



Sustainable Community Development Engineering

Sustainable Development Extension Plan (SUDEX):
**Community mobilization through proactive participation and synergistic
alliance to alleviate poverty and achieve sustainable self sufficiency.**

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Sustainable Engineering in the
Eastern Mediterranean (SEEM)
Larnaca, Cyprus

Poverty is the barren pasture in which disease, hunger, war and premature death graze.

Sustainable Development Extension Services (Sudex) empowers communities to proactively gain access to basic essential needs through a holistic integrated approach to restore the pasture.



- Objective: Empower impoverished communities in rural areas of developing countries to alleviate poverty and achieve sustainable self sufficiency.
- Who: Those living under extreme poverty.
- Commitment: Sufficient basic needs are available to ensure welfare of citizens, and gender equality, economic and education opportunities are imbedded in way of life to ensure welfare of citizens and community is sustainable.



The Native Americans have a saying that to know someone you must walk a mile in their moccasins. I have walked the mile in villages to fetch the water, to search for the fire wood, to play with the children, to sleep on the floor in the crowded huts. I do know them better and respect them all the more, but the truth is, it is not enough. Everyone I know is a victim or a perpetrator of some unconscionable horror, but I could not tell you who was which. We outsiders cannot experience what they have and so it is difficult to know where to start, and yet they will be the first to tell you, you build with what you have and you wait, it will come. I seek to shorten the time they have to wait.

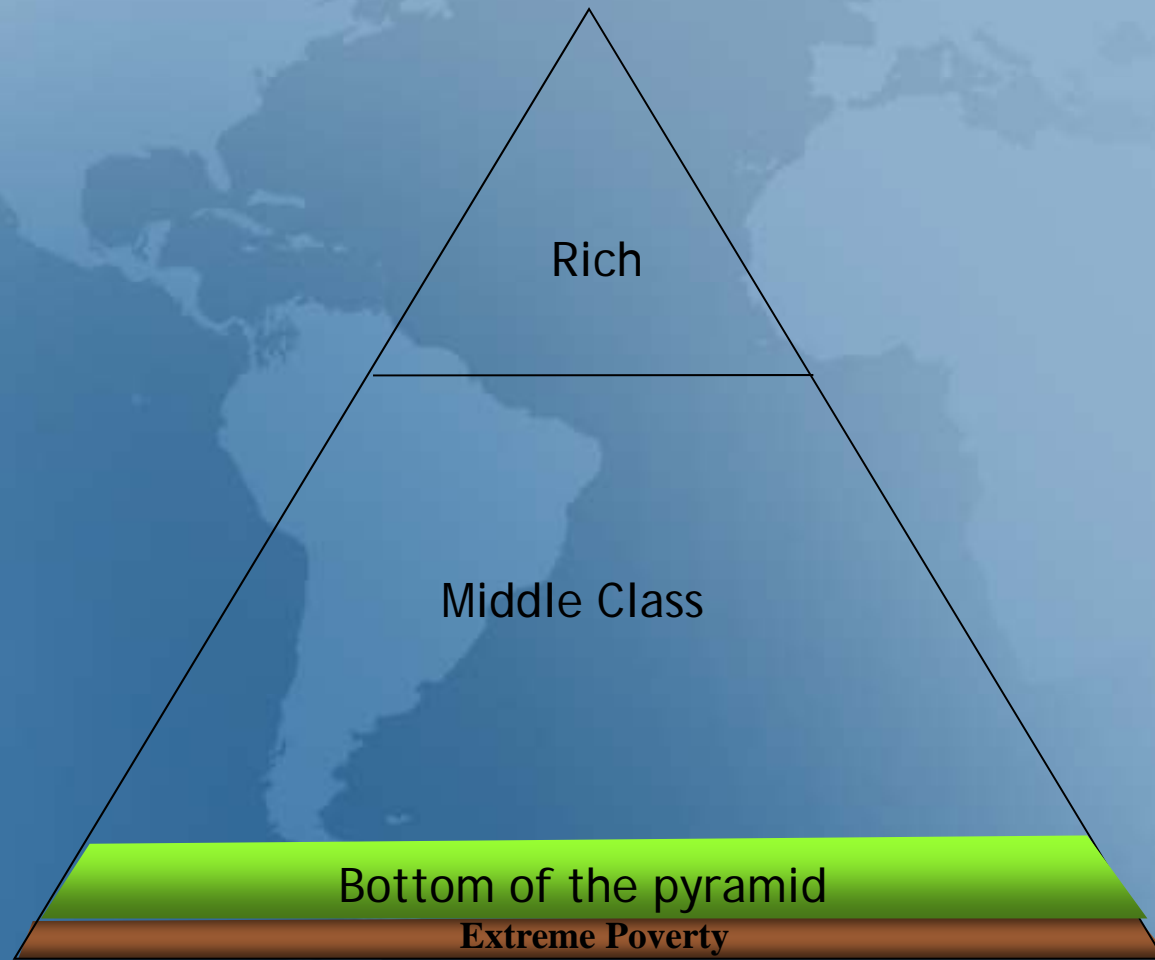


Overview

- **Statement of the Problem**
- **Perspective**
 - Portrait of Poverty
 - Eradicate Poverty
 - Why
 - How
- **Sudex Plan**
- **EWB projects if time allows**



Perception of Income Tiers



Poverty=lacking sufficient resources to obtain basic needs to provide for family contributing to any of its consequences.

- Basic Needs

- Adequate diet (not just food)
- Water (quantity and quality)
- Sanitation and hygiene
- Health care

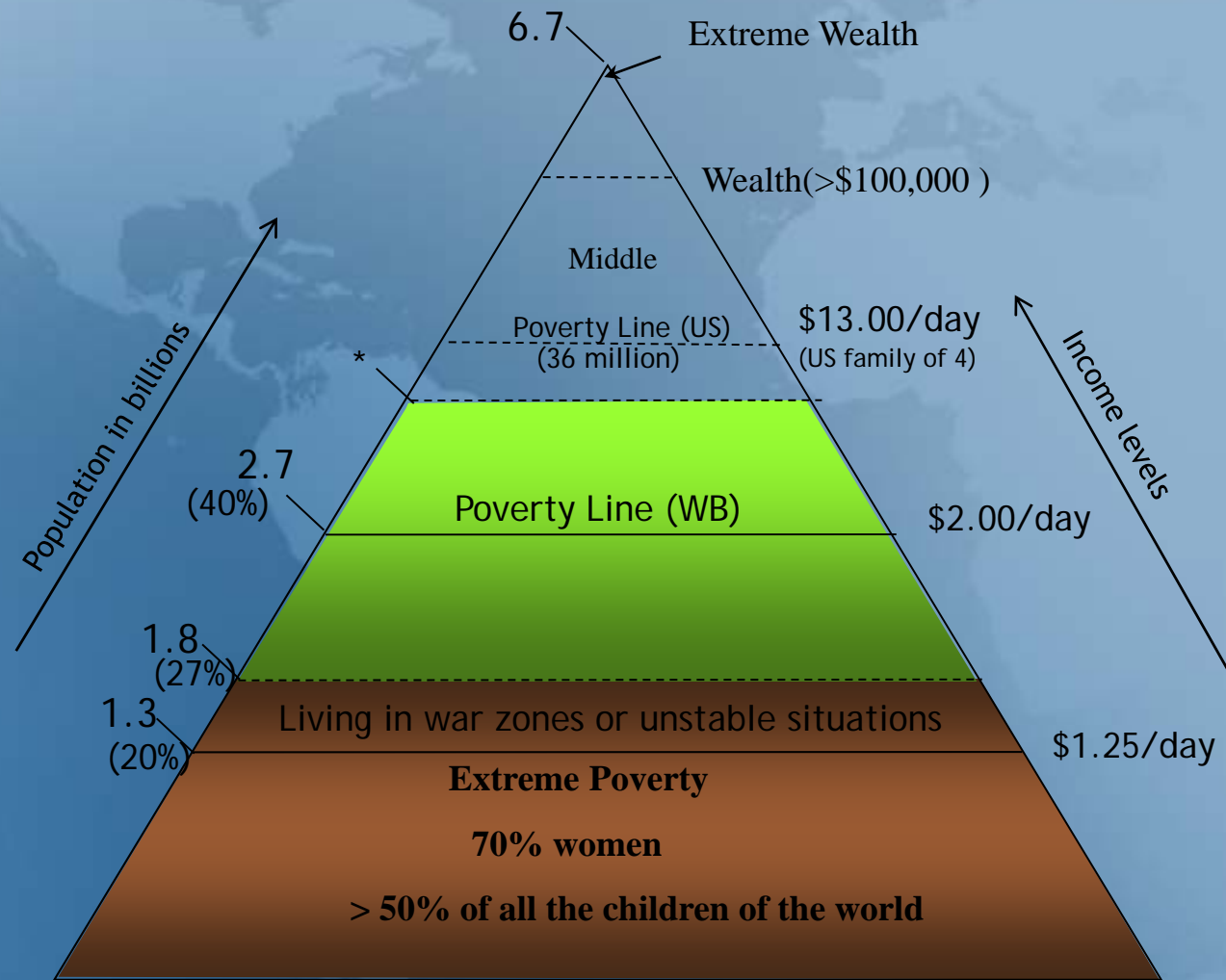
- Shelter
- Fuel
- Opportunity
 - Education
 - Information
 - Employment/Entrepreneurship
 - Financing

- Consequences of poverty

- Premature death at any age due to lack of any basic need
- Sense of helplessness; feeling of hopelessness, and despair
- Squalor, crime and addictions
- Environmental degradation with global repercussions
- Drain on local and global economy
- Desperation conflict and sacrifice



Reality of the Economic Pyramid



* Living in poverty above the poverty line (numbers unknown).

Sources: www.worldbank.org
www.census.gov

1990 (ref 2008MDG Report)

- The world population is about 6.0 billion (need to confirm).
 - 1.8 billion living in extreme poverty (Goal 0.9 billion by 2015).
 - Over 1.2 billion people lack access to safe water;
 - Over 2.4 billion people lack access to sanitation
 - 1.2 billion lack adequate housing
 - 1.6 billion lack access to electricity
 - 33% of the world's population are children;
 - nearly 50% live in conditions of abject poverty.
 - 5% of all the children in the world die annually due to inadequate health care, food, water, shelter, sanitation, and/or energy,.

2005 (ref MDG)

- The world population is about 6.7 billion.
 - Over 1.4 billion living in extreme poverty
 - Most of the decrease attributable to China increasing economy and decreasing population.
 - Increasing India economy offset by increasing population
 - Increase in sub-Saharan Africa 100 million.
 - At current rate, there will be 1 billion by 2015
 - What effects will the current recession have?
 - With increasing population in poor countries and dwindling resources can the current rate be maintained? (That is zero net gain discounting China.)



Root Cause Analysis – Four Symptoms

<p>Statement of Need: Over 40% of the world population is dying prematurely due to lack of basic essential needs for survival (or 2/3, if those living on the fringes of extreme poverty are included) this directly effects the welfare and quality of life on the entire population and arguably threatens it; access to the basic needs is the immediate solution; opportunity (education, information, financing, employment) is the sustainable solution.</p>							
Symptom 1: poverty		Symptom 2: hunger, disease, premature death, illiteracy,		Symptom 3: Environmental degradation. E.g. Deforestation		Symptom 4: Conflict and war	
Why?	Lack of education, financial resources and information	Why?	The need of resources and assistance to meet primary basic needs of the poorest in a sustainable manner.	Why?	Need land for food; Need wood for cooking;	Why?	Political self interest and exploitation. Dominance seen as means to control masses to maintain power
Why?	All parents are willing to pay to protect their children—as best they can, but if they are to implement and sustain the solutions, they need the capacity to do so—ability to pay supersede willingness to pay.	Why?	There are numerous strategies which filter funds from the "top of pyramid" through the layers of bureaucracies, political mazes and corruption before reaching the bottom. These funds are essential to ensure long term and infrastructure improvements, but there are significant time lags before those at the bottom see any substantive and/or consistent benefit.	Why?	Poaching means of income; compete with some species for food and water; do not recognize how directly affected by biodiversity	Why?	Unable to see how power and wealth can be increased by giving opportunity for others to have power and wealth
Why?	Lack of political will	Why?	Political expediency and corruption	Why?	Unable to control pollution	Why?	Those without, seek to replace those in power
Why?		Why?	Difficulty of accountability, transparency	Why?		Why?	The poor easily persuaded have nothing to lose; willing to sacrifice themselves
Root Cause: lack of financial means to purchase basic essential needs		Root Cause: inequitable distribution and poor use of resources and planning		Root Cause: Environmental issues are not understood and even when they are, the immediate needs take priority.		Root Cause: Fear, ignorance, arrogance, greed, power, inferiority complex believing only way to power and wealth is through subjugation.	
<p>Intervention Needed: The solutions to the basic essential needs are access to health care, water and sanitation, food and shelter, to which is added the basic need of opportunity to build capacity—access to information, education and training, financial resources, jobs and business prospects, as well good governance and ability to retain earnings. Technology is necessary to provide basic essential needs—otherwise people die, but without opportunity the needs can not self sustained, and donors are only as reliable as they are willing and able to provide...not all the long I am afraid.</p>		<p>Intervention Needed: The basic premise of the Sudex Plan is that community leadership and participation in the decision process best provides an understanding of how the decision fulfills a need, and consequently the community will assure it decisions will be implemented and maintained. The methods are tried and true drawn from best engineering and business management practices, and community mobilization and participatory approaches; it is the holistic integrated comprehensive application and the conditions to which the Plan is to be applied that are unique. This process is predicated on community mobilization using participatory methods, defining the problems, identifying the optimum solutions, implementation, performance feedback, followup, improvement and transfer of lessons learned.</p>		<p>Intervention Needed: Education, eradicate poverty, community empowerment through information, and opportunity (jobs, financial access, and entrepreneurship. Eradicating poverty will relieve some severe environmental concerns, but will introduce a new set, the difference being that the raw basic and immediate justification for survival will be removed, and solutions open to debate and compromise.</p>		<p>Intervention Needed: This is may be the hardest to address: empower-ing communities to become sustainably self sufficient give them strength in numbers and political power ultimately leading to fair and equitable governance (justifying the fears of the despot). War and conflict will not be eradicated by eradicating poverty, but one basic cause will be significantly reduced.</p>	

Why is it important to eradicate poverty?

- The right thing to do...
 - Deprived of basic human needs; denied basic human rights
 - Premature death at all ages; those who do not die contend with poor health
 - Trapped in extremely poor living conditions
 - Lack access to education and opportunity
 - Inequitable standard of living,
 - Is there a rationale to justify otherwise?
- External Impacts
 - Economics
 - Politics
 - Conflict
 - Health
 - Environmental degradation
 - Population
 - Urban migration
 - Slums and increased crime
 - Resurgence of the pirates and smugglers of the 16th century

Poverty Mission: Changing sense of helplessness and hopelessness to dignity and self esteem.

(Anthony Esenu-Uganda)



Lack of money is not the cause:

- The world's 2006 GDP was \$48.2 trillion
 - 76% was attributable to 1 billion people,
 - nearly 7% is held by the world's 500 billionaires.
- This is sufficient to eradicate poverty without affecting any one's status as a billionaire; in fact more may well join the ranks.
- Preventing material waste and irresponsible spending is sufficient to eradicate poverty alone.
- Innovative appropriate technology is available.
- The needs of those living in poverty are great, they represent a huge market, encouraging this market will provide sufficient growth to significantly reduce if not eliminate poverty.
 - Ideally those who make up the market can take advantage of it before those who can wake up.

There are thousands of organizations working in developing countries. They typically work independently with little sharing of information, address their own perceived community need and specialty often without conferring with the community. Their mission gets lost in the quest for funds.

There is little sharing of ideas, a lot of duplication, and data gaps in one strategy easily filled by another.

The benefits are often isolated, limited and temporary, many are negative and inappropriate, and few empower the community to act as its own agent of change.

While millions are affected, billions are overlooked.



There is no one approach, no single economic model, no one and only engineering fix that in and by itself will meet all the needs. We need to incorporate all the applicable, relevant and appropriate strategies, sharing all information and lessons learned, the failures, and the successes as open source.

If we oversimplify complex problems we come up with over simplistic limited solutions.



- Concept of appropriate technology is well known, but not well understood...as often as not applied inappropriately.
- In thinking outside the box, we should not forget what lies inside...as likely as not—the solution.
- It is a common and major mistake not to listen to the villagers...**invariably indigenous wisdom is superior to ours given their own set circumstances**...But not always.



We need to work together creating collaboration between the community and the extensionalist to prepare and implement a feasible and appropriate practical realistic plan incorporating mutual respect and cultural sensitivity that will ensure the community can achieve its self determine state of sustainable self sufficiency.

Otherwise, the future in developing countries is destined to be a repeat of the past, and the whole world suffers.



It is not a sense “OWNERSHIP” that is at fault.

- The obligations of ownership are assigned solely to the villagers by the intervener; the interveners accept no responsibility or accountability for such actions as:
- **Inadequately explaining the importance** of the intervention
 - Too high of expectations; **unfulfilled promises**
 - Misunderstanding the importance and applicability to the village
 - **Applying their norms to the village**
 - **Conditional aid**
 - Inappropriate technology
 - Ill equipped to be sustainable.
 - **Underestimating the intelligence and capabilities of the villagers**
 - Slow to actively seek the opinions of the villagers
 - Lack of involvement of the villagers in the assessment and decision process.
- **No parent wants to stand idly by and see their children suffer; all parents are willing to pay to protect their children given the resources to do so and creditable information they trust. But if they are to implement and sustain the solutions, they need the capacity to do so—ability to pay supersedes willingness to pay.**



What *is* lacking is COMMITMENT.

- Ownership implies purchase, possession, to have title to, or dominion over...not concepts well understood in the communal life of the villages. Ownership does not guarantee commitment.
- Commitment means accepting responsibility and following through with a sense of duty and dedication.
 - it is an entrustment only taken up when its value is appreciated;
 - it will only be gained through patience and respect;
 - it will only be accepted through trust and confidence;
 - it cannot be delegated, commanded or demanded;
 - its façade can be purchased;
- If there is no commitment, either its cause has not been adequately presented, or there is not sufficient confidence in the villagers (which is sensed and reciprocated)...
- if you teach a man to fish where there are no fish, it does not instill confidence in the fisherman.



Sustainable Development Extension (Sudex)

Participatory Community Planning

Synergistic Alliance

Nexus of Consilience

Collective Learning

Self Sufficient Sustainable Development

Passing on the knowledge



- To walk the talk requires action without which solutions are just words.



Adapted from: Exploring Pathways to a Sustainable Enterprise, GEMI, June 2002

Until the interveners and villages are equal respected partners in resolving the problems, unacceptable numbers of people remain locked in cells of unnecessary poverty; the key just beyond their reach dangling from the necks of those who can provide relief.

Proactive participation places the key within grasp of the community.

Adequately informed puts the key in the lock.

A synergistic alliance unlocks it.



Sudex attempts to provide the key enabling the community to proactively seek out the organizations that are best qualified to provide the best solutions, but it too is not the end all and relies on partnering with existing organizations and communities to continuous improvement for all.



Engineers are important

“We need ...more... engineers to take care of our infrastructure; we have poured too much of our talent into [building] false castles in the financial world.”

**Paul Volker Past Chairman of US Federal Reserve Bank
Speaking about how to avoid 2008 major recession. 10/08**

“...extreme poverty, disease, and environmental degradation could be alleviated with the wealth, the new technologies [science and engineering], and global awareness with which we entered the 21st century.”

Jeffery Sachs, The End of Poverty: Possibilities of our time (2005)

"Clean water makes all the difference, ...the engineers who create modern clean water and sewage systems saved more lives than all the doctors practicing medicine in our communities."

Dr. Harvey Fineberg, National Institute of Medicine, PBS Rx for Survival

A new engineering social consciousness and conscientiousness is necessary.

Bernard Amadei; Adapted from Engineering with a Soul

But:

Over 90% of the necessary scientist and engineers are not in the countries that need them most.

BUT....



Equally important are:

- Health specialist,
- Social Scientist,
- Economists,
- Attorneys
- Political scientist and politicians,
- Anthropologist,
- Community planners,
- Business leaders,
- National and local governments
- Bureaucrats
- ...and clowns as well.



BUT MOST IMPORTANT ARE...

...THE CITIZENS OF THE COMMUNITY

- Proactive Community participation and leadership is the critical component, often over looked or ignored by those who seek to help, and consequently the root cause of many failures.
- Commitment results with active and appreciated participation in decision process. One tends to ensure their decisions are implemented and maintained (which sometimes makes it difficult to change.)
- The community does not need outsiders to tell them what their problems are;
 - But it can use some help identifying practical sustainable solutions, and the tools and funds to implement them;
 - Provided with creditable reliable information and tools they can decide on the appropriate solution for themselves.

