



Public Benefit Campaigns for Energy Efficiency in Macao

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17th December 2007



Macao in Figures

- **Population : 513,427**
- **Area: 28.6 km²**
- **GDP : 13,946 Million USD (+23%), (28,438 USD per capita) (+16.5%) ***
- **Energy Consumption: 33,401 TJ (0.678 TJ per capita)**
- **Main industries - Gaming and Tourism (55 % of GDP), others - Service, Manufacturing**
- **Except electricity generated from Refuse Incineration, all energy are imported.**

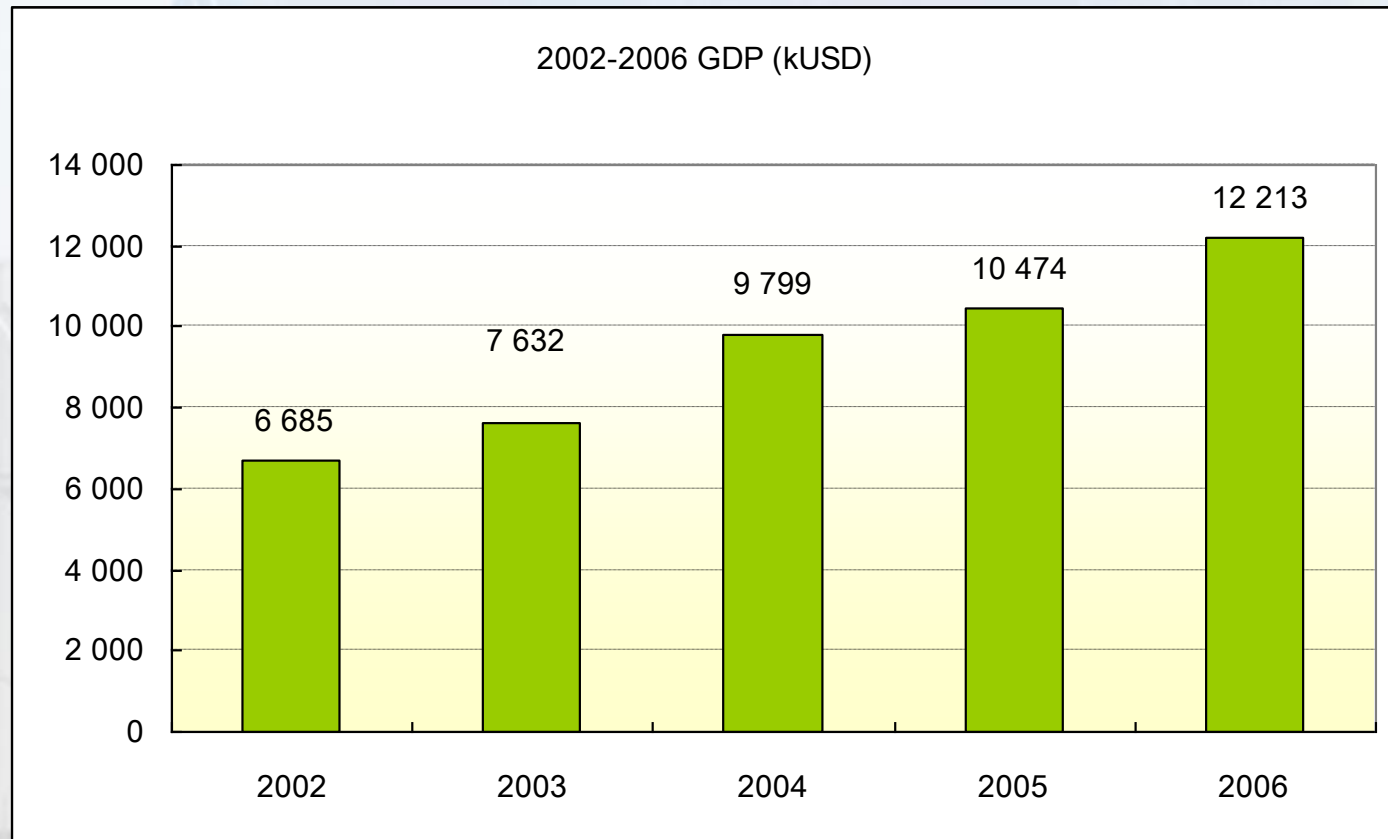
Source: 2006 census and statistics

* 2006 current price.



Economic Growth

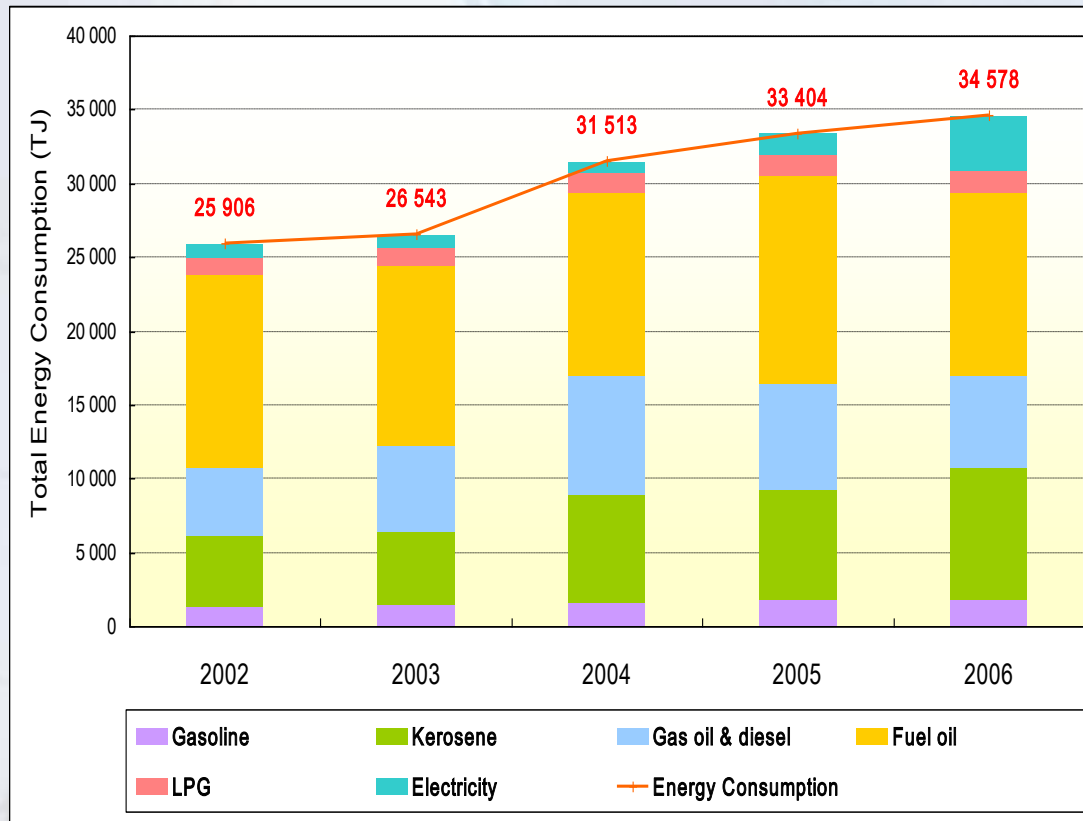
- From 2002-2006 average growth of 12.8%



Note: *GDP at constant (2002) prices.



Energy Consumption



From 2002 to 2006 average growth rate of 8.8%.

Energy consumption in 2006 was 34,578TJ

Energy consumption by source in 2006 are

Fuel oil (35.95%)

Kerosene (25.91%)

Gas oil & diesel (17.93%)

Electricity(10.69%)

Gasoline (5.11%)

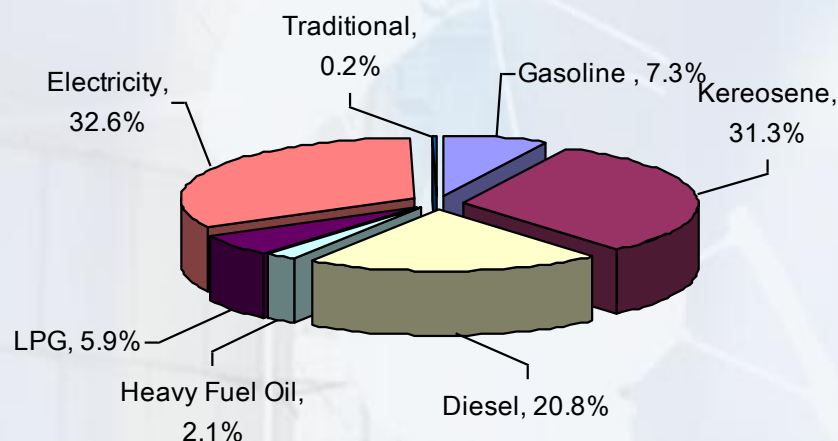
LPG (4.28%)

Traditional energy (0.14%)

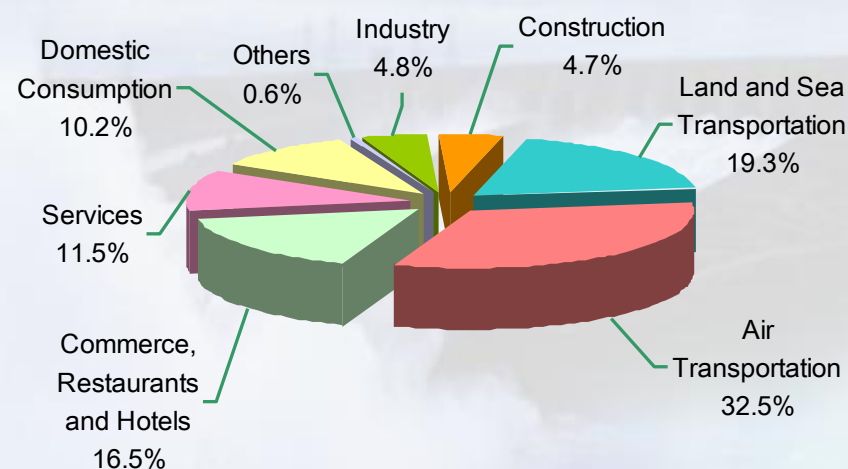


Final Energy Consumption

By Energy Type



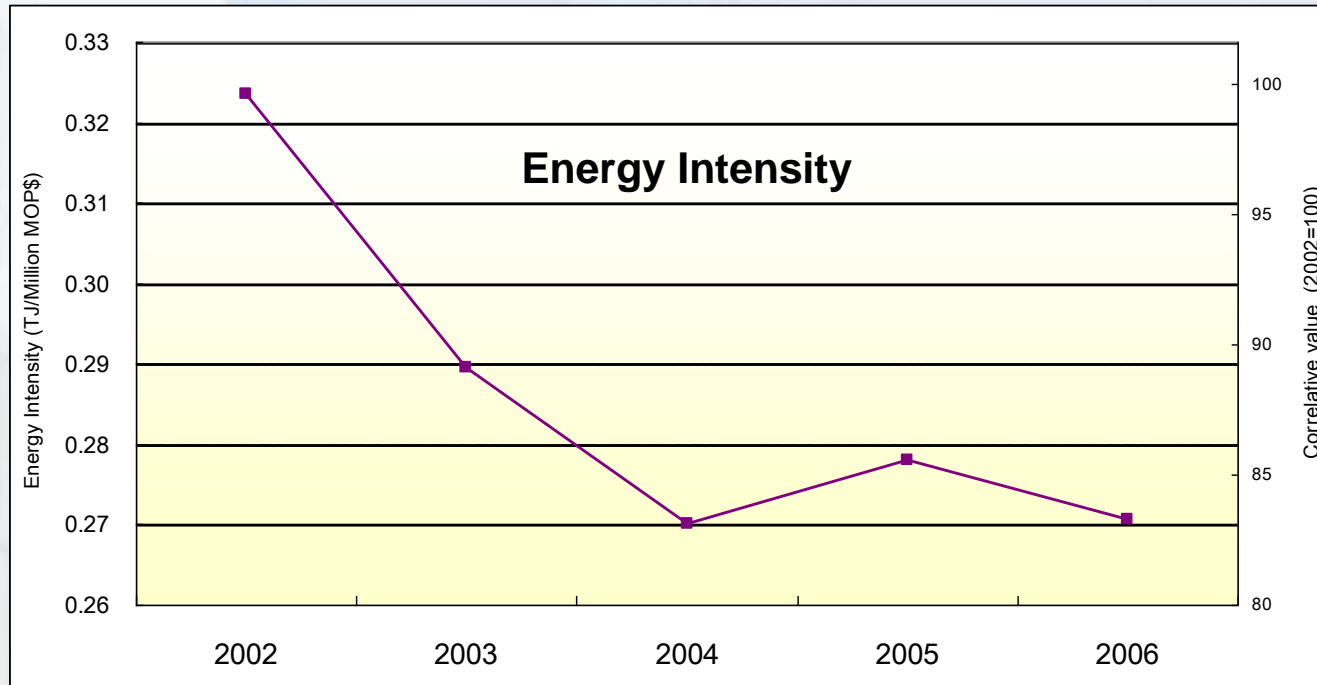
By Sector



- The main final energy type in Macao are electricity, kerosene , gas oil and diesel and gasoline.
- Transportation, Tourism and Service industries are are the largest consumers.



Energy Consumption & GDP



- The energy intensity of 2006 was 33.88 kJ/USD GDP (2002 value).
- 2006 economic growth of 23% and energy consumption growth of 3.51%.



Policy Objectives for Energy Sector

To ensure an energy supply which is





Policy measures

- **Supply side**
 - Diversification of energy supply
 - Infrastructure modernization
 - Strengthen regional cooperation
- **Demand side**
 - Promotion of Energy Conservation
 - Improve Energy Efficiency
 - Application of new technologies



Energy Conservation and Energy Efficiency

- **Public promotional campaigns**
- **Energy conservation programs (Government , industries)**
- **Promotion through different media**
- **Training programs**
- **Surveys**



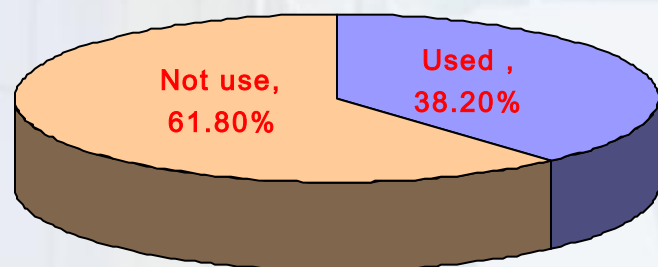
2005 Macao Energy Efficiency Survey

- **To evaluate the current situation on energy efficiency**
- **Interviewed local household, public department and utilities, hotels, entertainment, restaurants, retail shops, offices, energy product supplier, energy product retailer, professionals, students.**

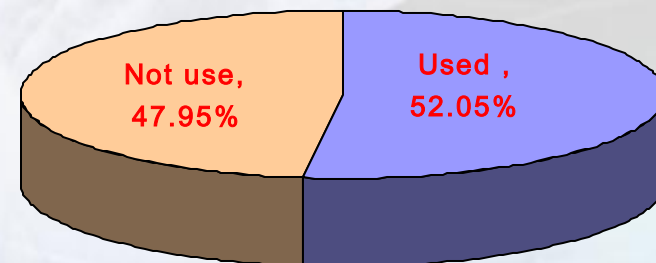


2005 Macao Energy Efficiency Survey

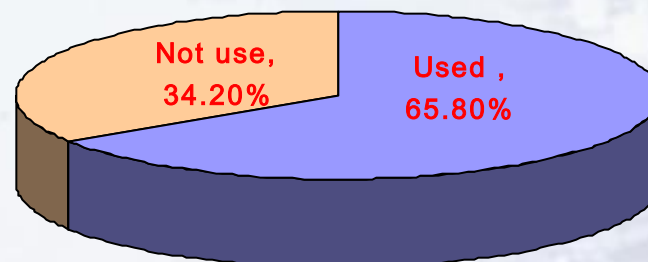
- **Main results:**
 - **Utilization of Energy Saving Lamp:**
 - **Government & Pub. Utilities (65.8%), Household (38.2%) and Private Enterprise (52.05%)**



Household



Private Enterprise

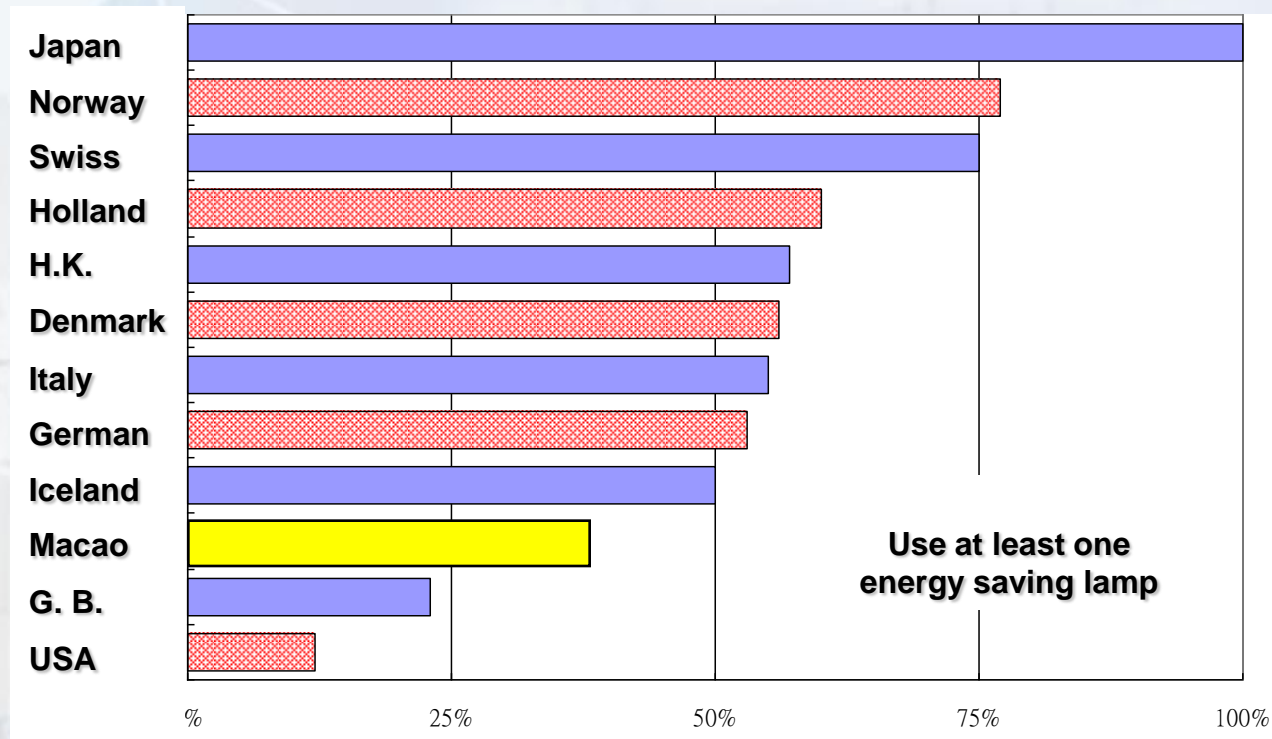


Government & Pub. Utilities



2005 Macao Energy Efficiency Survey

- **Comparison on utilization of energy saving lamps in household**



Sources:

"Cool Appliances Policy Strategies for Energy Efficient Homes" OECD 2003

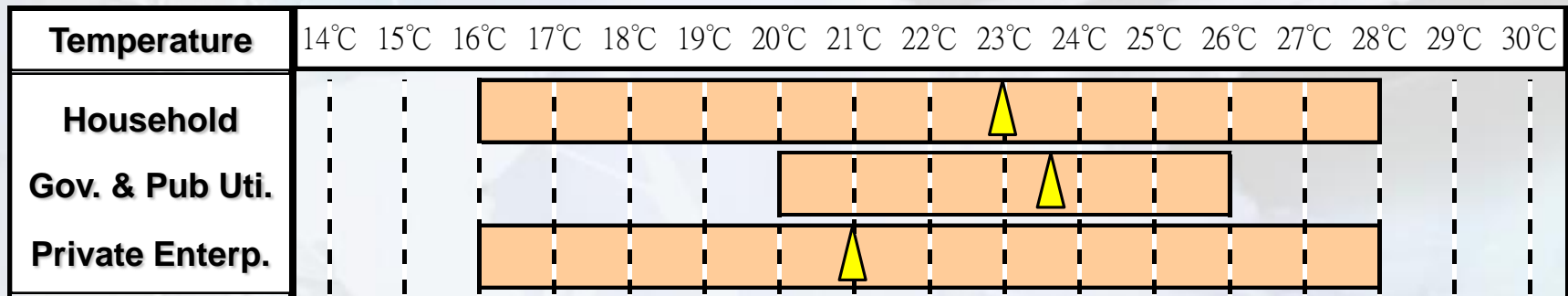
"Survey for Hong Kong Electricity Consumption in Household", Hong Kong Economic Post, 8th August, 2005

"Macao Energy Efficiency Survey 2005"



2005 Macao Energy Efficiency Survey

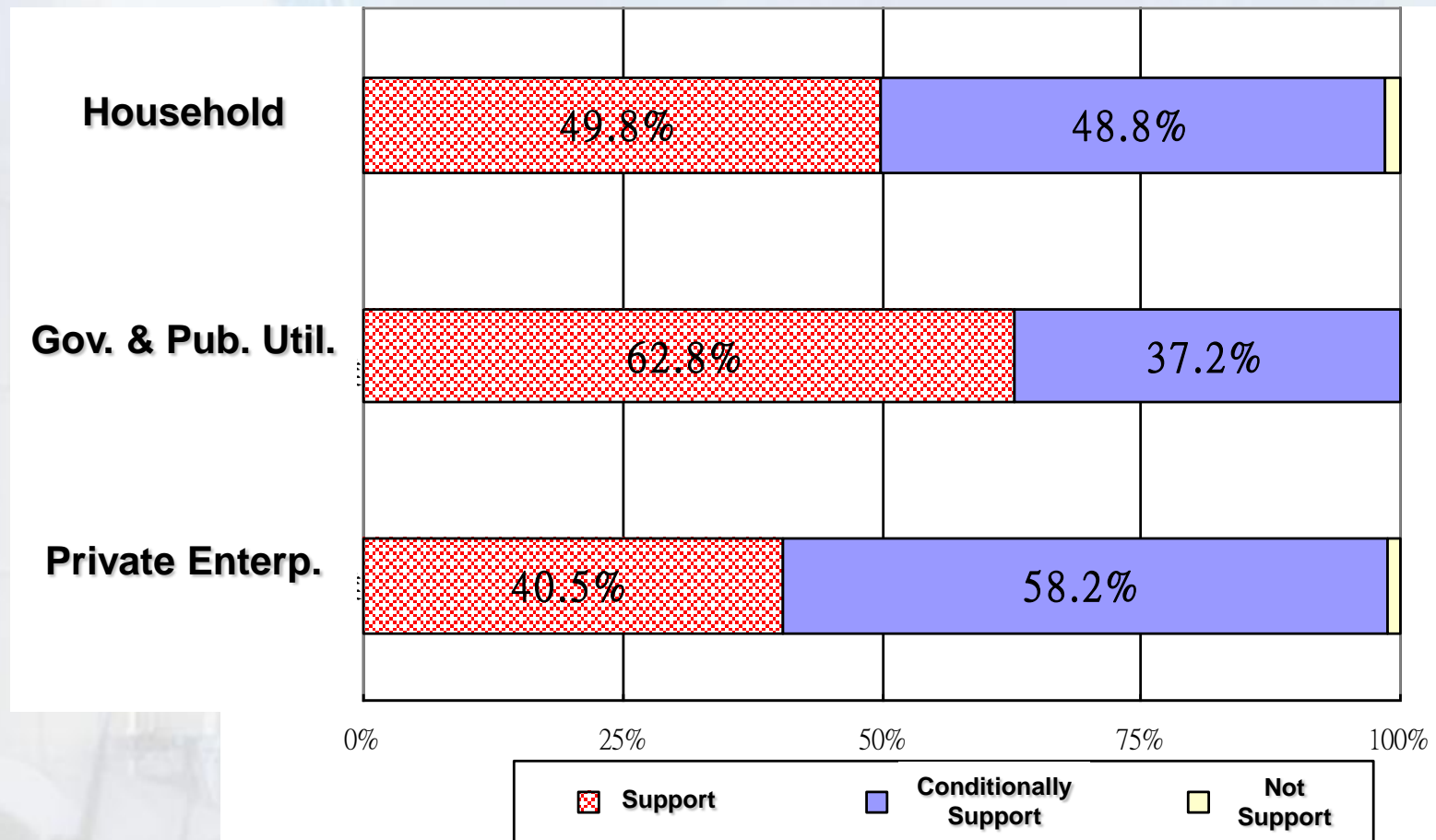
- **Main results: Air-con Temperature Setting:**
 - **Government & Pub. Utilities (23.6°C), Household (23°C) and Private Enterprise (21°C)**





2005 Macao Energy Efficiency Survey

- Support to energy efficiency campaign**





2005 Macao Energy Efficiency Survey

- **Conclusion:**
 - **The results showed that, the Macao domestic and enterprise are not highly aware of energy efficiency, therefore, the energy saving awareness needed to be enhanced.**
 - **According to the data, there is a large room for improvement in energy efficiency and energy saving**



Public Promotional Campaigns

- QQ - the firefly – mascot of the campaign





Public Promotional Campaigns

School promotional campaign

- Interactive activities with students, through games, music and cartoons.
- Primary school, secondary school
- Panel and Q&A competition in schools
- Total student reached through above activities - (52%)





Public Promotional Campaigns

Visit to energy facilities



Public Promotional Campaigns

Macao Energy Conservation Week

- **Organized by 5 public departments, 15 associations, and 3 public utilities, at 11-17, June 2007**
- **Energy Conservation Action**
 1. **Switch off the lights when not in use;**
 2. **Adjust the air-conditioning temperature to a comfortable level, and avoid any unnecessarily low temperature setting;**
 3. **Turn off any electrical appliances when not in use.**
- **“Switching Off the lights for 5 minutes”**
 - **Switch off the lights of household, hotels, restaurants, etc, for 5 minutes.**
- **Government departments’ promotional**
 - **Energy Conservation Program, Casual Wear Day**
- **Seminars on Energy Efficiency**





Public Promotional Campaigns

Macao Energy Conservation Week

- **Results**
 - More than 140 associations, entities, casinos, hotels, and shops participated those activities during the week.
- **Energy Conservation Action**
 - 58,374 registrations
- **“Switching Off the lights for 5 minutes”**
 - Citizens
 - Registered entities (109)
 - Saving from of the peak demand (about 5%)
- **Government departments’ promotional**
 - Launching of the public department energy conservation program
 - Casual Wear Day — most of the public departments, except those required to have uniforms.

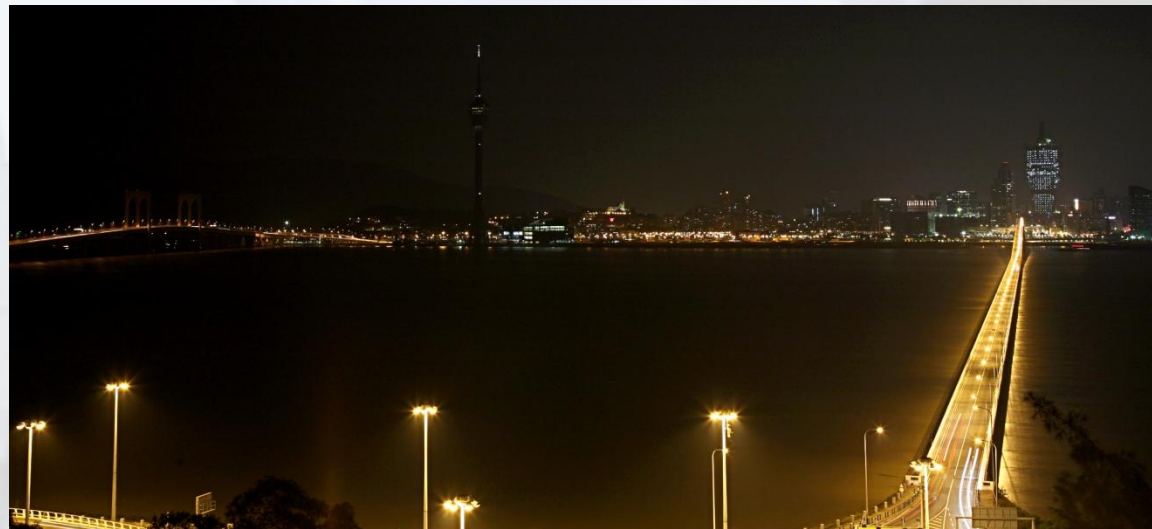


Public Promotional Campaigns

Before



After



Public Departments Energy Conservation Program

- **2 year program**
 - **Training of the coordinators of each department**
 - **Collection of consumption data**
 - **Benchmarking**
 - **Setup framework and guidelines for energy management**



Media Promotion

- Video – “The Stories of Energy” – 16 episodes



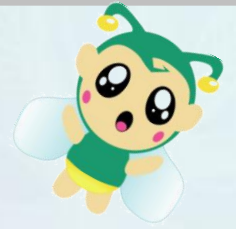


Media Promotion

- QQ – the firefly cartoons and computer games

Education Conservation Fun





Media Promotion

- Newspaper, television, radio, website and printed material





Training

- **Promotion of energy management and application of technologies**
 - **Organize professional training for enterprise and industries.**
 - **Courses specialized in energy efficiency in buildings, for hotels and professionals, (95% of participation)**





Other Ongoing and on Planning Actions

- **Macao Green Hotel Award Scheme**
- **Energy Conservation Program for enterprise**
- **Energy labeling for electrical appliances**
- **Guidelines for Public Outdoor Lighting**
- **Guidelines for Energy Conservation in Buildings**
- **Developing of mass transportation and sky walk system**
- **Encourage cogeneration projects**
- **Trial programs on renewable energy and new energies**

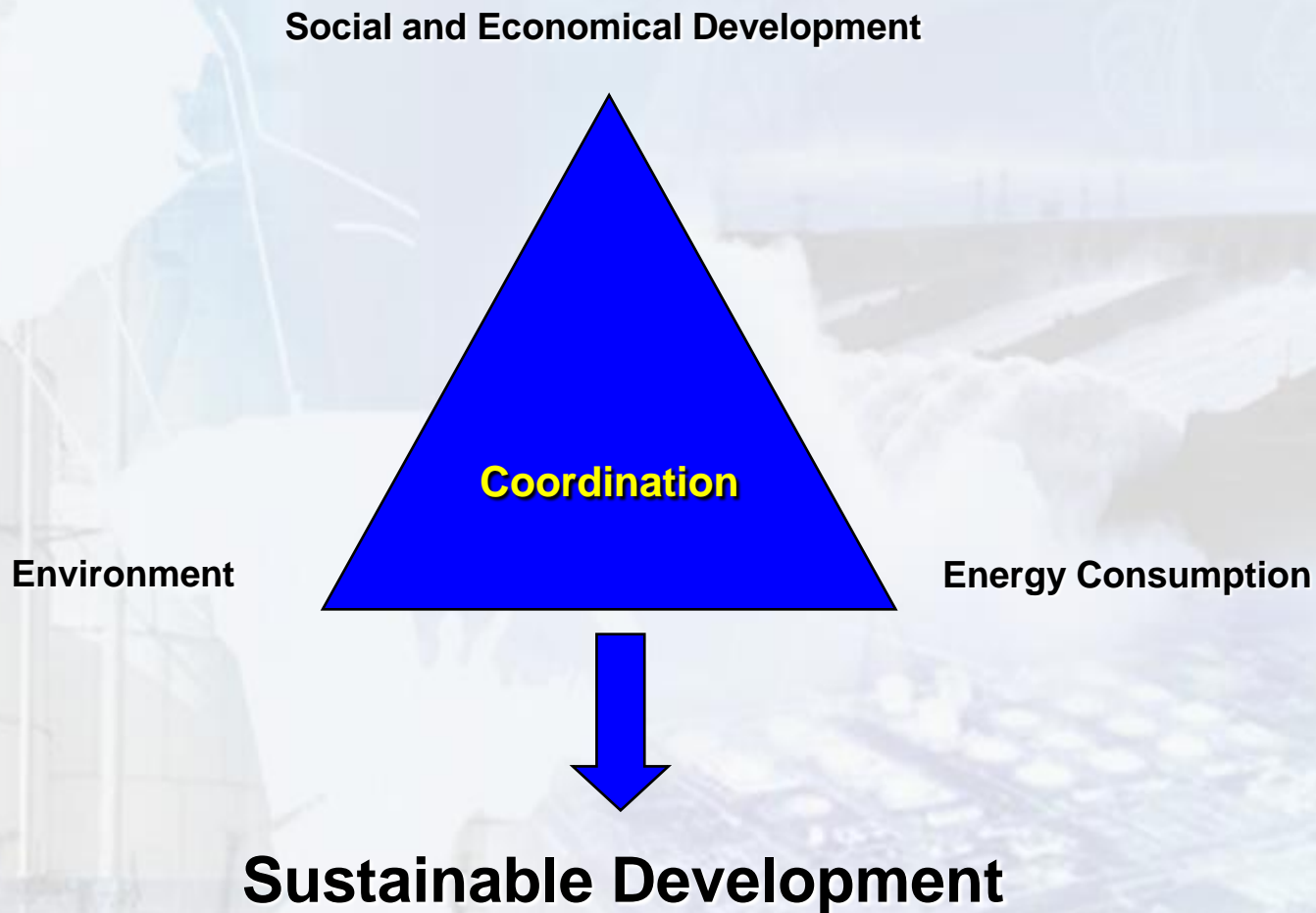


Other Emissions Reduction Actions

- Vehicles exhaust gas emissions regulation
- Limitation on the number of vehicles
- Hybrid vehicles
- CNG for public transportation
- Natural gas for power generation
- Adoption of Kyoto Protocol



Long term development objective





Sustainable Development

- The consumption of energy should be in balance and harmoniously coordinated with mankind, the natural environment, and economic development.
- Energy efficiency to reduce emissions is a key issue of our policy for development.



Thank you!