

# **MARKAL Modeling Activities in Central America: Some Initial Results**

**Presented at the 6<sup>th</sup> ETSAP-VII  
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# **Objectives of Project**

- **To build the region's analytical capability in energy planning and GHG emission mitigation**
- **To explore the market potential of efficient and renewable energy technologies in the region**
- **To identify cost-effective projects/programs in carbon emission reduction**

# Participating Institutions

- Sponsors: US AID and US DOE
- Technical Coordinator: Brookhaven National Laboratory
- Participating Countries: El Salvador, Honduras, and Panama
  - Ministry of Environment
  - Universities
  - Office of CDM Projects
  - Other institutions relating to energy and economic development

## **Highlights of 2001 Activities**

- **Project planning and implementation**
- **MARKAL model training workshop at Brookhaven National Laboratory**
- **Data base development workshop in participating countries**
- **Progress report & project review workshop in Panama City**

# Scenario Development

## Baseline

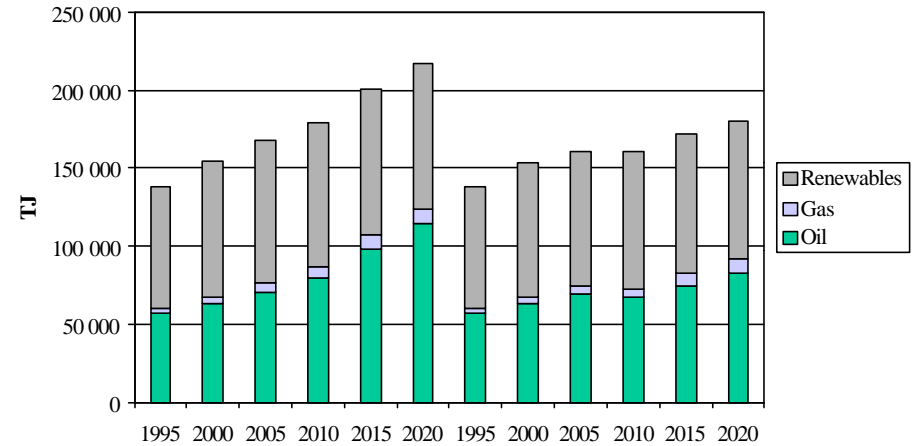
**Base case economic and energy projection under current government development plans, including recommended power sector expansion plans.**

## Energy Efficient & Renewable Energy Scenario

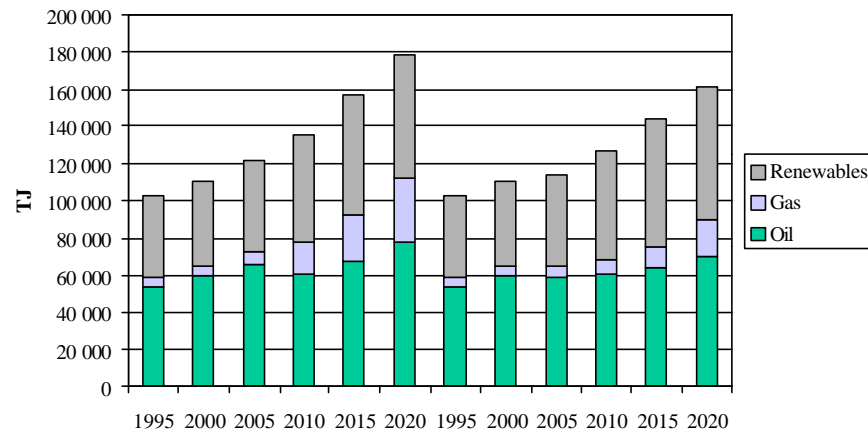
**Accelerated penetration of renewable energy resources, inclusion of major CDM projects under consideration, and introduction of efficient demand-side technologies**

# Primary Energy Demand: Baseline vs. Energy Efficiency & Renewable Scenario

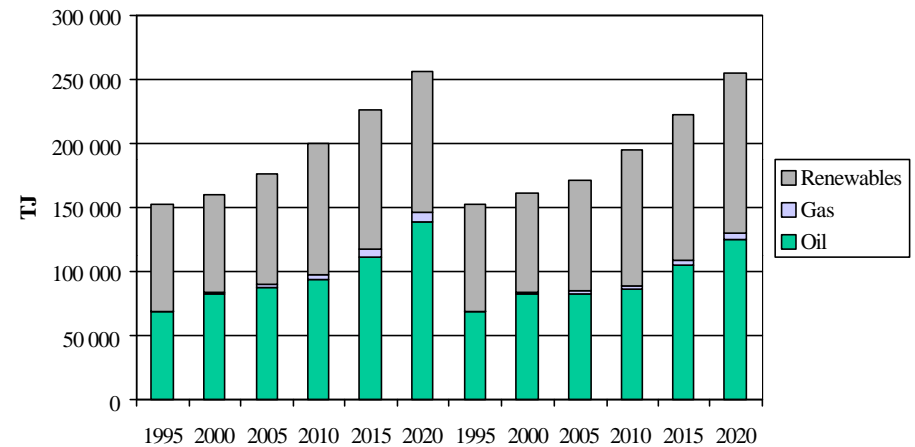
## El Salvador



## Panama

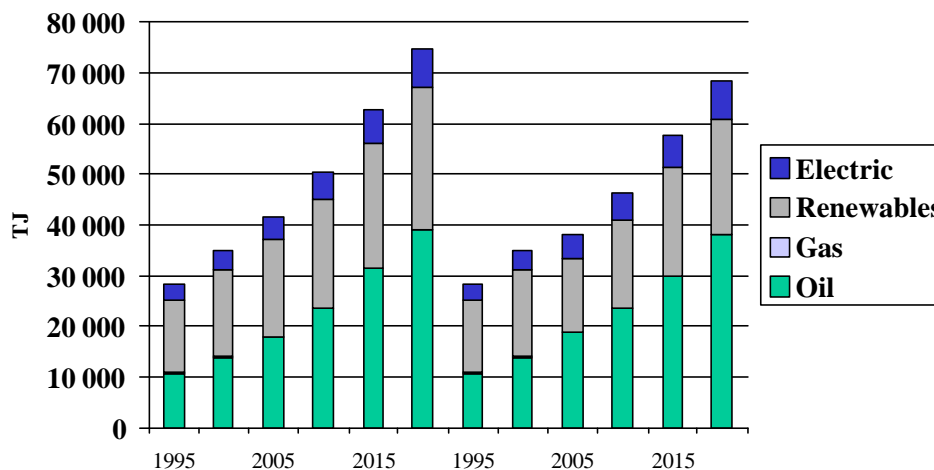


## Honduras

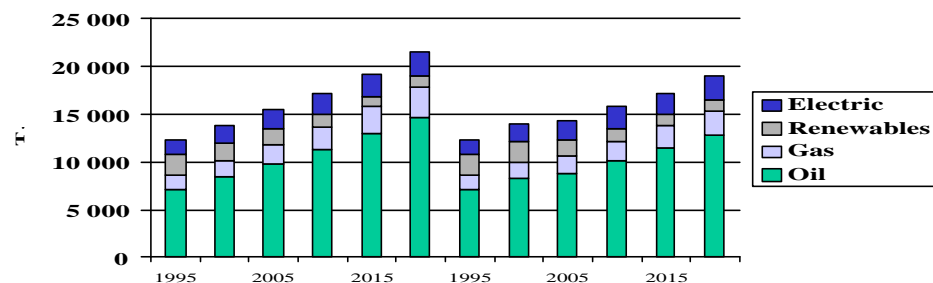


# Industrial Demand: Baseline vs. Energy Efficiency & Renewable Scenario

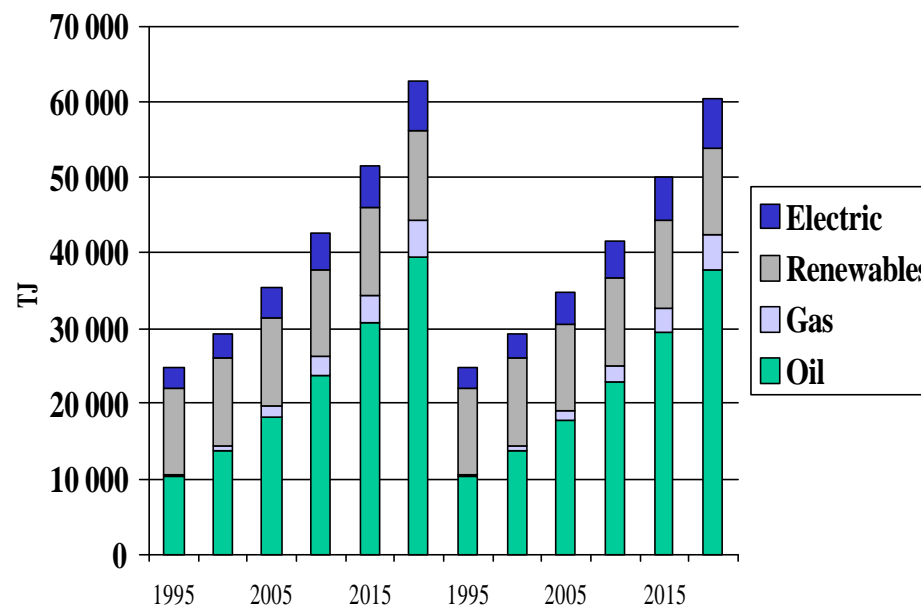
## El Salvador



## Panama

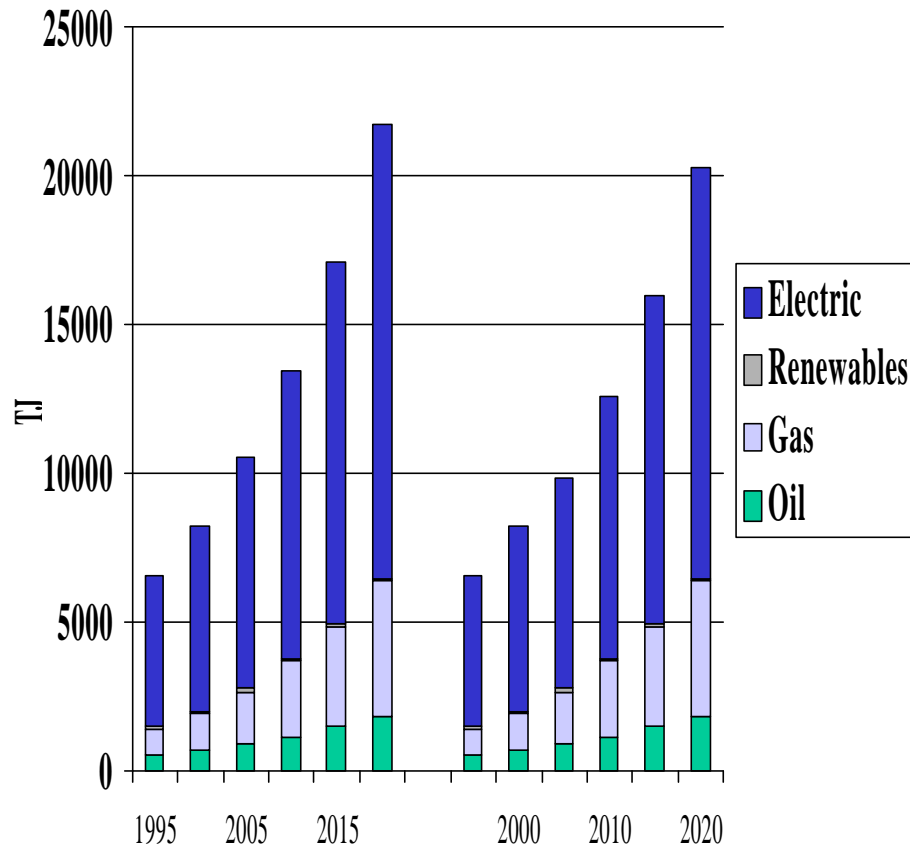


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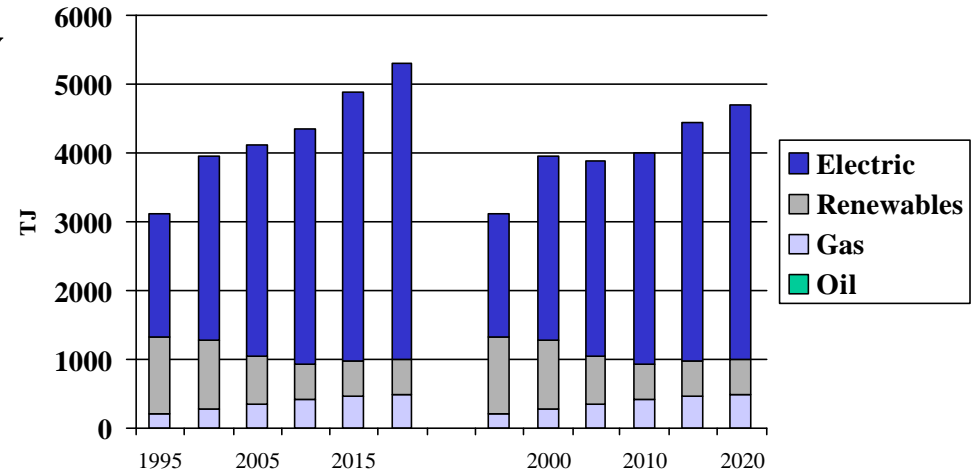


# Commercial Demand: Baseline vs. Energy Efficiency & Renewable Scenario

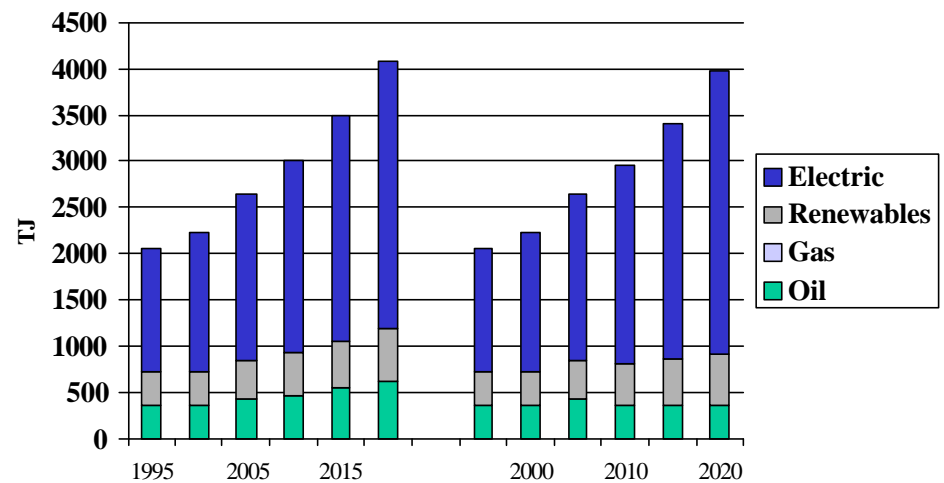
## Panama



## El Salvador

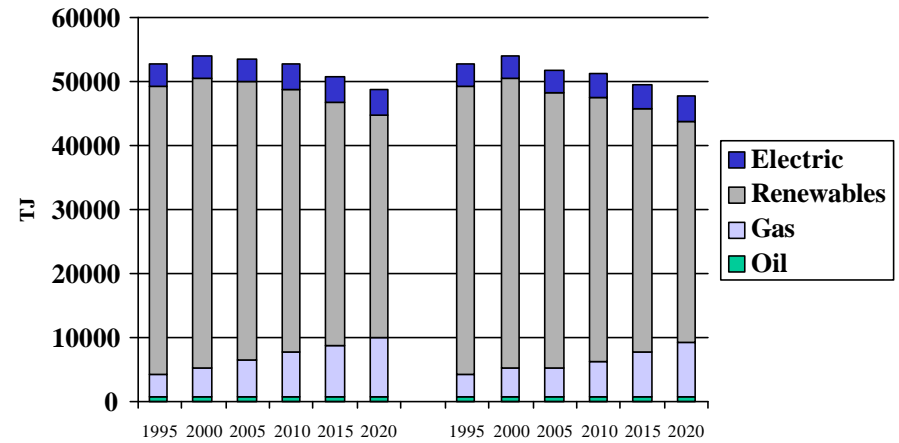


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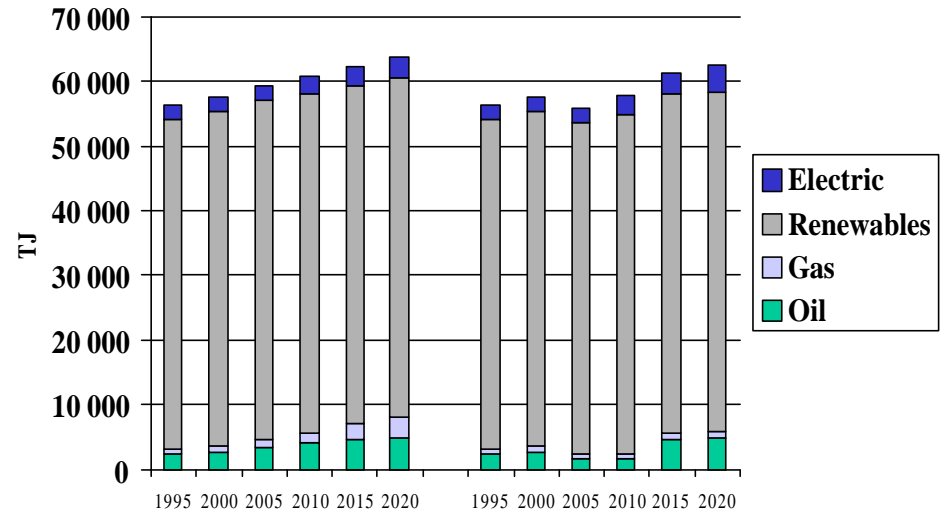


# Residential Demand: Baseline vs. Energy Efficiency & Renewable Scenario

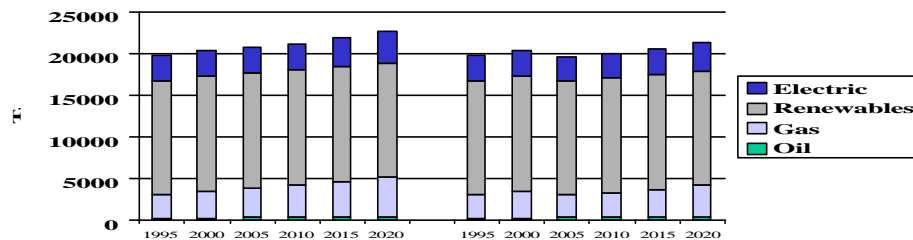
## El Salvador



## Honduras

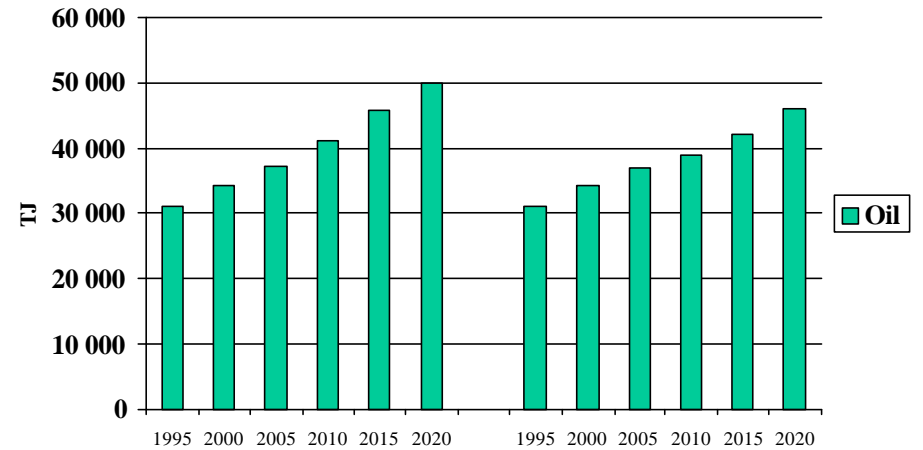


## Panama

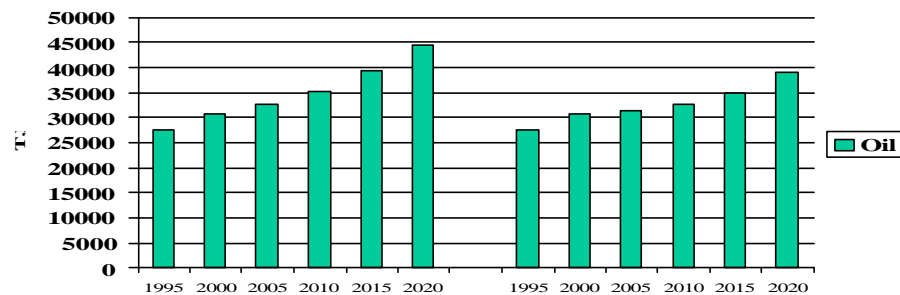


# Transportation Demand: Baseline vs. Energy Efficiency & Renewable Scenario

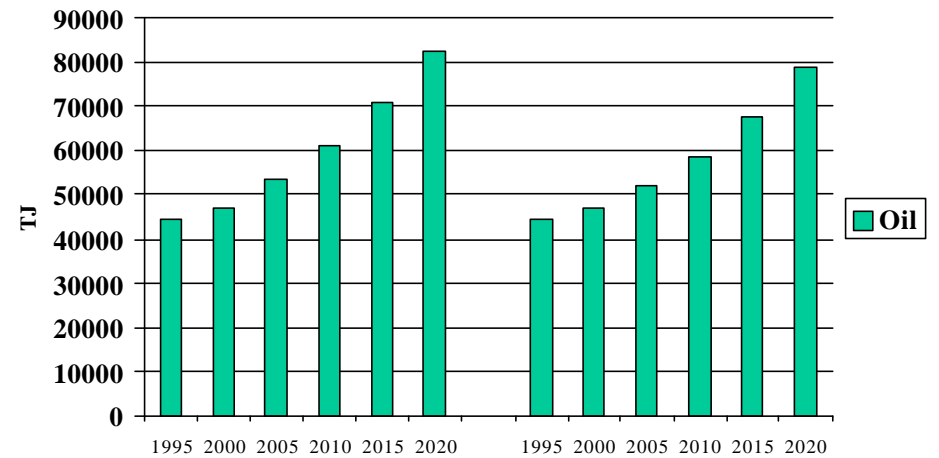
## El Salvador



## Panama

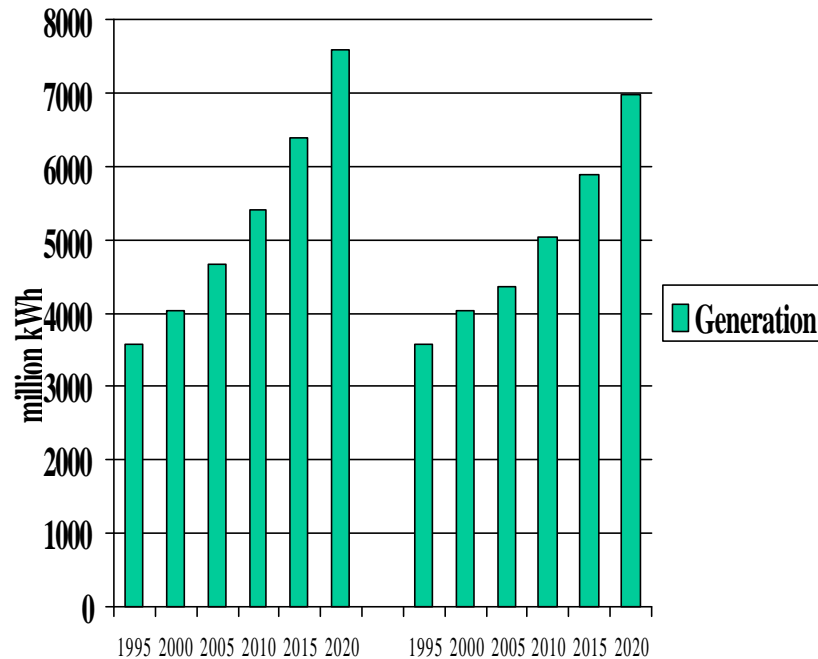


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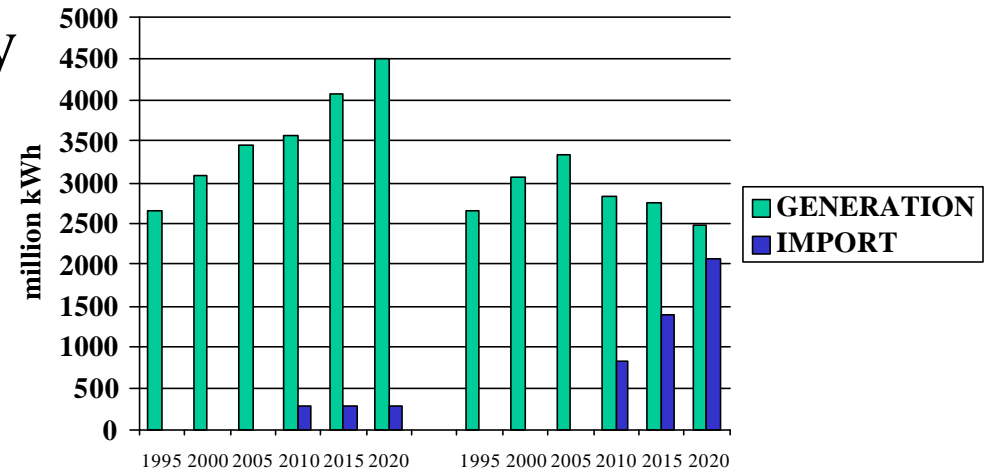


# Electricity Supply: Baseline vs. Energy Efficiency & Renewable Scenario

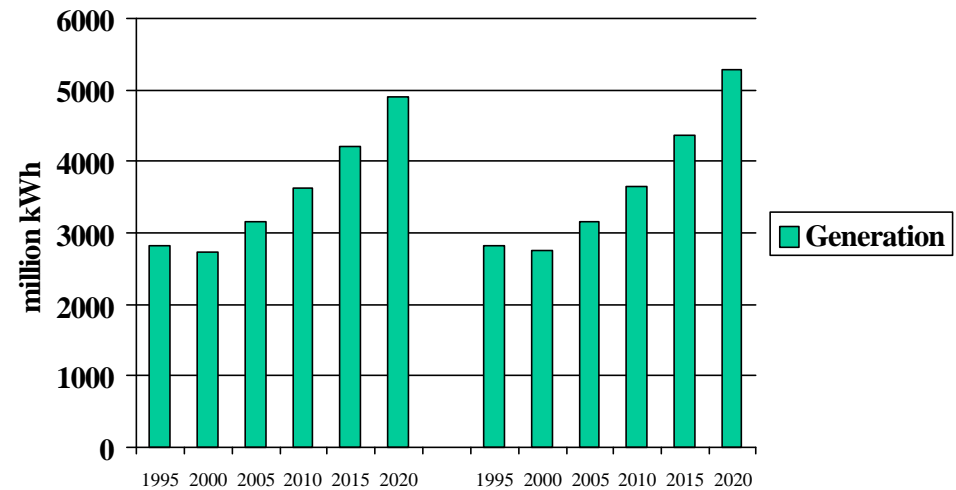
## Panama



## El Salvador

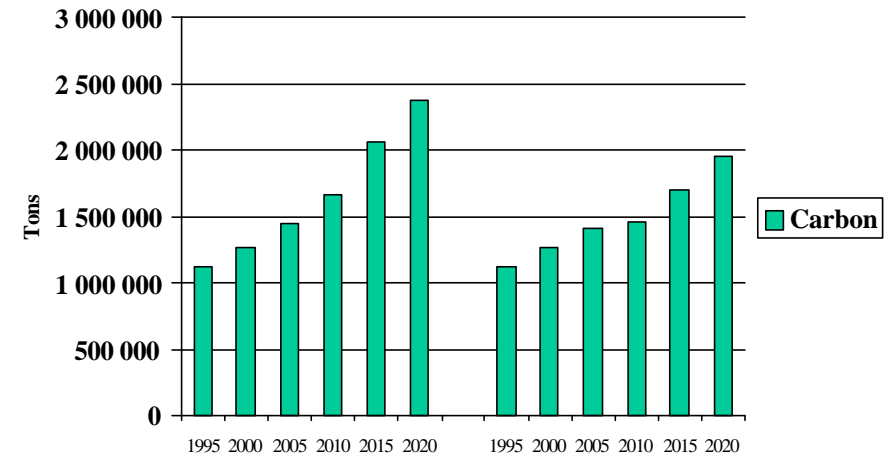


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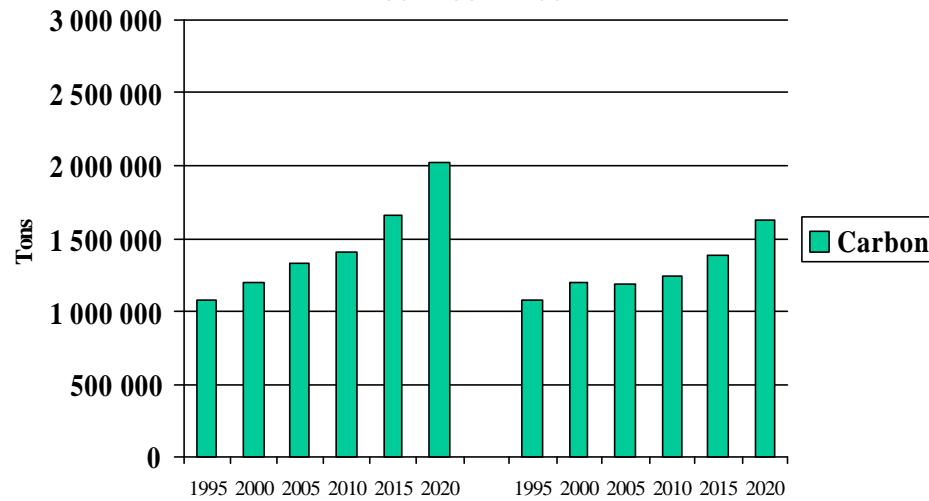


# Carbon Emissions: Baseline vs. Energy Efficiency & Renewable Scenario

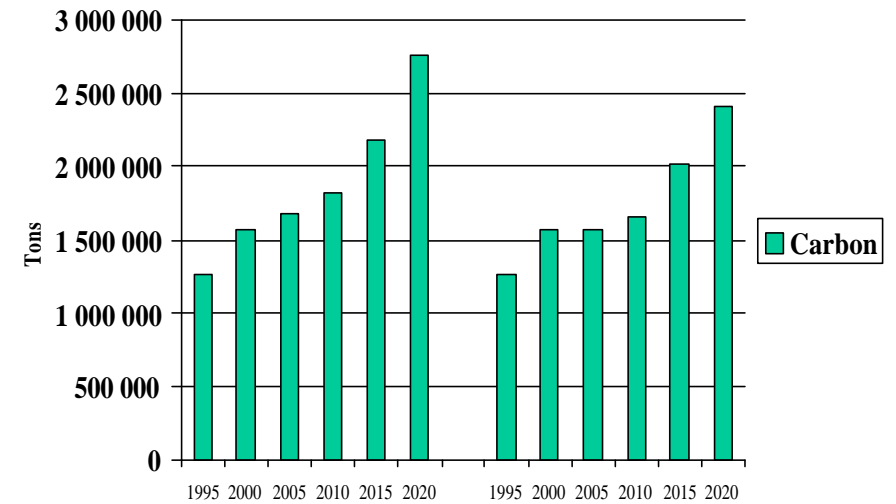
## El Salvador



## Panama

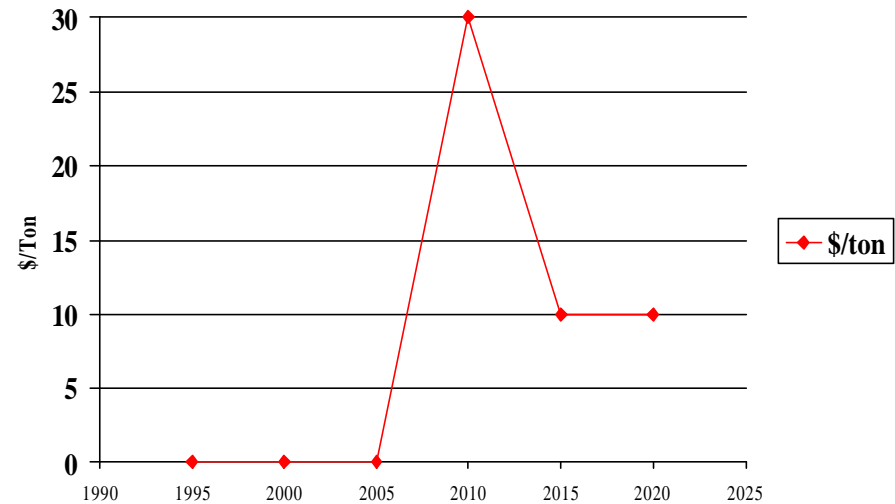


## Honduras

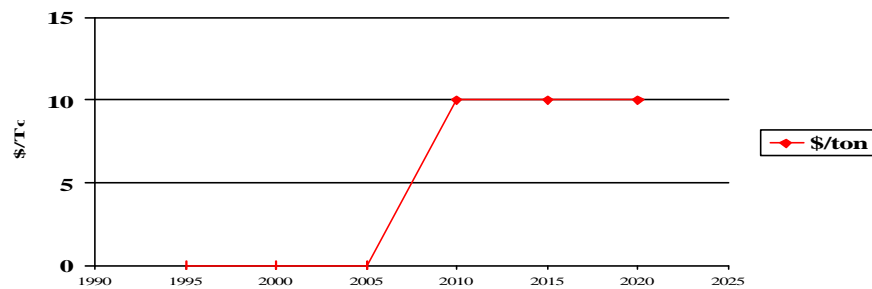


# Marginal Cost of Carbon Emission Reduction at the Emission Level of the Energy Efficiency & Renewable Scenario

## El Salvador



## Panama



## Honduras

