9-17-2012

SLIDES: Session 3: Decision-Making and the Energy Poor

Andrew Yager

Follow this and additional works at: http://scholar.law.colorado.edu/energy-justice-conference-and-technology-exposition

Part of the Business Law, Public Responsibility, and Ethics Commons, Energy Law Commons, Energy Policy Commons, Entrepreneurial and Small Business Operations Commons, Environmental Engineering Commons, Environmental Health and Protection Commons, Environmental Law Commons, Environmental Policy Commons, Environmental Public Health Commons, International Business Commons, International Law Commons, International Public Health Commons, Power and Energy Commons, Science and Technology Commons, Sustainability Commons, Transportation Commons, Water Law Commons, and the Women's Health Commons

Citation Information
http://scholar.law.colorado.edu/energy-justice-conference-and-technology-exposition/20

Reproduced with permission of the Getches-Wilkinson Center for Natural Resources, Energy, and the Environment (formerly the Natural Resources Law Center) at the University of Colorado Law School.
Session 3: Decision-Making and the Energy Poor

Andrew Yager
United Nations
Non Sequitur  By Wiley Miller

I KNOW, I KNOW...BUT HAVE YOU EVER TRIED TO EXPLAIN THE REAL WORLD TO THE LEGAL DEPARTMENT?
Contents of Presentation

1. Energy Poverty
2. Gaseous Fuels in Africa
3. Ethanol Cooking Fuel Initiative
“…a billion people stuck in desperate conditions alongside unprecedented prosperity.”

Source: The Bottom Billion, Paul Collier, Chapter 11, An Agenda for Action.
Who are these people?

- These are fellow global citizens who are too poor to engage in their local marketplace in a meaningful way.
- Their national budgets are too small to take care of their basic human needs.
- These people are not impacted by the many *sustainable development* programmes and activities in their countries. They are in what may be termed the pre-development stage.
Achieving Sustainable Development

We can act by investing with the poor to create local conditions that enable them to develop more rapidly.
Need Modern Fuels for Cooking

Respiratory disease from cooking on traditional fuels kills nearly 5,000 people daily world-wide
Energy Poverty: Annual Deaths

Easily prevented deaths

Deaths per day (thousands)

- Indoor air pollution 5
- Water & sanitation 5
- Malaria 5
- TB 5+
- HIV/Aids 5+

Total in the range of 25-30 k per day

About 150-200 k preventable deaths per week

⇒ One Asian tsunami per week
⇒ One Haitian earthquake per week
National average primary energy vs HDI
So I started cleaning out the basement to get rid of stuff we don't really need, and...well...one thing led to another.
Local Gas Supply Options in Africa

- **Dissolved methane gas** in Lake Kivu (DRC, Rwanda); Lakes Nyos and Monoun (Cameroon).
- **Biogenic gases** formed in swamps and marshes (Botswana, Nigeria, DR Congo).
- **Biogas** from animal, agricultural and human waste.
- **Landfill gas** (various countries).
- **Gas Flaring reduction** at oil and gas production facilities (Nigeria, Angola, others).
- **Small gas deposits** (Mozambique, Namibia, South Africa, Rwanda, Ethiopia, Somalia, Cameroon, Congo (Brazzaville), Cote d’Ivoire, Ghana, Senegal, Sierra Leone, among others).
- **LP Gas** (propane, butane).
- **Ethanol cooking gas**
Rationale for engaging in small-scale resource exploitation (a new development paradigm)

1. Heightened awareness of the negative health impacts associated with traditional fuels, thereby prompting the need to switch to modern cleaner fuels.
2. New technologies to exploit small-scale reserves in a cost-effective manner are available today.
3. Post-independence national energy companies have become more mature as viable business ventures.
4. Many more newly educated national professionals are employed in the energy sector in their countries (both in the private and public sectors).
5. Financial resources are becoming available in Africa.
Ethanol Cooking Fuel Initiative

CleanStar Mozambique
Charcoal-based deforestation

- Causes land degradation and flooding
- Soil erosion leads to food insecurity
- 10kg of wood = 1kg charcoal
- Major source of CO2 emissions
Subsistence farming

- Slash & burn agriculture cycle
- Lack seeds, inputs, guidance, market
- Forced to make charcoal for cash
- Vulnerable to climate & disease
CleanStar’s commercial strategy in Mozambique

“NDZiLO”

Ethanol-based cooking fuel & Ethanol clean cookstove

Clean, safe and fast with fuel spend matching charcoal
Main Selling Points – Clean, Safe, Fast and fuel spend matching charcoal
Customers visit shops to fulfil orders, sign warranty/carbon agreement, take stove and fuel
Customers then visit every day / week to buy NDZiLO fuel (1L & 5L available)
Processing plant designed by Team ICM in Colwich, Kansas

July 2011: still in the computer
Worlds First Sustainable Cooking Fuel Plant

Opened 17 May 2012
Federal Agriculture Minister cooks up a storm at Opening Ceremony
Rural Impact: ↑ incomes, ↑ nutrition, ↑ tree cover, ↑ soil health
CleanStar’s Community Agriculture Centre at Savane
Manual cassava pre-processing
Cassava drying to stabilize starch for storage / logistics
CleanStar Mozambique is a commercial producer and retailer of affordable modern cookstoves and sustainable ethanol-based fuel.

**VERTICALLY-INTEGRATED BUSINESS MODEL**

- **CULTIVATION**
  - Smallholder farmers
  - Cassava, cowpeas, Soya, sorghum, trees
- **PROCESSING & PACKAGING**
  - Ethanol plant, soya mill, flour mill
- **DISTRIBUTION**
  - Network of urban shops & auth. reseller kiosks

**PRODUCTS**
- Cookstoves & ethanol fuel

**CUSTOMERS**
- Low-income urban Households (stove sales target of 80,000 by 2014)
- Food products

**FOUNDERS AND FINANCIERS**

- **CleanStar Ventures**
  - Social and environmental impact venture developer
- **Novozymes**
  - Danish industrial biosciences company
- **ICM**
  - US chemical and agri-process engineering company
- **Bank of America**
  - Innovative carbon project financier and trader

**INVESTMENT SCALE AND TIMELINE**

- **Seed investment**
  - Jan 2009
  - CleanStar Ventures
  - Novozymes
  - ICM

- **1st Round**
  - Aug 2010
  - Novozymes

- **2nd Round**
  - Jun 2011
  - Novozymes
  - Bank of America

- **3rd Round**
  - Nov 2011
  - Novozymes
  - CleanStar Ventures

- **May 2012**
  - Investment funds
  - IFU, Denmark

**Investment funds**

- $20 million “proof of concept” in Mozambique*

**Expansion in Mozambique**

- $40-50 million capacity
  - 2014-15

**Pan-African Expansion**

- $5m pan-African
  - 2013
  - $50-100m+ pan-African
  - 2014+ development

*Commercial investors with long-term interest; no donor funding
Sustainable Ethanol for Cooking Partnership:
Accelerating Clean Energy Access in Urban Households

- The issue
- About the Partnership
- Why sustainable ethanol?
- Join us!
Who’s behind this so far?  What’s next?

INTERESTED PARTNERS

Next steps
• Finalize structure & support  (Sept / Oct 2012)
• Hire 2 or 3 core staff  (Nov / Dec 2012)
• Design & launch programs  (Jan 2013)
Sustainable Ethanol for Cooking
Join us!

Contact us to see how to get involved

www.se4c.org