MECOWA
“CNG Virtual Pipeline” in Ghana

MIT Global Entrepreneurship Team 2016-2017

Company

- **MECOWA** is a family owned, diversified holding company that specializes in developing opportunities for socioeconomic growth within Ghana and other parts of Africa

Business Problem

- **Ghana has limited energy accessibility:** c.7.3 million people (i.e. 30%) do not have access
- **Unreliability of energy supply**, and gap between demand and supply at peak hours
- **Electricity prices** at **unsustainable levels** (e.g. 59% increase in Feb. ‘16)

Solution

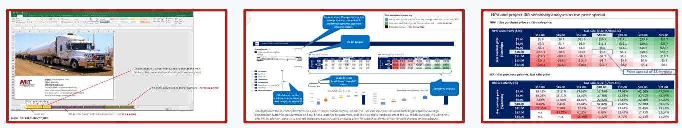
- Build a Compressed Natural Gas (CNG) Virtual Pipeline (VP) to provide gas to customers

Sourcing → Compression → Transportation → Decompression → Generation

Focus of the project: secure constant gas, compressed at “mother station”, transport it to customers via truck fleet, decompress it at the client site

Methodology

- Help MECOWA **assess the financial feasibility of a CNG virtual pipeline** (VP) to serve industrial clients
- **Main deliverable**: comprehensive **operating and financial model**



Screenshots from the model built for MECOWA

Results

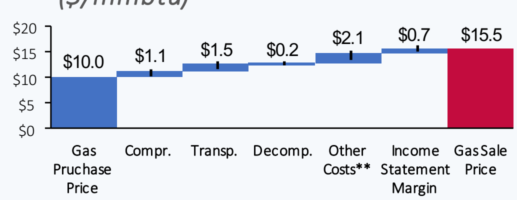
Three main scenarios analyzed

	Scenario 1: Tema	Scenario 2: Kaneshie	Scenario 3: Kumasi
Capacity	2,500 mscfd	2,500 mscfd	2,500 mscfd
Clients	3 @ 800 mscfd	6 @ 375 mscfd	1 @ 2,500 mscfd
NPV	$13.5M	$9.0M	$1.3M
Project IRR	36.9%	28.6%	17.8%
Disc. Payback Period	4.2 years	5.9 years	14.6 years
Equity IRR	57.6%	39.3%	20.4%
Avg. client demand	*Average client size: 3MW*	*Average client size: 1.5MW*	*Average client size: 10MW*

NPV ranging from **$1.3m** to **$13.5m**

IRR ranging from **17.8%** to **36.9%**

Incremental cost (IC) of CNG VP *($/mmbtu)*

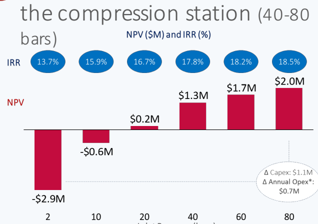


Incremental Cost to hit 20% target IRR in Scenario 1: **$5.5**/mmbtu

Recommendations

- **MECOWA should pursue this financially feasible project following these recommendations**

1. Assure a high inlet pressure in the compression station (40-80 bars)

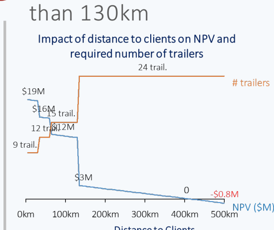


2. Own transport. fleet

Outsourcing price breakeven ($/km) **$5.4**/km

“Transportation is at the core of this business. This is a logistics problem. You don’t want to outsource it.”

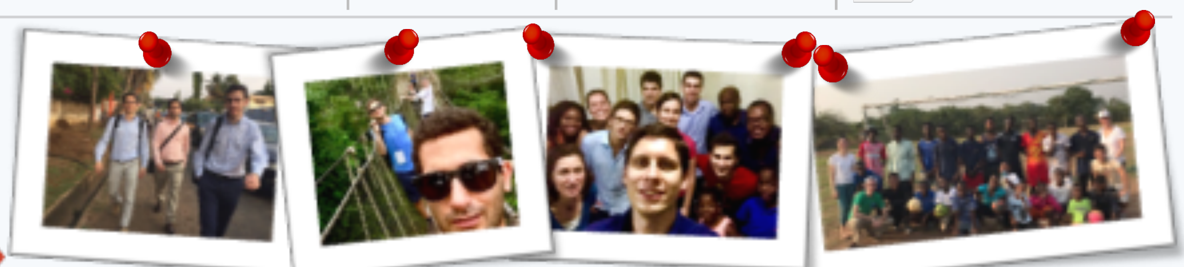
3. Serve clients closer than 130km



4. Invest in decompression stations to ease adoption

	MECOWA	CLIENT	DELTA
Total Capex	$17.6M	$16.5M	($1.1)M
Decompression Capex	$1.1M	$0.0	($1.1)M
Annual Opex	$2.7M	$2.7M	<($0.1)M
Annual Decomp. Opex	<$0.1M	$0.0M	<($0.1)M
Project IRR	17.8%	19.5%	1.7%
Price output (IRR=20%)	$18.4/mmbtu	$18.1/mmbtu	($0.3)/mmbtu
Project NPV	$1.3M	$2.8M	$1.5M

Team



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