Opportunities in Energy Efficiency: Green Building and the Industrial Sector

USAID's Energy Efficiency for Clean Development Program (EECDP)

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Opportunities in Energy Efficiency

Energy Efficiency Program Planning

Strategies and Approaches

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Program Development Cycle

Fundamental Market Elements

In mature markets, these exist

Do they exist in the developing world?

Program Development Cycle

Program Design

If the fundamental elements exist, a greenfield market program can be designed using the 'red' lifecycle steps

Program Development Cycle

Program Design

In a mature market, programs can be implemented and launched skipping steps.

Example, ICF lighting program from NY can be resized and redeployed in TX.

Program Development Cycle

Program Design

In an <u>greenfield market</u>, where the fundamental elements are not clear, program development may need to touch on all elements.

Not realistic to achieve all elements in one iteration.

Program Development Cycle

Example

Want a concept program design that leverages local 'channel partners' and an emphasis on financing. It's unclear who the channel partners are, and funding agencies need a business case.

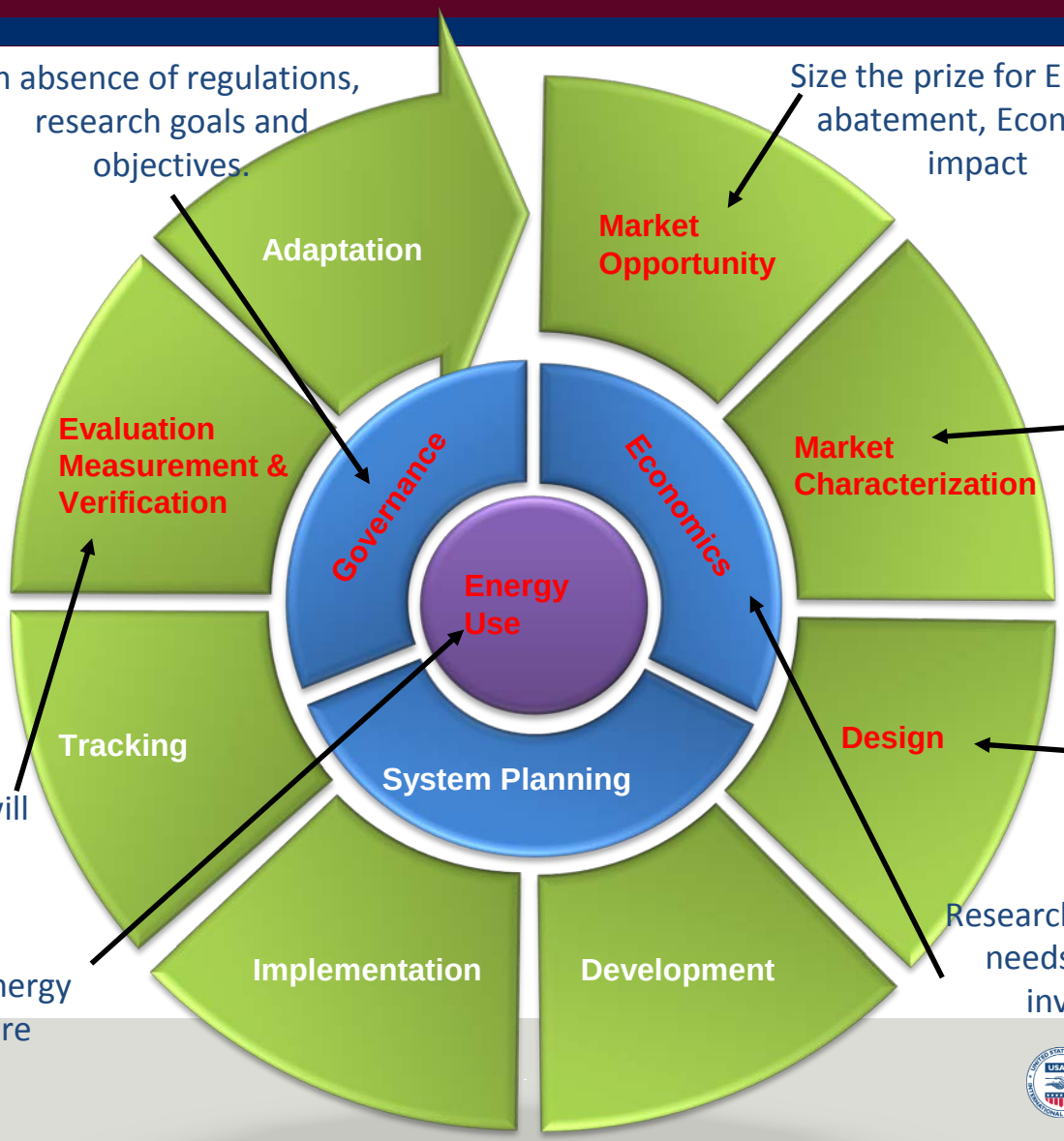
Program Development Cycle

Example

Want a concept program design that leverages local 'channel partners' and an emphasis on financing. It's unclear who the channel partners are, and funding agencies need a business case.

In absence of regulations, research goals and objectives.

Size the prize for EE, GHG abatement, Economic impact



Research how Industrial products and services flow in the market, who the actors are.

Design a program concept, meeting economic tests

Research Industrial ROI needs, competing investments

Showcase how results will be measured

Model existing energy networks, future constraints

Program Development Cycle

Example

Want a concept program design that leverages local 'channel partners' and an emphasis on financing. It's unclear who the channel partners are, and funding agencies need a business case.

Outcome

Understanding of the Industrial Market

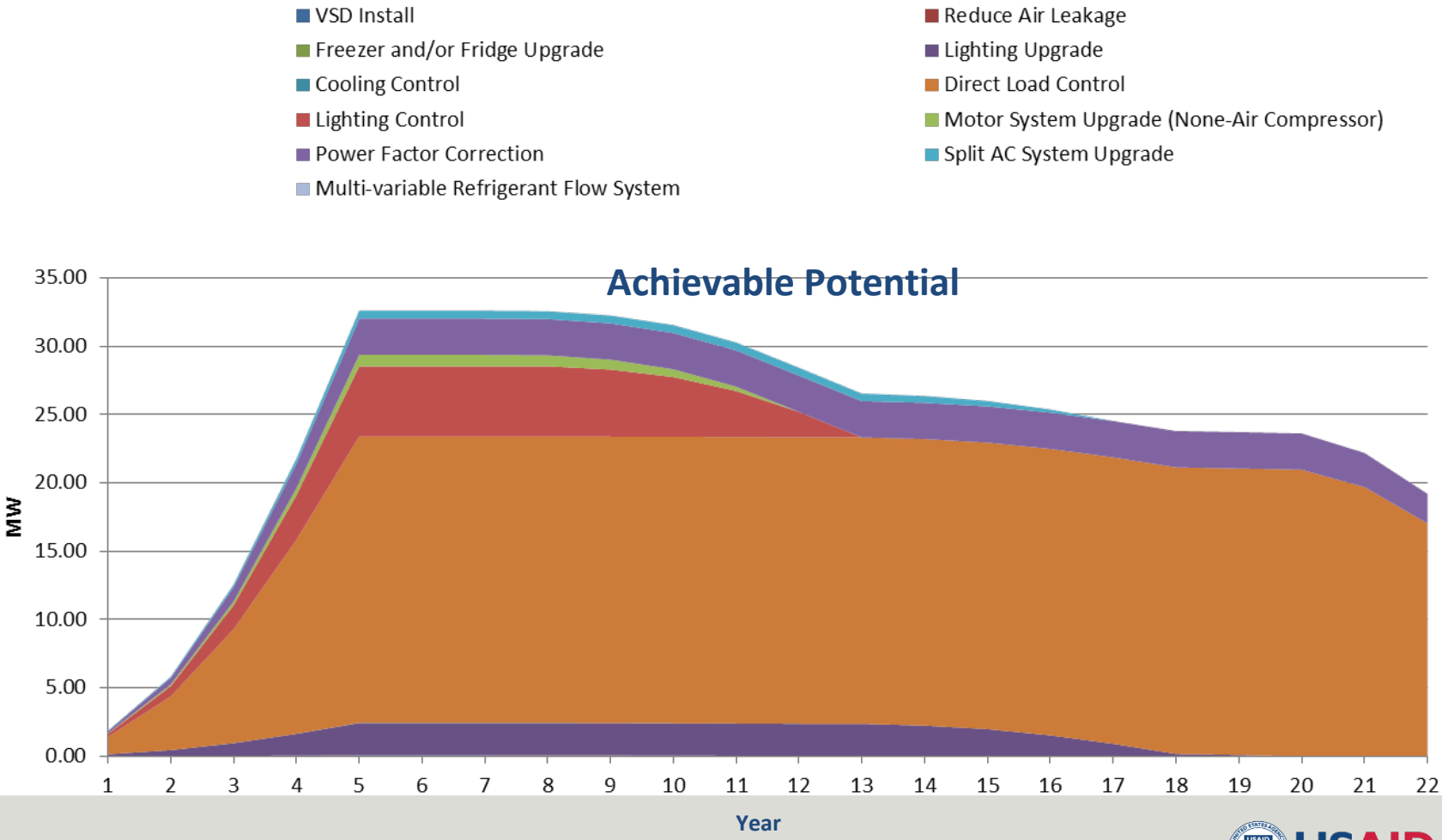
Size, economics, and benefit potential

Concept Program to be used for:
1) Obtaining Channel Partner commitment
2) Support Negotiations with governors and finance agencies

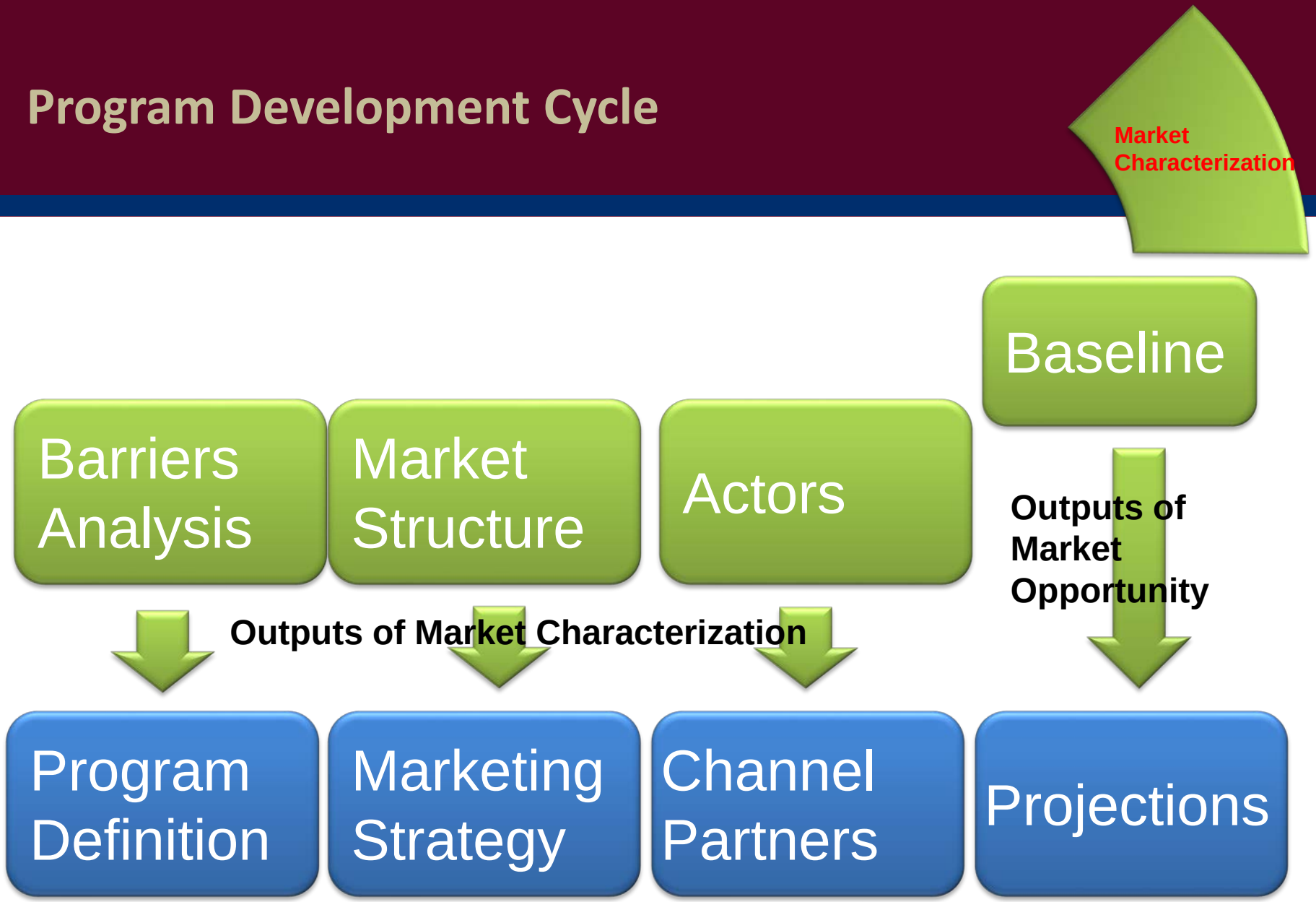
Program Development – Case Study

Market Opportunity

TANESCO, Government owned electric utility, Tanzania



Program Development Cycle



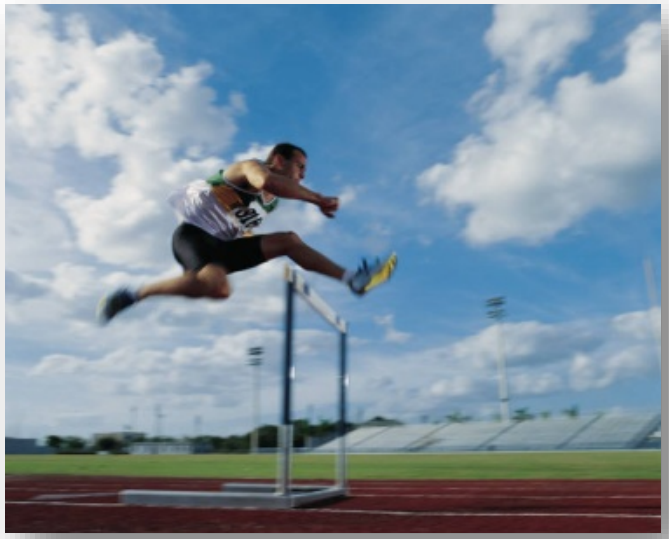
Components of Program Design

Program Development Cycle

Market Characterization

Barriers:

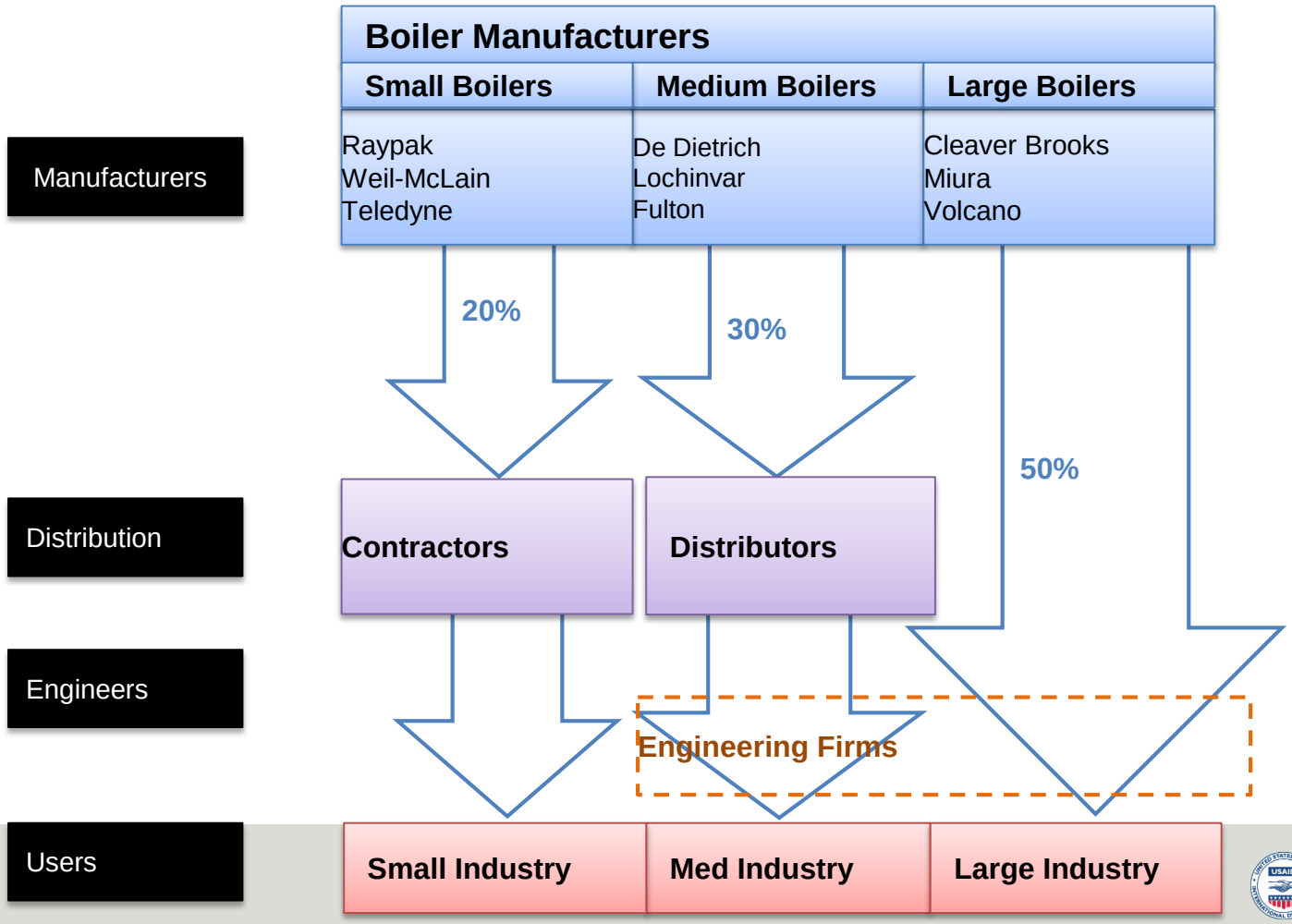
Hurdles:



Program Development Cycle

Market Characterization

Market Structure



Program Development Cycle

Market Characterization

Market Actors

Knowledge Firms

- Universities
- Research labs
- Consultants
- Media specialists
- Web developers
- Modelers

Policy Makers and Public Entities

- Regulatory commissions
- Energy offices
- Code officials
- Legislatures
- Public goods charge programs
- Regional efficiency organizations
- Non-governmental organizations
- Community organizations
- Agricultural extension service
- Ministries

Manufacturers/ Businesses

- Material suppliers
- Product manufacturers
- Distributors/ wholesale
- Utilities
- Engineering consultants

Energy End Users

- Textiles
- Steel Mills
- Jute
- Frozen Food

Finance Agents

- Banks
- Aid Agencies
- Shareholders
- Investors
- ESCOs

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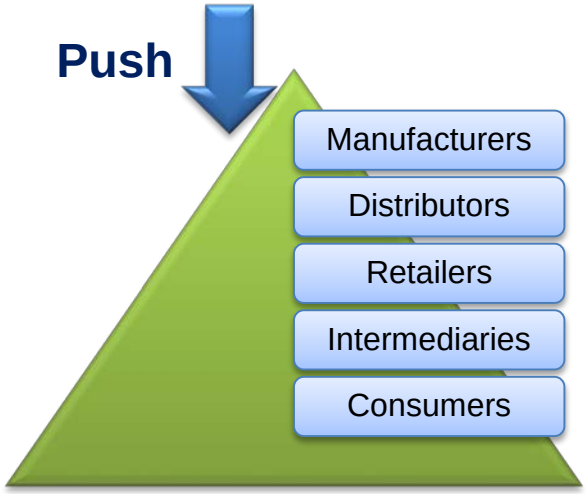
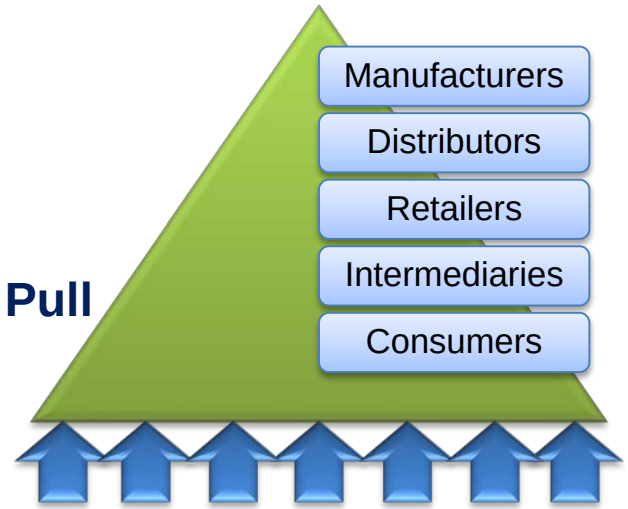
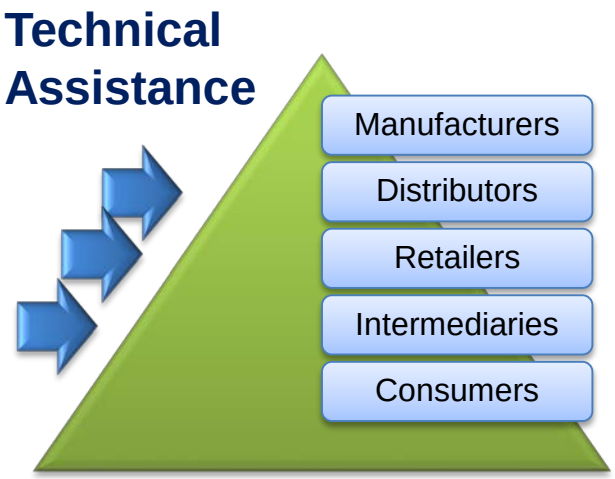
Program Development Cycle



'Pure' Market Transformation



Resource Acquisition

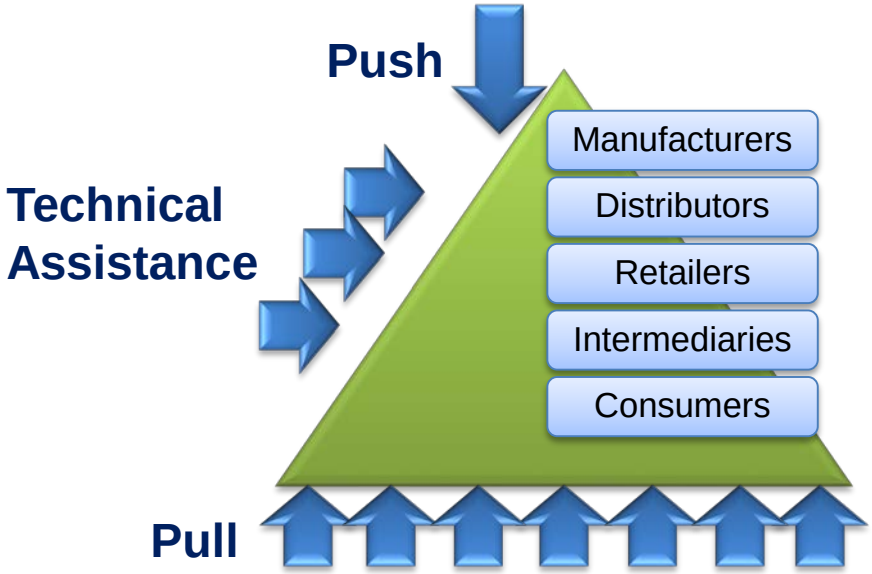


Capacity Building

Program Development Cycle

Design

An overarching strategy of DSM is **Market Transformation**. Therefore, the portfolio of programs and initiatives tend to include a mix of various program types to achieve long-term savings goals.



Program Development Cycle

Design

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Program Development Cycle

Design

Prescriptive Measures • Motors • Compressed air • HVAC • Refrigeration controls	**Identification** Find rebate on website	**Implementation** Purchase and install	**Rebate** $ / Unit	DEEMED SAVINGS
Capital Projects • Efficiency • Demand Mgmt • Fuel Switching • Self-Generation	**Identification** 100% incentive	**Development** Incentive up to 50%	**Implementation** Up to 50% Half on Completion Half on Performance	DEMONSTRATED SAVINGS
Energy Management • EnMS • EMIS • Sub-Metering	**Identification** 100% incentive	**Development** Incentive up to 50%	**Implementation** Up to 50% Half on Completion Half on Milestones	

Technical Assistance and Engineering Support

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Program Development Cycle

Design

Case Study – TANESCO, Government owned electric utility, Tanzania

Program Forecasted Activity

Program Metric	2014	2015	2016	2017	2018
Incremental MWh Savings	0	0	4,842	6,826	9,402
Cumulative MWh Savings	0	0	4,842	11,668	21,069
Incremental MW Savings	0	0	1.2	2.1	3.1
Cumulative MW Savings	0.0	0.0	1.2	3.3	6.4
Motor & VFD installs	0	0	421	911	1,561
Custom projects completed	0	0	6	6	7
Annual Program Costs ($Millions)	$0.0	$0.0	$1.1	$1.7	$2.5
Annual Program Costs (Millions TZS)	TZS 0	TZS 0	TZS 1,789	TZS 2,746	TZS 3,998

Program Development Cycle

Design

Case Study – TANESCO, Government owned electric utility, Tanzania

Program Forecasted Performance

Metric	Value
Utility Cost Test (UCT) Ratio	1.2
Net UCT Benefits ($Millions)	$8.5
Net UCT Benefits (Millions TZS)	TZS 13,744
Levelized cost per kWh ($)	$0.04
Levelized cost per kWh (TZS)	TZS 135
Levelized cost per kW ($)	$135
Levelized cost per kW (1000 TZS)	TZS 217

Program Development Cycle

Evaluation
Measurement &
Verification

Goals	Performance Indicators	Data Sources
a) 10MW Electrical Demand Savings each year, following three years of operation	a) Measured and Verified Savings b) Projects being Studies c) Conversion rate of Studies to Savings	a) Program tracking system b) Measurement Plans
b) Local Jobs Created	a) Labor from install b) Local manufactures	a) Detailed Invoices from major projects b) Economic Analysis
c) Participation of Finance Sector	a) Number of applications to finance agency b) Number of meetings between lender and plant	a) Survey of finance sector

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