

# NPI Energy Efficiency Program & Initiatives

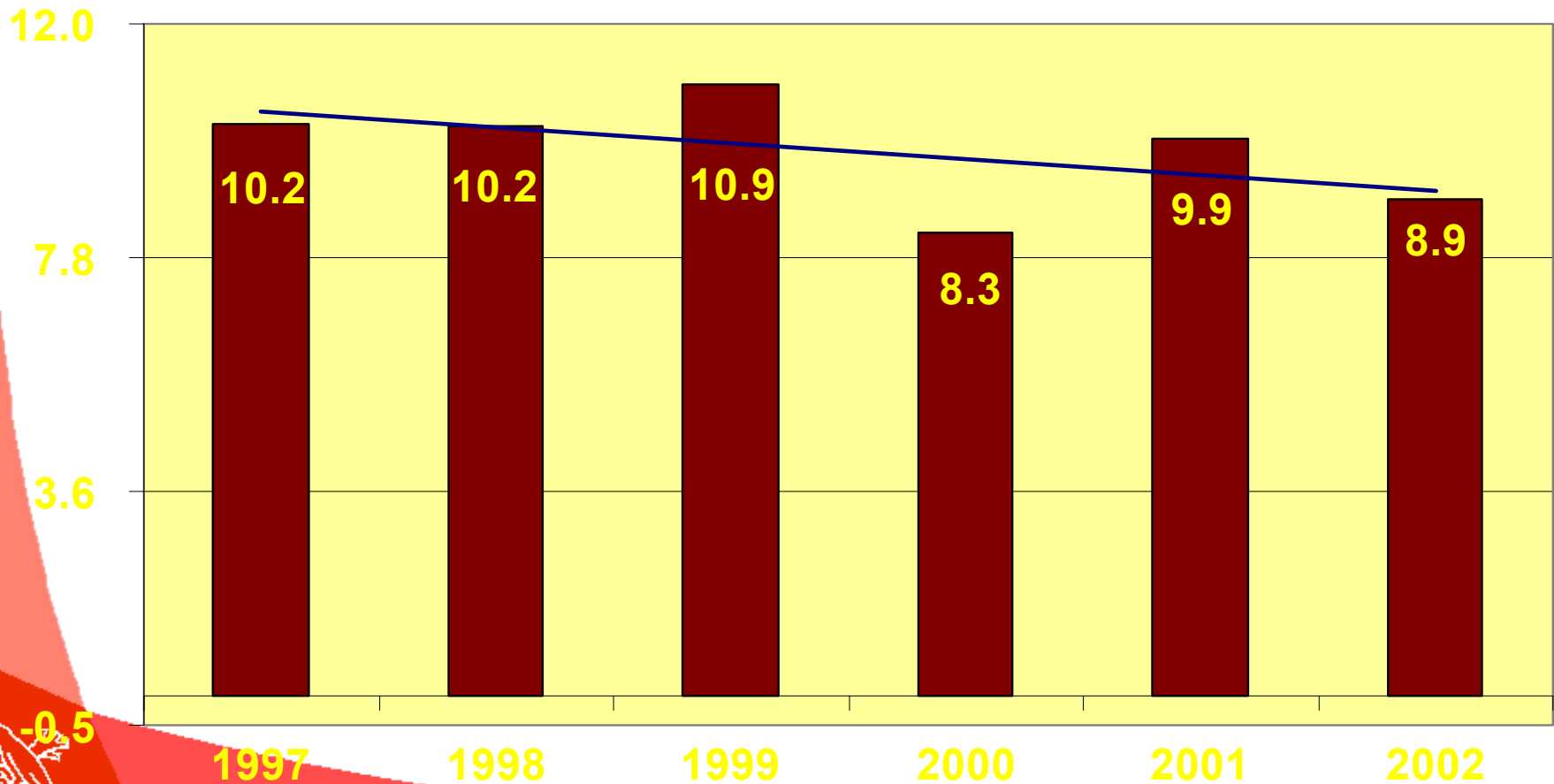


Nestlé

*Good Food, Good Life™*

# Energy Usage Reduced by 12%..

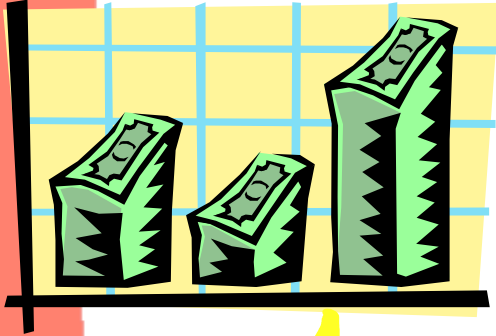
Energy Trends, GJ/MT Product



Nestlé

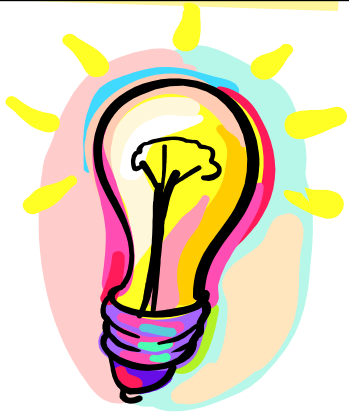
Good Food, Good Life™

# What have we done?



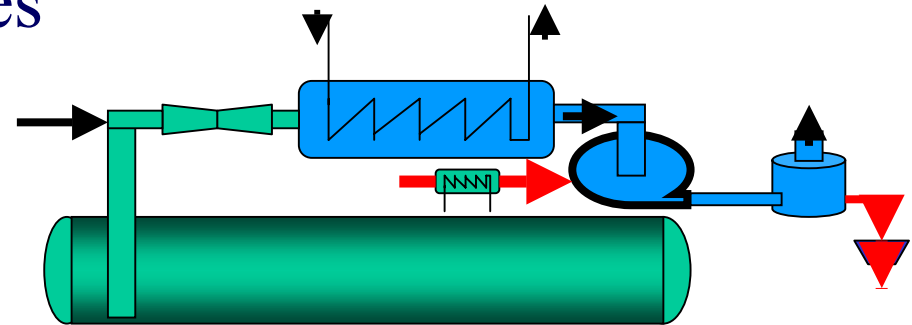
Established Environmental KPIs  
and Targets

Energy Training  
Sessions



Conducted Energy Audits in  
Industrial Services

Implemented several  
energy conservation  
initiatives

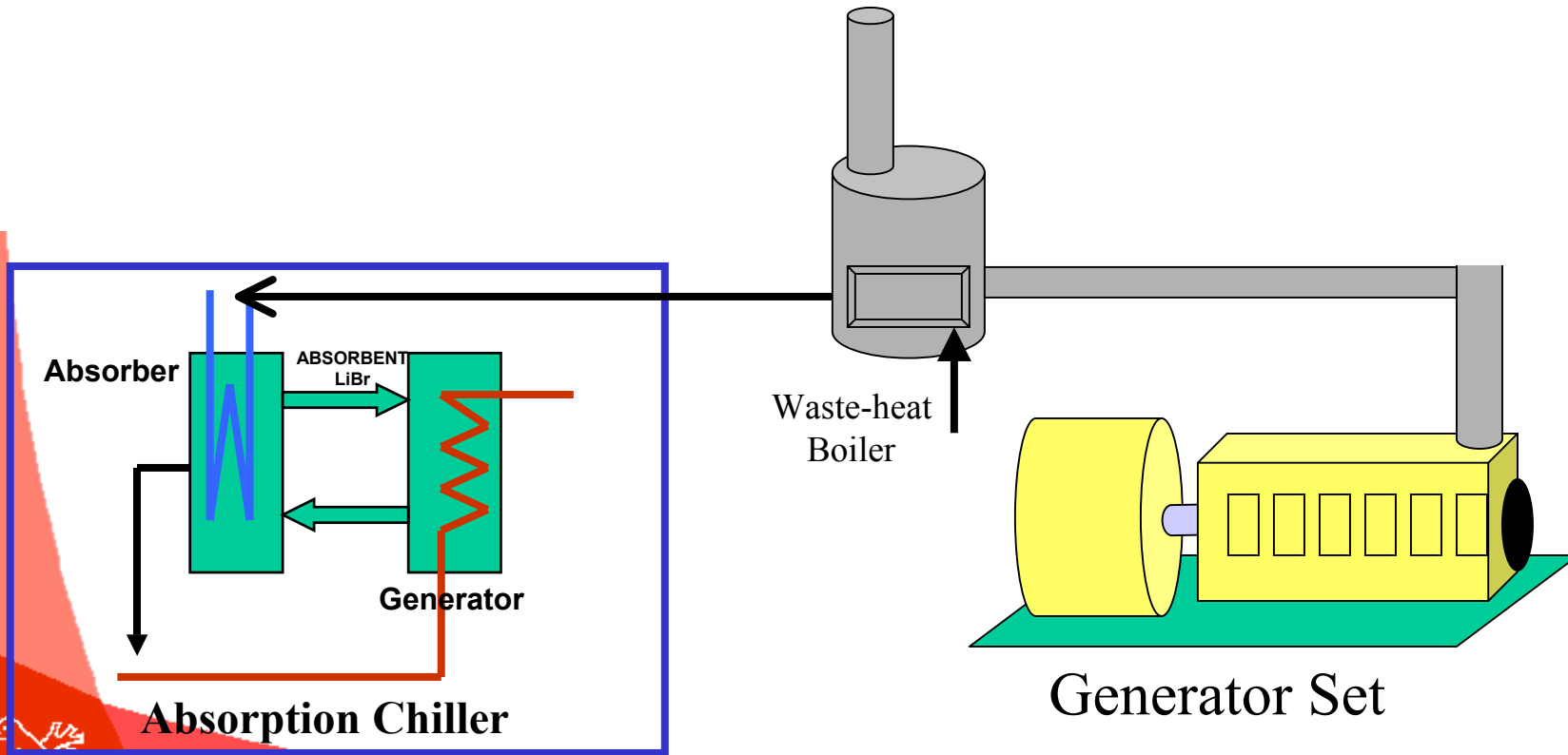


Nestlé

*Good Food, Good Life™*

# Energy Efficiency thru waste-heat recovery

AFTER



## Waste Heat Boiler for Genset



2 MT steam/hour @ 6 bar



**Nestlé**

*Good Food, Good Life™*

## Absorption Chillers



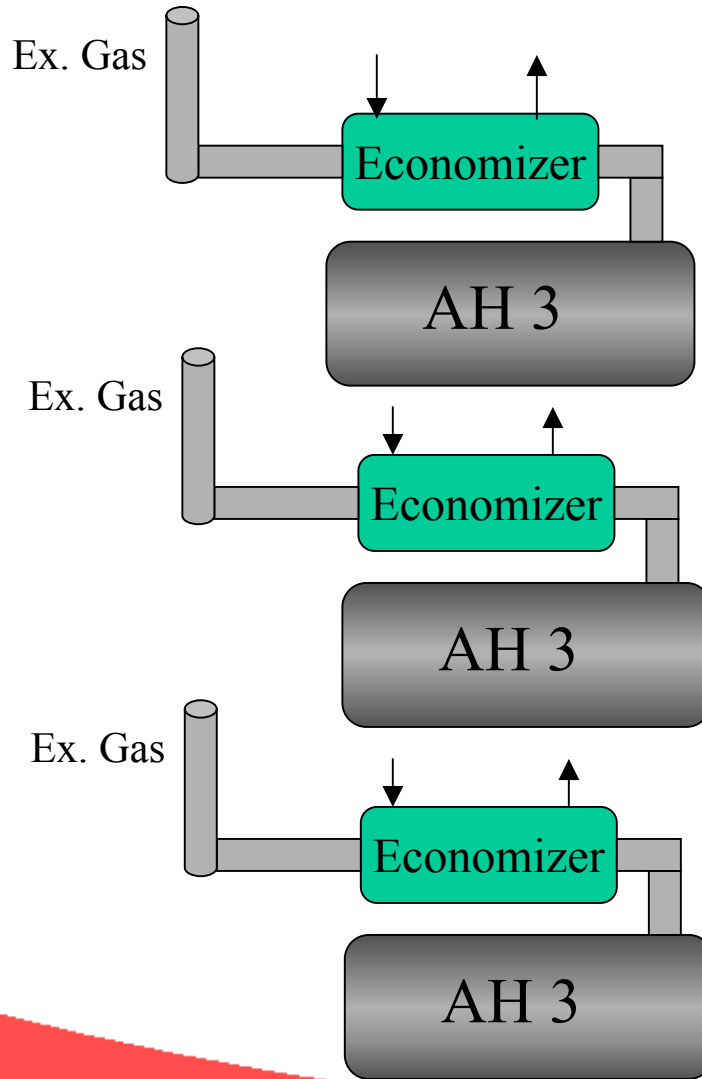
2 units with 500 TR capacity each



**Nestlé**

*Good Food, Good Life™*

# Economizer at Air Heaters



## •Installation of Economizer for Air Heaters

- Investment : P 24.5 Mio
  - 7% Fuel savings = 300,000 liters/year



Nestlé

Good Food, Good Life™

# All sites

- **Power Factor improvement from 85% to 95%**
- **Electronic ballast for general lighting.**
- **Improvement in AHU utilization - Start up, scheduling**
- **Installation of Variable Frequency Drives to**
  - **WWTP aeration turbines**
  - **AHU blowers**



**Nestlé**

*Good Food, Good Life™*

# Utilities

(Power, Steam, Compressed Air, Chiller)

## A. Metering

- On line metering of water, air, steam, power, LPG and Inert Gas Consumption in each department

## B. Monitoring of operations

- Boiler Operation, Water, Air
- Condensate Recovery of up to 45%.
- Installation of Oxygen Trim for regular monitoring of O<sub>2</sub> content and meeting < 5% excess air for efficient operation.



Nestlé

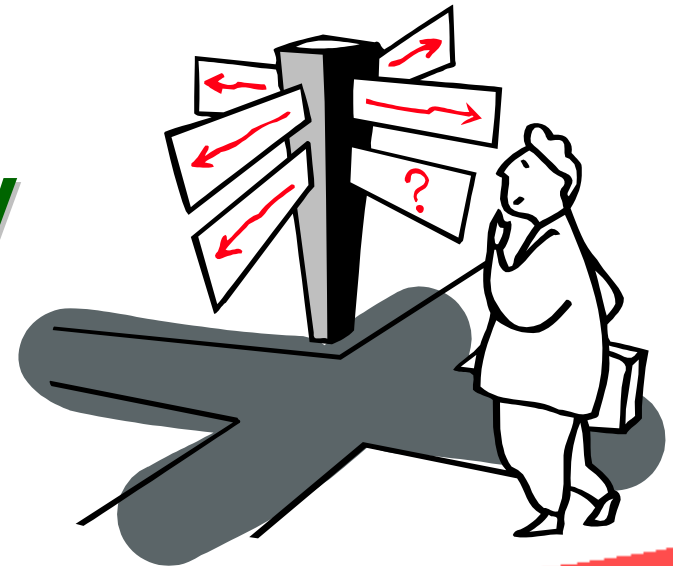
*Good Food, Good Life™*

# What more must be done?



- ▶ **Get Passionate about energy management as the key to competitive advantage...**

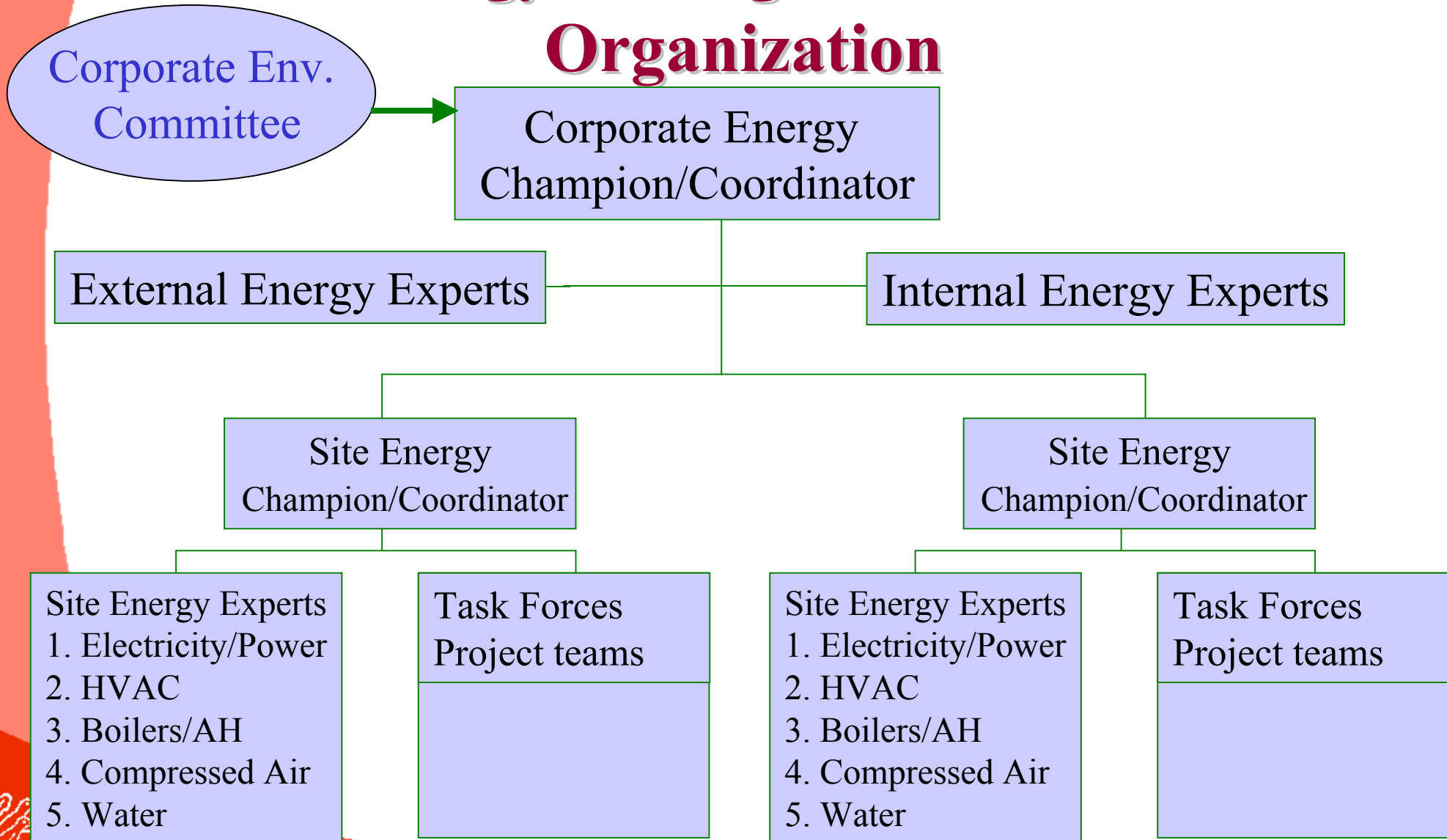
**More structured Energy Management System**



**Nestlé**

*Good Food, Good Life™*

# Energy Management Team Organization



# Consolidated Good Practices per sites



Lighting  
System

HVAC

Water  
System

Electric  
Motors

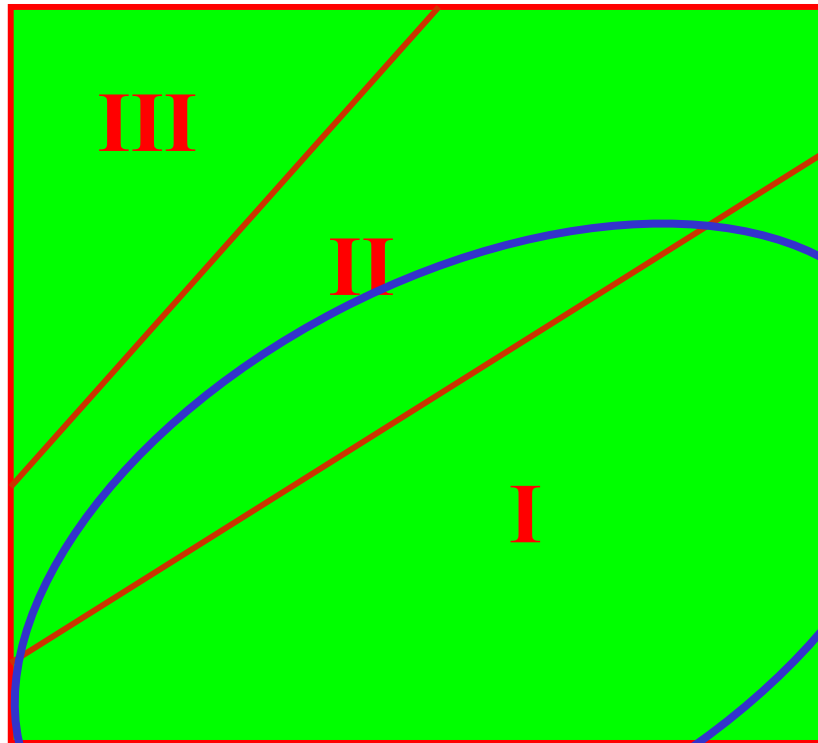
Other System



Nestlé

*Good Food, Good Life™*

# Energy Conservation Approach



+ Consolidated efforts  
of employees on Energy  
Efficiency

- I. - Practices
- II. - Small Investment
- III. - Medium to High Investment

Savings potential

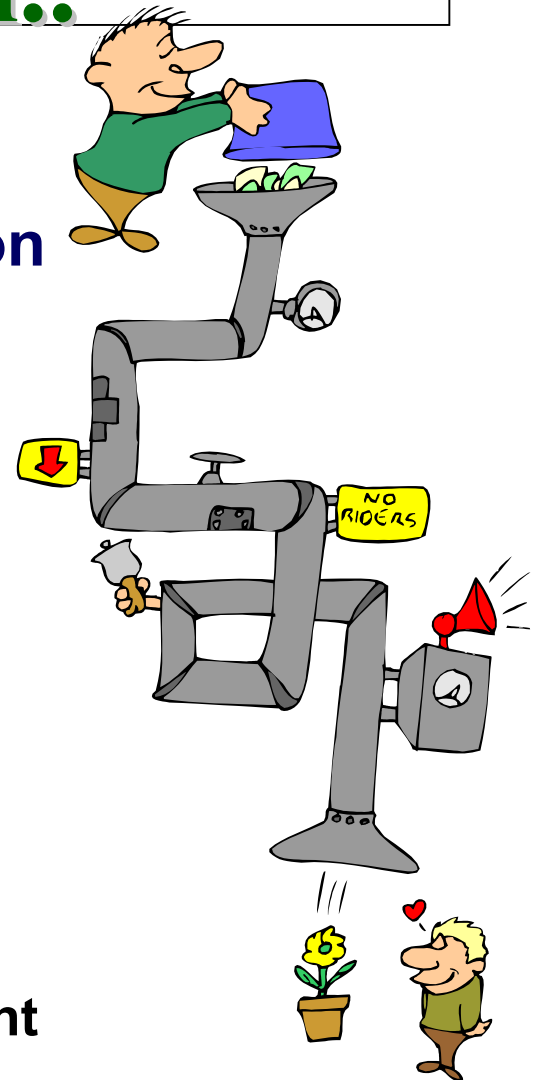


Nestlé

Good Food, Good Life™

# Energy as a raw material..

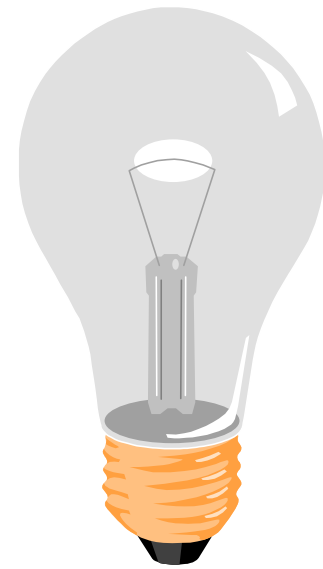
- **Cleaner production**
  - continue improving the present operation to higher yield and low wastage.
- **Demand-Side Management**
  - a mindset that energy is a resource that must be used and monitored properly
  - Role Modeling of all leaders in energy management
  - Improvement of existing practices
    - Steam Trap Management
    - Steam and Compressed Air Leak Management
    - Power Management



Nestlé

*Good Food, Good Life™*

# Energy..



## A Resource...

# *A Competitive advantage*



Nestlé

Good Food, Good Life™