

# IFC's Program for Commercializing Fuel Cells in Developing Countries

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# The IFC

- The International Finance Corporation
  - private sector arm of the World Bank Group
  - largest multilateral source of loan and equity financing for private sector projects in the developing world.
- Total portfolio \$17.9 billion, FY '04 investments of \$5.63 billion
- “Sustainability” one of 5 strategic priorities



# The GEF

- The Global Environment Facility: donor financing for the “incremental costs” of developing country projects with *global* environmental benefits
- Projects implemented primarily by the World Bank, UNDP, and UNEP
- Total resources: \$3 billion for FY '03-'06; 35-40% for clean energy projects that reduce greenhouse gas emissions



# Power in Developing Countries

- Antiquated utility infrastructure
- Existing central generating system unable to do customer segmentation
- Widespread use of diesel gensets and other polluting DG equipment where there is need for reliable power
- Nearly 2 billion still without access to power



# Fuel Cells in Developing Countries

- High value added for *reliable* power
- Modular, small footprint, and quiet
  - Deployment in urban and remote areas
  - Wide set of “productive” applications
- High electrical efficiencies, CHP potential, reliable, and environmentally friendly
- Can help developing countries “leap-frog” to the next generation of power infrastructure



# IFC-GEF Fuel Cell Financing Initiative (FCFI)

- Stage 1 approved by the GEF Council  
November 2003: \$9M for three  
projects in three GEF eligible countries
- Stage 1 Funding mostly for capital cost  
buy-down: subsidy up to 50% of  
capital cost, or US\$2,000/Kw



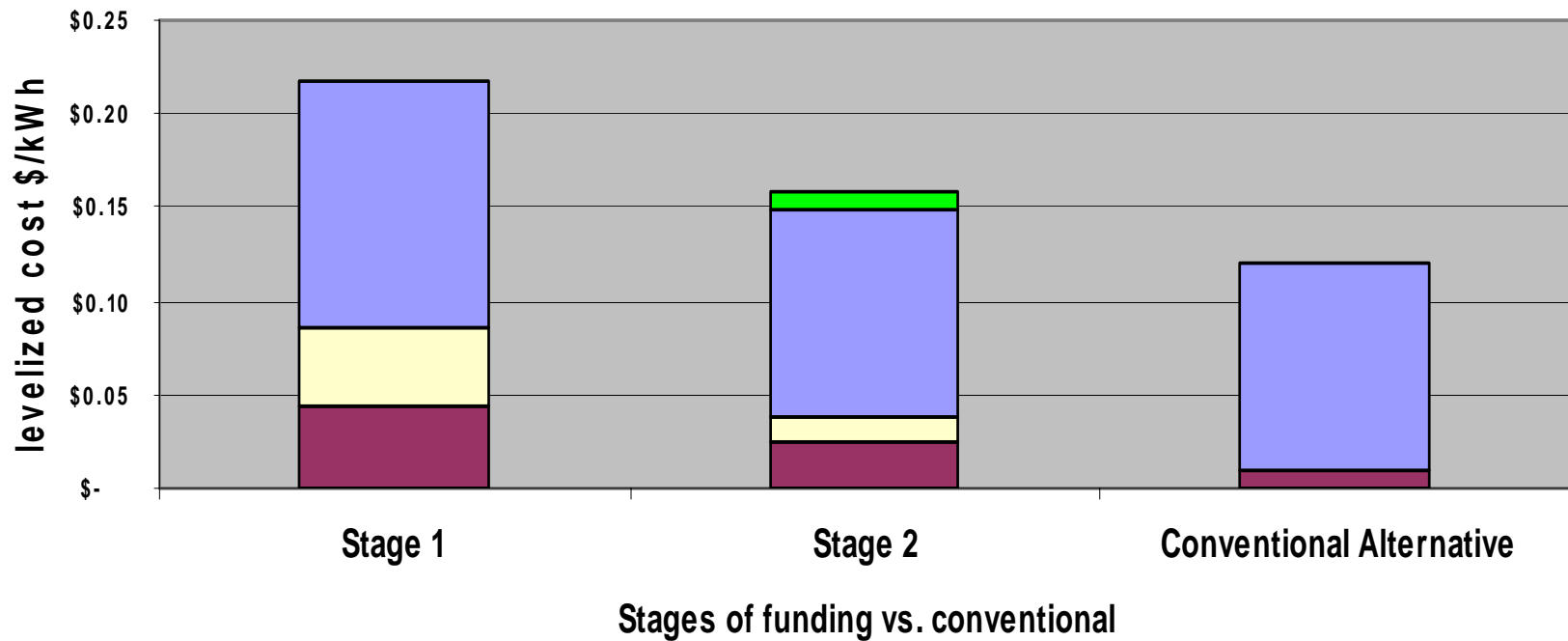
# FCFI Requirements

- Project must be located in a developing country eligible for GEF financing ([http://gefweb.org/participants/Members\\_Countries/members\\_countries.html](http://gefweb.org/participants/Members_Countries/members_countries.html))
- Country must be a signatory of the UN FCCC (<http://unfccc.int/resource/conv/ratlist.pdf>)
- Location should be in geography with good future market potential for fuel cells (replicability and sustainability)



# FCFI GEF Goals: Reducing the LT Costs of Fuel Cells

Schematic of Levelized Costs Analysis Under  
IFC-GEF Fuel Cell Financing Initiative



■ Co-Financed Capital Costs □ GEF Financed Cap Costs ■ Variable cost ■ Additional GEF Support





## SECA Phase III Goals: A Good Fit with the Needs of IFC Client Countries

- 3kW - 10 kW power range has multiple DG applications and large market potential
- \$400/kW and 40 to 60% efficiency
  - Combination competitive with diesel gensets in stand alone, grid backup & hybrid with PV, biomass and wind applications
- Multiple fuels expands the potential market
  - Benefits of more propane applications
- Availability, O&M and lifetime targets respond to market
  - 95% availability
  - Required maintenance at >1000 operating hrs
  - Life of 40,000 operating hrs for stationary applications
- Multiple global technology suppliers
- Rigorous pre-commercial testing requirements



## While You Work on the Technical, Performance and Cost Challenges of SECA

- The IFC and World Bank in parallel will be:
  - Encouraging in-country Power Sector reform that enables the deployment of DG and GHG mitigating technology such as fuel cells
  - Building infrastructure support for DG
  - 2 to 3 initial fuel cell projects with \$2000/kW buydown subsidy installing up to 4.5 MW



# SECA's Phase II ends when IFC/GEF Phase II begins

- IFC/GEF Phase II Program (to be approved based on Phase I outcomes)
  - Approximately \$1000/kW subsidy
  - \$45M budget
  - 45 MW of anticipated new capacity in Stage II
  - Market conditioning and awareness
  - Regulatory hurdles reduced
  - Financing
  - In-country O&M support



## FCFI Stage I: Status and Timelines

- First request for proposals (RFP) issued in Jan. 03
  - Nine responses received
- Stage 1 approved by GEF Council in November 2003
- Second RFP issued in April 04 – Seven responses received
- Review Committee met in November 04 – five companies taken to next stage
- Three companies currently in technical due diligence!



# Conclusions

- Fuel cells for power generation fit the needs and circumstances of developing countries – assuming cost reduction targets can be achieved
- Fuel cells can mitigate GHG emissions in developing countries – an objective for the US and other GEF donors
- The IFC and GEF are supporting commercialization of technologies with substantial environmental benefit



# Conclusions

- We look forward to continued collaboration with US DOE, the six Industrial Team Leaders, and the numerous Core Technology contractors in bringing fuel cells and SECA technology to the largest possible global market in the earliest conceivable timeframe



IFC's Fuel Cell  
Commercialization Program: We'll  
be Ready When You Are!

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