

**Asia–Pacific Regional Initiatives on Energy,  
Environment and Ecosystems (3E) Nexus for Sustainable  
Development**

**Hulhule Island hotel, Maldives, 24-25 February 2014**

**Energy efficiency and Energy  
Conservation in Lao PDR**

By Khamphone Nanthavong,  
Faculty of Engineering  
National University of Laos

# contents

- Some Background information
- Lao Energy sector
- Some findings

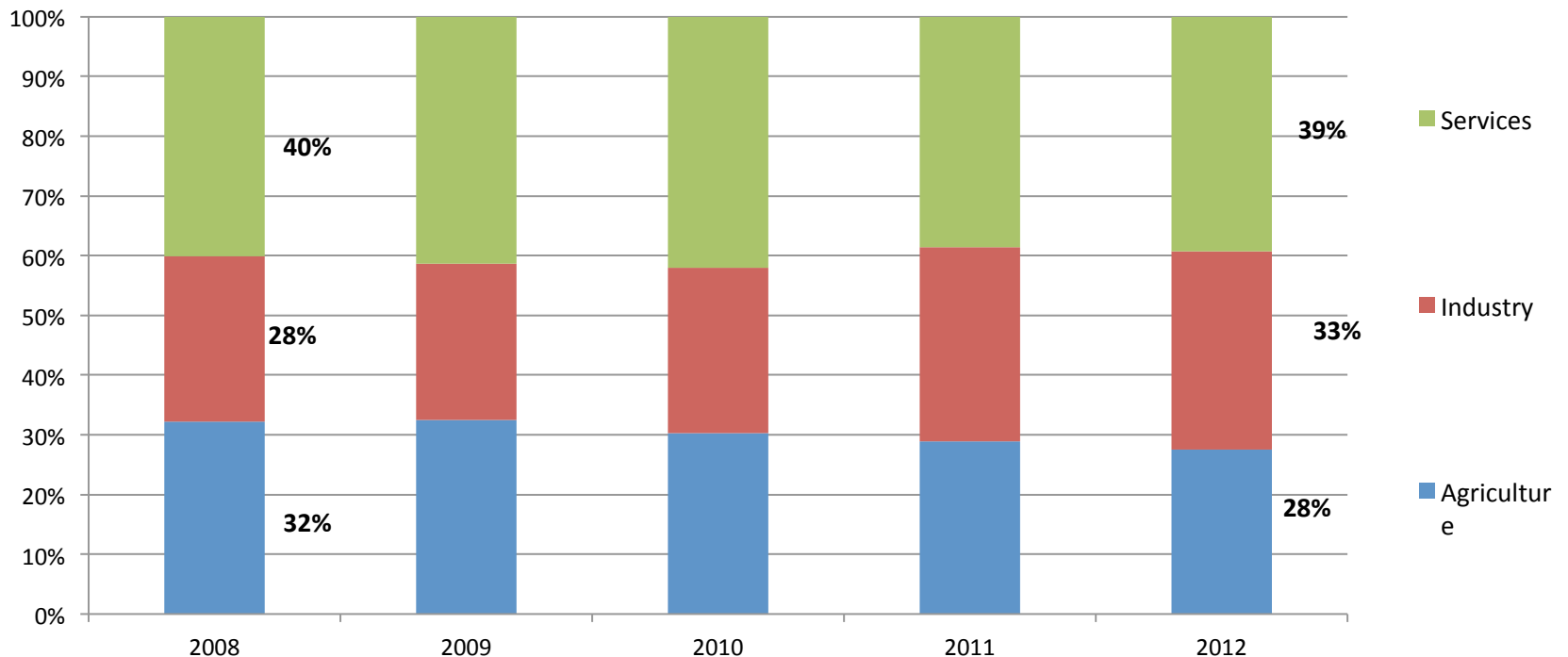
# Background information



- Land locked
- Area: 236 800 Sq. km
- Population: 6.6 million
  - Density: 28 people /sq.km)
- Terrain: 70% mountainous coverage
- Main Water artery:
  - Mekong and its 8 tributaries
- Main income sources:
  - Services
  - Industry (mining, garment, power export)
  - Agriculture and Forestry
- Electrification rate: 84% (household base, 2012)

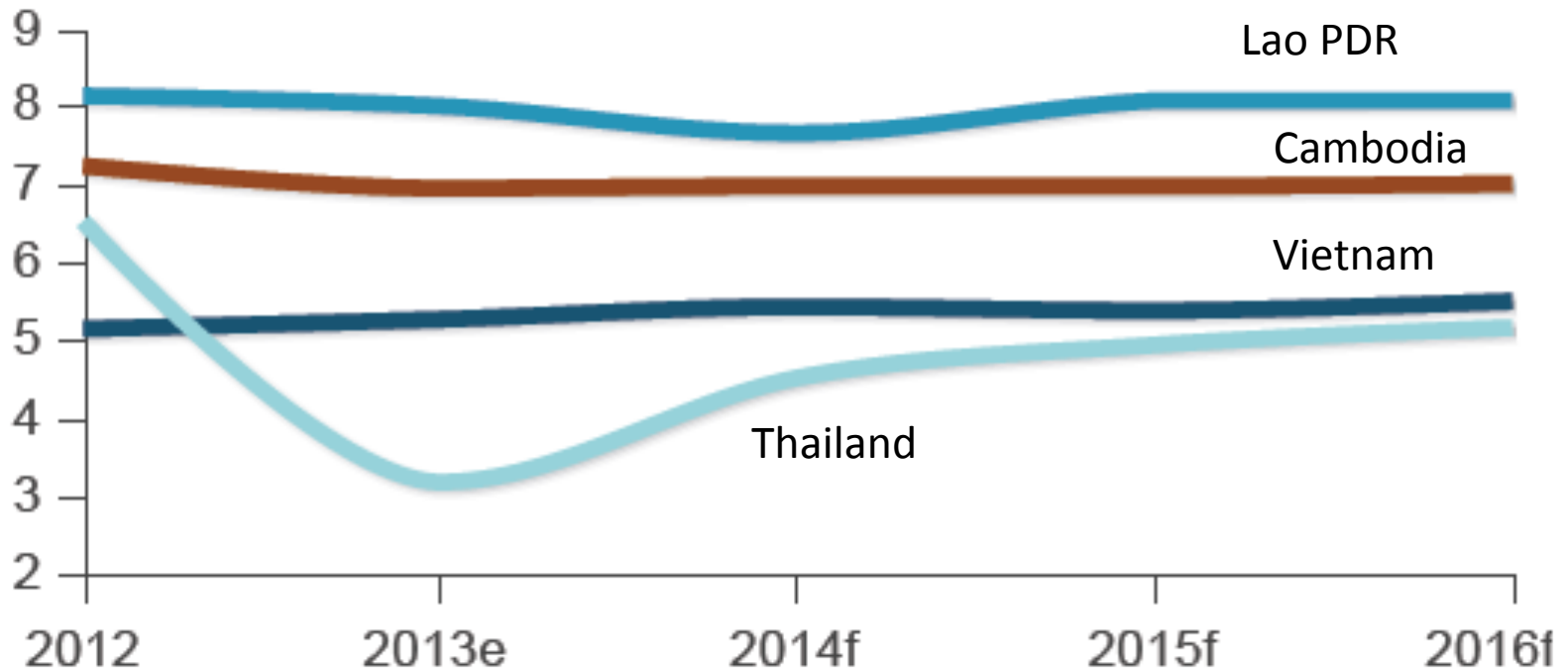
# Background: Economic

- GDP: 9,418 mln US\$ (current market price),
  - 1,396 US\$/capita (lower Middle Income)
  - Growth: 7-8%
- GDP composition trend:



# GDP growth trend (source: WB)

GDP % growth, annual



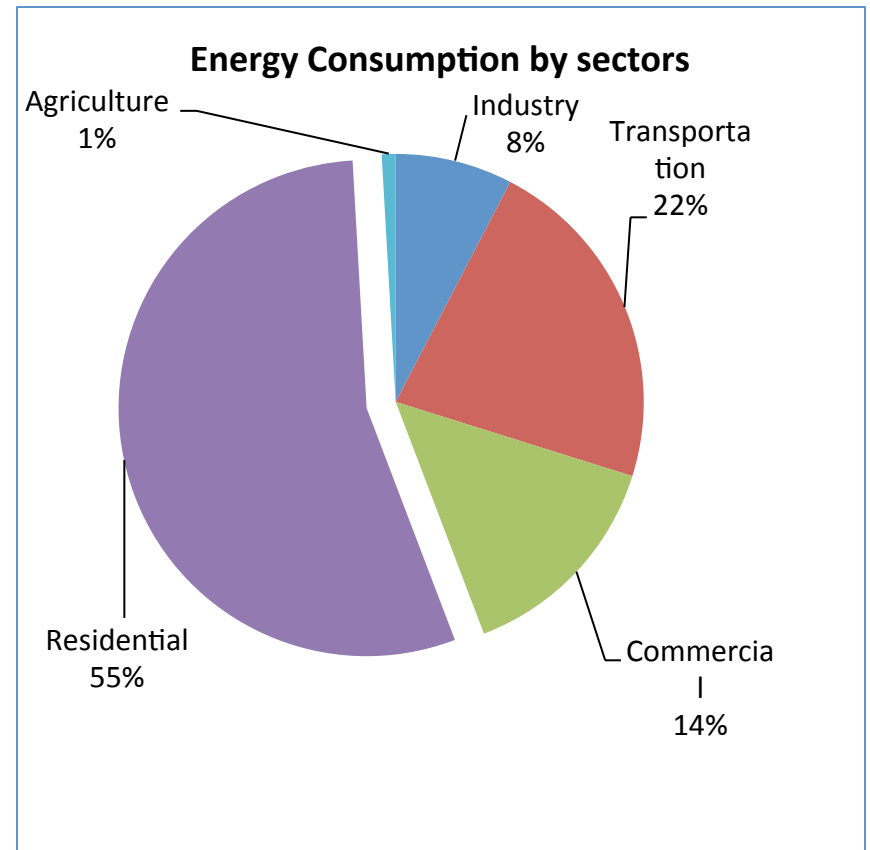
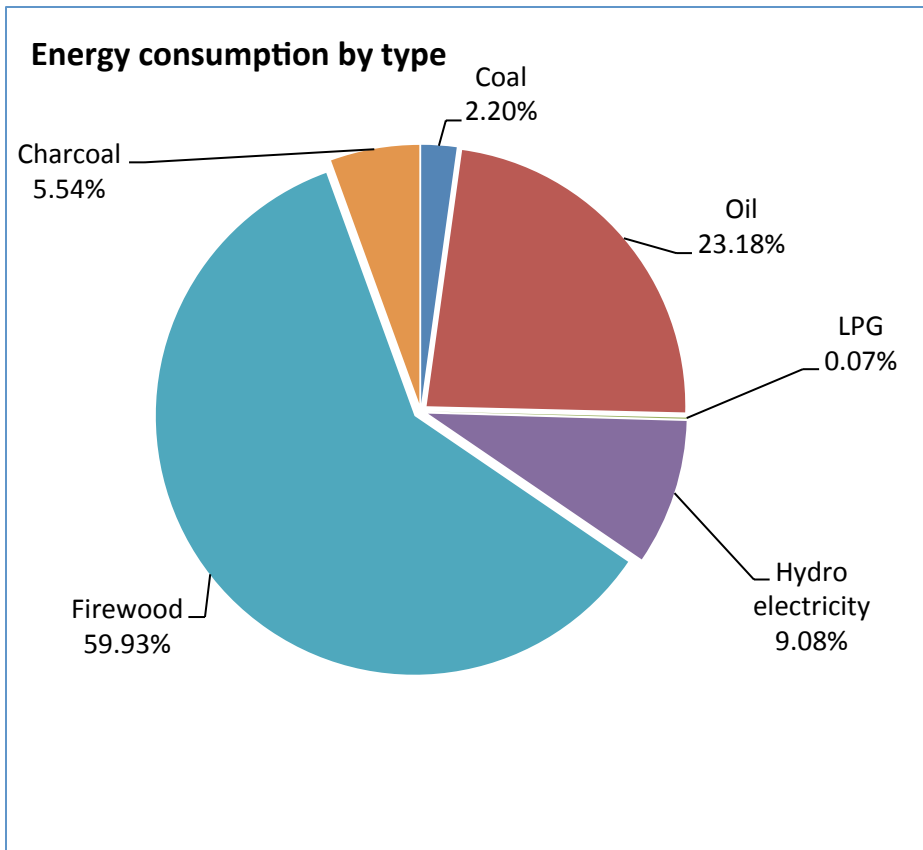
# Lao Energy sector

## Energy resources:

- **Fossil fuels:**
  - Oil and natural gas: none
  - Coal: proved reserve 600 million tons (mainly lignite)
- **Renewable energy:**
  - Hydropower 26,000 MW
    - Small hydropower 2000 MW (capacity less than 15 MW)
  - Solar energy: radiation 3.6-5.3 kWh/sq.m/day
  - Biomass: energy crops, agro-forestry wastes
  - Wind power: relatively good potential in central part

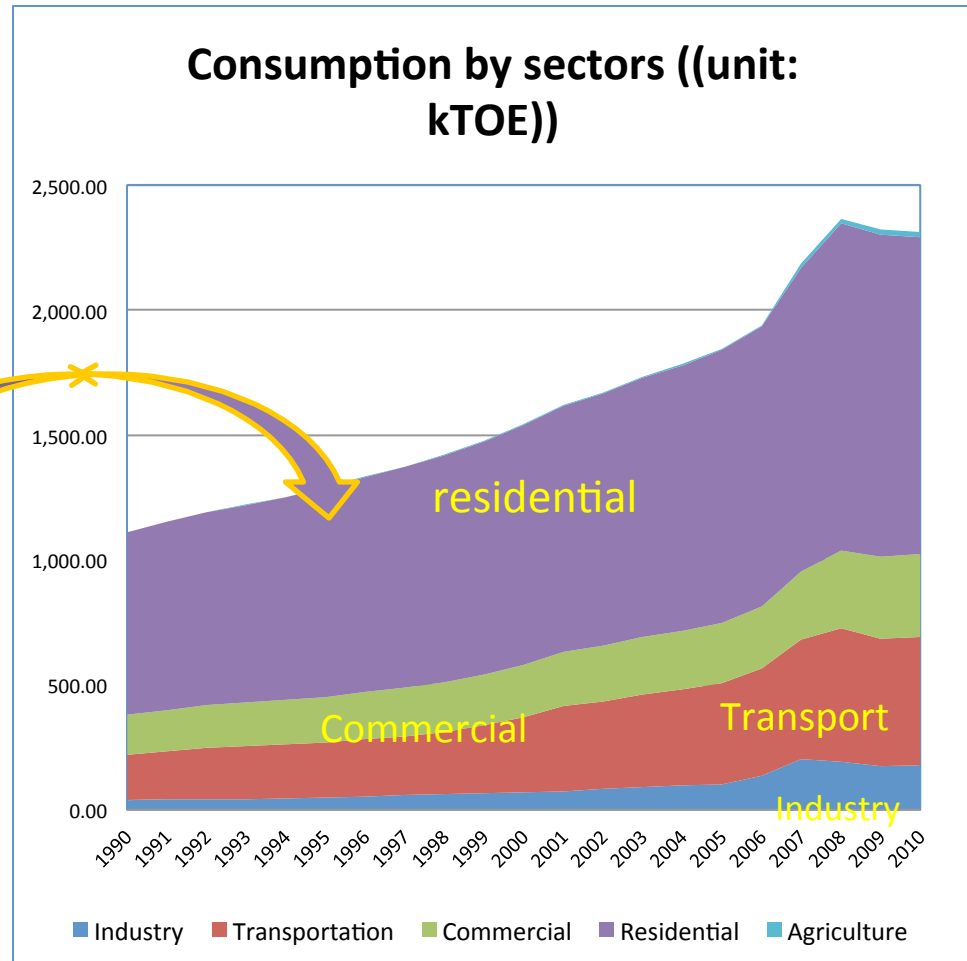
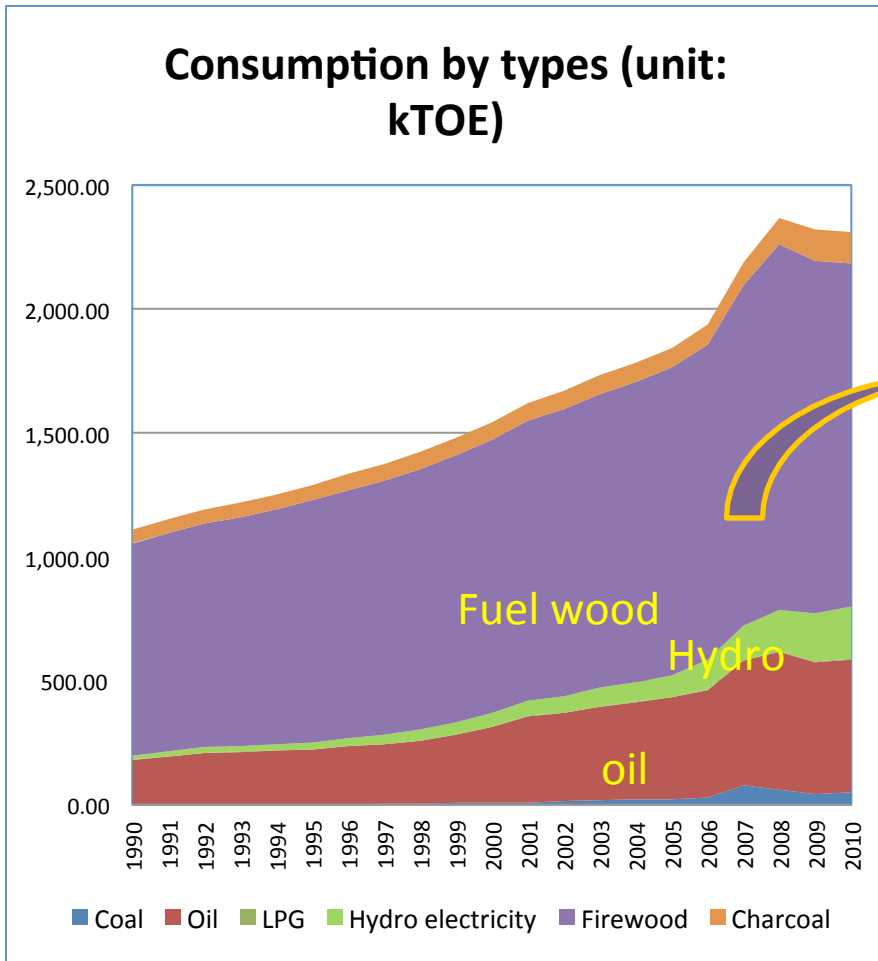
# Energy sector: final energy

- Final energy consumption: 4% annual growth
- shares by types and sectors (MEM, 2010)



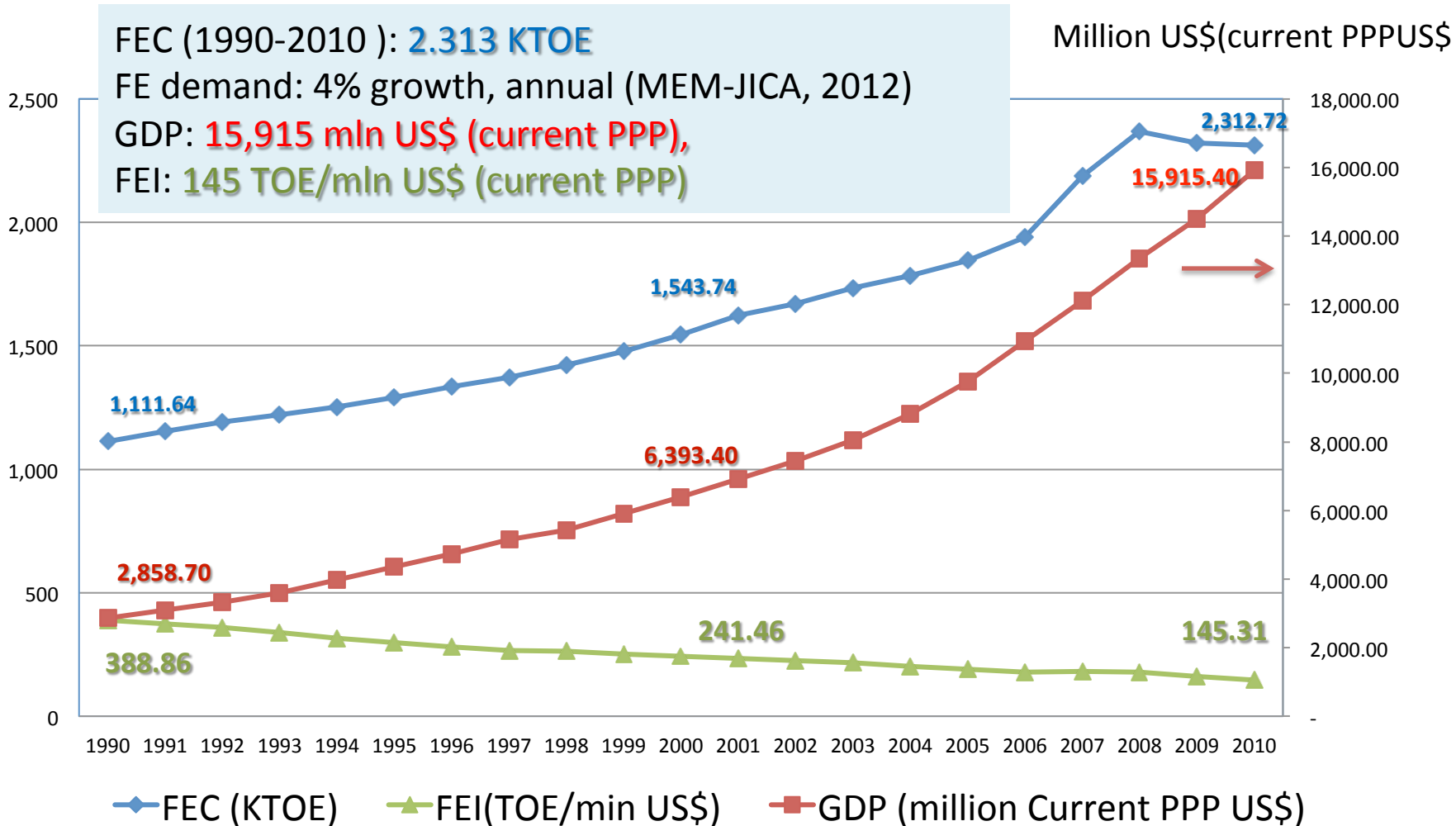
# Energy sector: final energy

- Final energy consumption: trend (MEM)





# Final Energy intensity(FEI)



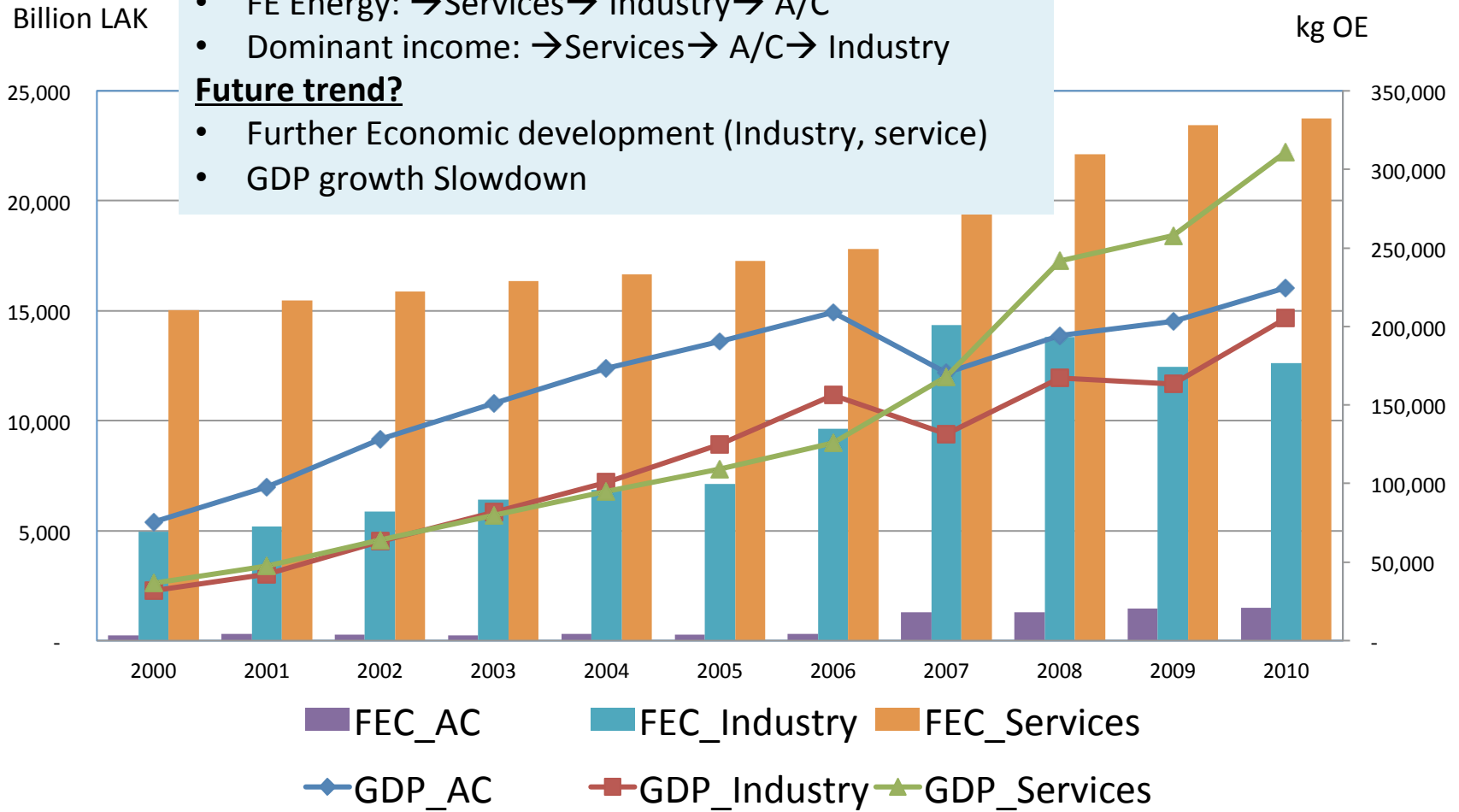
# GDP vs Final Energy Consumption(FEC)

## Current trend:

- FE Energy: → Services → Industry → A/C
- Dominant income: → Services → A/C → Industry

## Future trend?

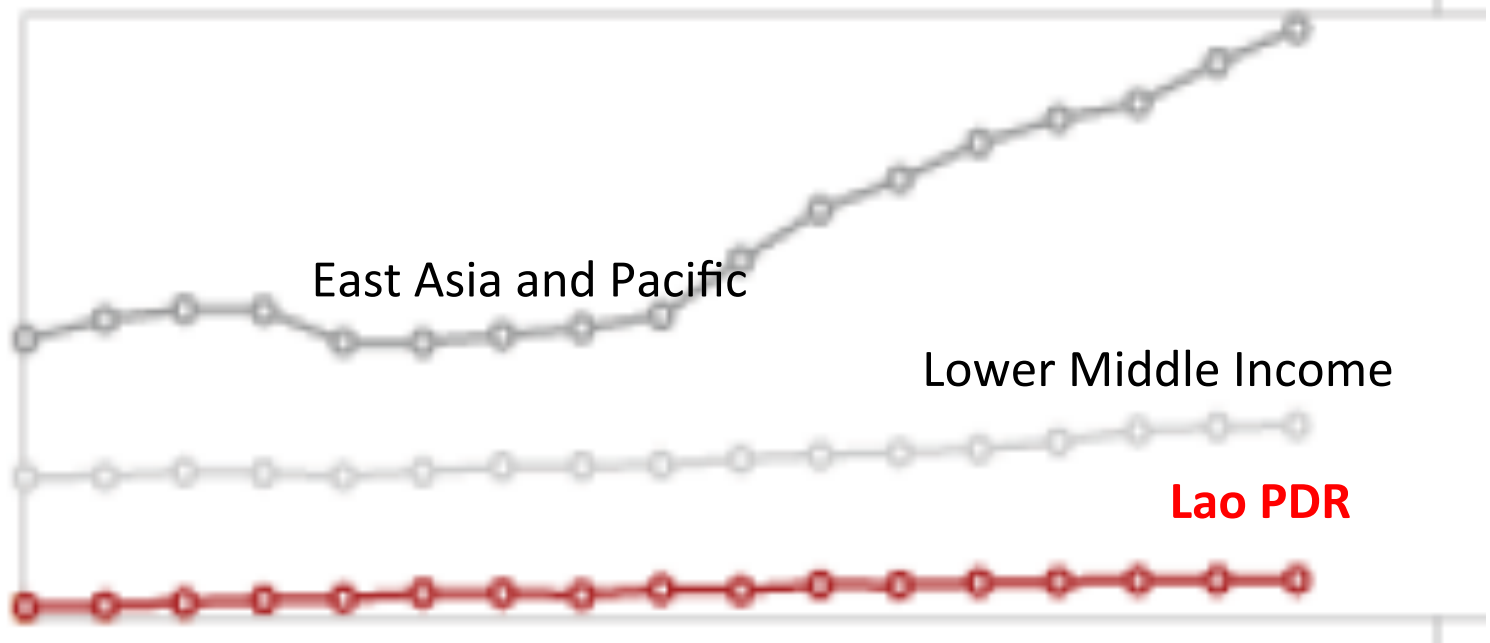
- Further Economic development (Industry, service)
- GDP growth Slowdown



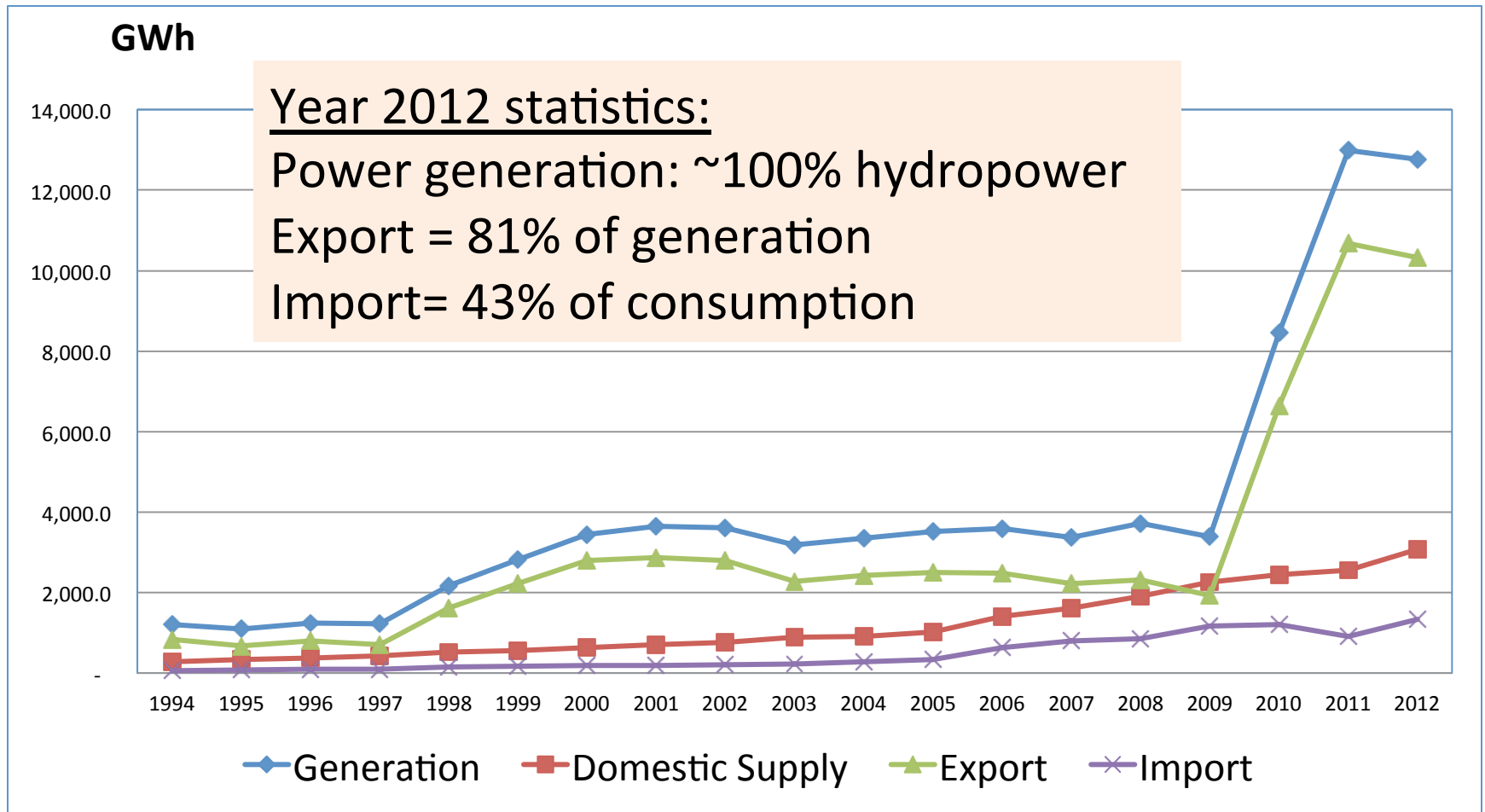
# CO2 Emission

CO2 emissions (metric tons per capita)

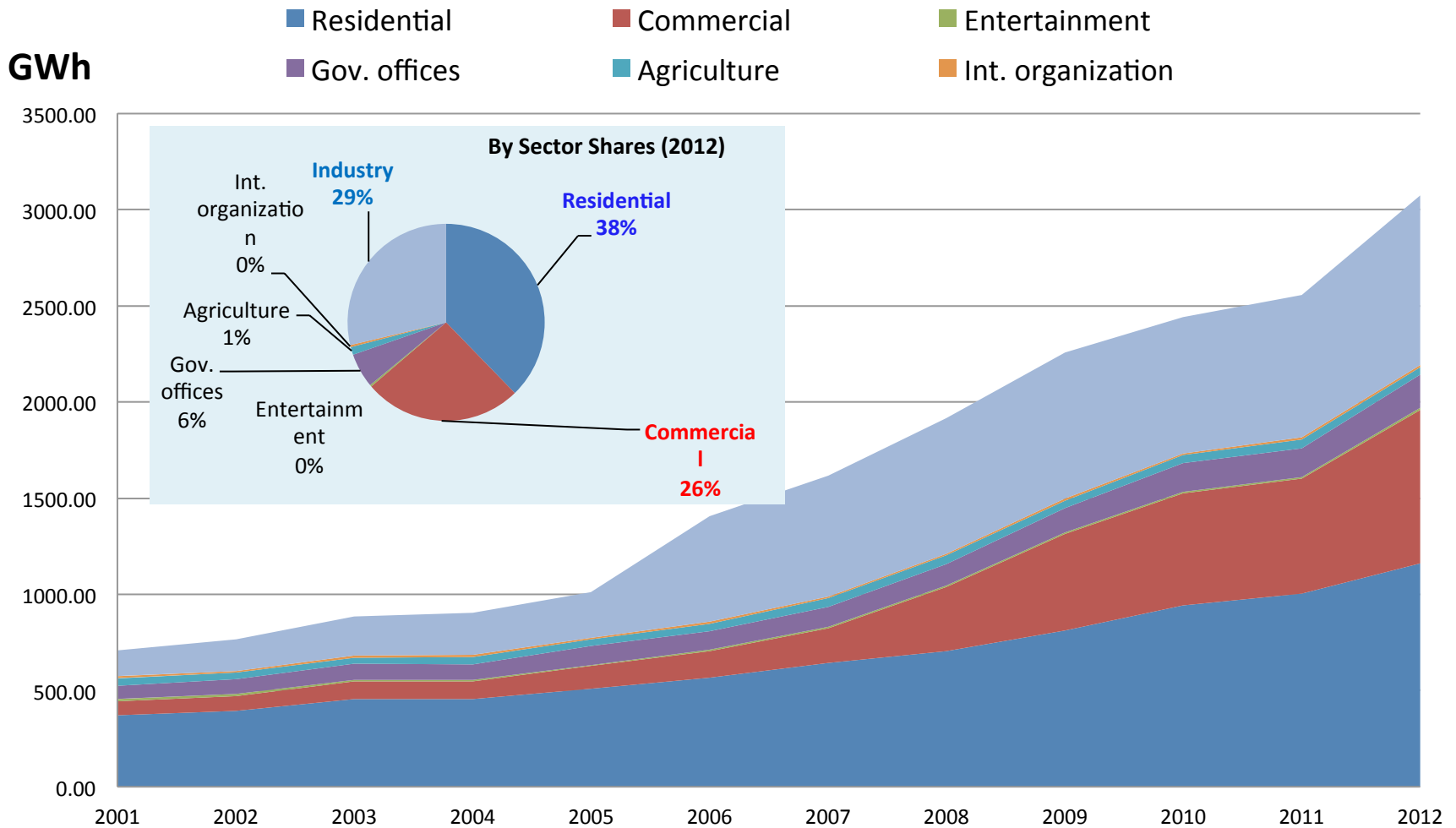
0.3 T/capita, 2010 (source: WB)



# Electricity Production and consumption



# Electricity consumption by sectors



# Some reasons to start thinking about Energy Efficiency in Lao PDR

- **Final energy demand (4% annual growth)**
  - 5900 kTOE by 2030 (~ 2.5 times of 2010):
    - Industry → 31% (8% in 2010); 15% annual growth
    - Transport → 29% (22%), 8% annual growth
    - Residential → 21% (55%), decreasing share
    - Commercial → 10% (14%), decreasing share
    - The rest: negligibly small changes

# Some reasons to start thinking about EE (cont.)

- **Increasing energy import (MEM forecast)**
  - Oil import (~ 4 times of 2010 demand)
    - Increased emission
  - Electricity import
    - Electricity demand in 2020 to increase by ~ 5 times of 2010 (energy and capacity)
    - Power Deficit continues (at least by 2020?)
      - EDL new capacity (including shares from PP)
      - Concession of some large HPP comes to end

## Some reasons to start thinking about EE (cont.)

- **Commitment of GOL** (at EMM5, Brunei Darussalam 2012)
  - To reduce demand for final energy by 10% by the year 2030
  - Forecast (BAU): 5900 kTOE by 2030
  - To reduce: 590 kTOE?
- **Will Lao PDR cope with given commitment?**



# Some reasons to start thinking about EE ...(cont.)

## Situation of Energy Efficiency

- **Lack of public awareness on EE**
  - Energy users lack knowledge/awareness on EE products/ technologies/measures
- **Lack of institutional support to EE**
  - Insufficient information on energy consumption pattern
  - Lack of policy and legislative framework to promote EE
  - Lack of support measures for EE promotion
  - Insufficient institutional capacity in relation to EE (planning, implementation)

# Conclusions:

## **Is it time to seriously think about EE in Laos?**

- Drafting of EE policy is in progress (ADB support)
- Sectors of Focus:
  - Industry
  - Residential
  - Commercial and Office Building
  - Transport
  - Biomass energy consumption
- Series of stakeholders consultation workshops
- To propose for Prime Minister approval by end of 2014

**Asia–Pacific Regional Initiatives on Energy,  
Environment and Ecosystems (3E) Nexus for Sustainable  
Development**  
**Maldives, 24-25 February 2014**

**Thank you for your kind  
attention!**