

# **Inter-regional Workshop on Energy Efficiency Investment Projects Pipeline**

**United Nations Economic and Social Commission for Asia and the  
Pacific (ESCAP)**

**United Nations Economic Commission for Europe (UNECE)**

**ALBANIA**

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**Bangkok, Thailand**

# CONTENTS

General data Albania

Energy Consumption

Case study “Student City”

Recommendations

Conclusions

CHALLENGES

# Background Albania

- **Population:** 3.2 Million people
- **Area:** 28 750km<sup>2</sup>
- **Natural resources:** water, oil, chromium, copper, biomass, lignite, stone, solar, wind



**GDP:** 60 % services

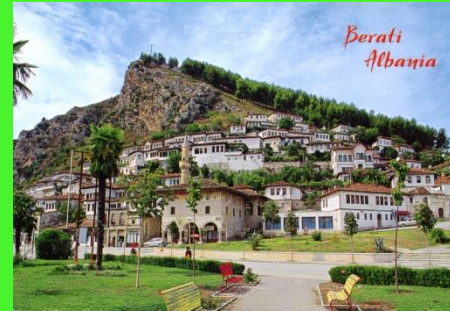
19 % industry

21 % agriculture

**Gross energy consumption:** 2014 Ktoe

**Final energy consumption:** 1817 Ktoe

# Albania Energy Consumption



## Energy used:

Electricity: 1628 MW HPPs, 98 MW TPP and import

Heat: biomass (wood), electricity, LPG( no gas)

Transport: refined petroleum products

Domestic and import

## Consumption by sectors:

Transport – 40 %

**Households and services – 36 %**

Industry – 17 %

**Building Sector** – public, households and services

**Building stock** – does not exist

**Data on buildings** – **National statistics office**  
(households + construction sector)



# Efficiency Buildings in Albania

- **National statistics**
- ❖ **buildings in overall** (residential, services and public) – 1,075,881
- ❖ 54/46 % - urban/rural
- ❖ 10 % not in use
- ❖ 15% seasonally used
- ❖ 48 % older than 30 yrs (15 % are 50 +)
- 
- **Energy savings** potential per sector (EES 20012):
  - Transport – 10 %
  - **Buildings – 30 %**
  - Services – 20 %
  - Industry – 15 %
- **Assuming cost effective measures:**
  - walls and roof insulation
  - EE lighting
  - RES for households/heating system

# **Main institutions in EE policy field**

**Government of the Republic of Albania**

**Ministry of Energy and Industry, Energy department**

**National Agency of Natural Resources of the Republic of Albania**

**Municipalities**

# CURRENT FINANCIAL STATUS

- Energy Efficiency fund does not exist yet.
- The ESCO concept is not a reality yet.
- Undeveloped EE services and financing mechanisms under the energy saving
  - performance contracting (ESPC).
- Only construction companies, design institutes and energy consultants are
  - providing the basic lines of EE services.
- Lack of wide range of EE service providers as well as lack of financial resources.
- Projects
  - **KfW project (2012 - 2014)**
  - 6 million € - 1 Student City edu buildings
  - **IPA project (MEI 2011-2014)**
  - 1.6 million € - 10 buildings (9 edu + 1 public)

# FEATURES AND CHALLENGES

- High energy intensity due to inefficient generation and transmission processes, old buildings, not end- use energy efficiently consumption;
- Gradually increasing electricity tariffs;
- Not implementation in place of the EE law;
- Institutional and capacity building to be performs;
- Very limited number of energy auditors;
- Not information campaigns; public awareness;



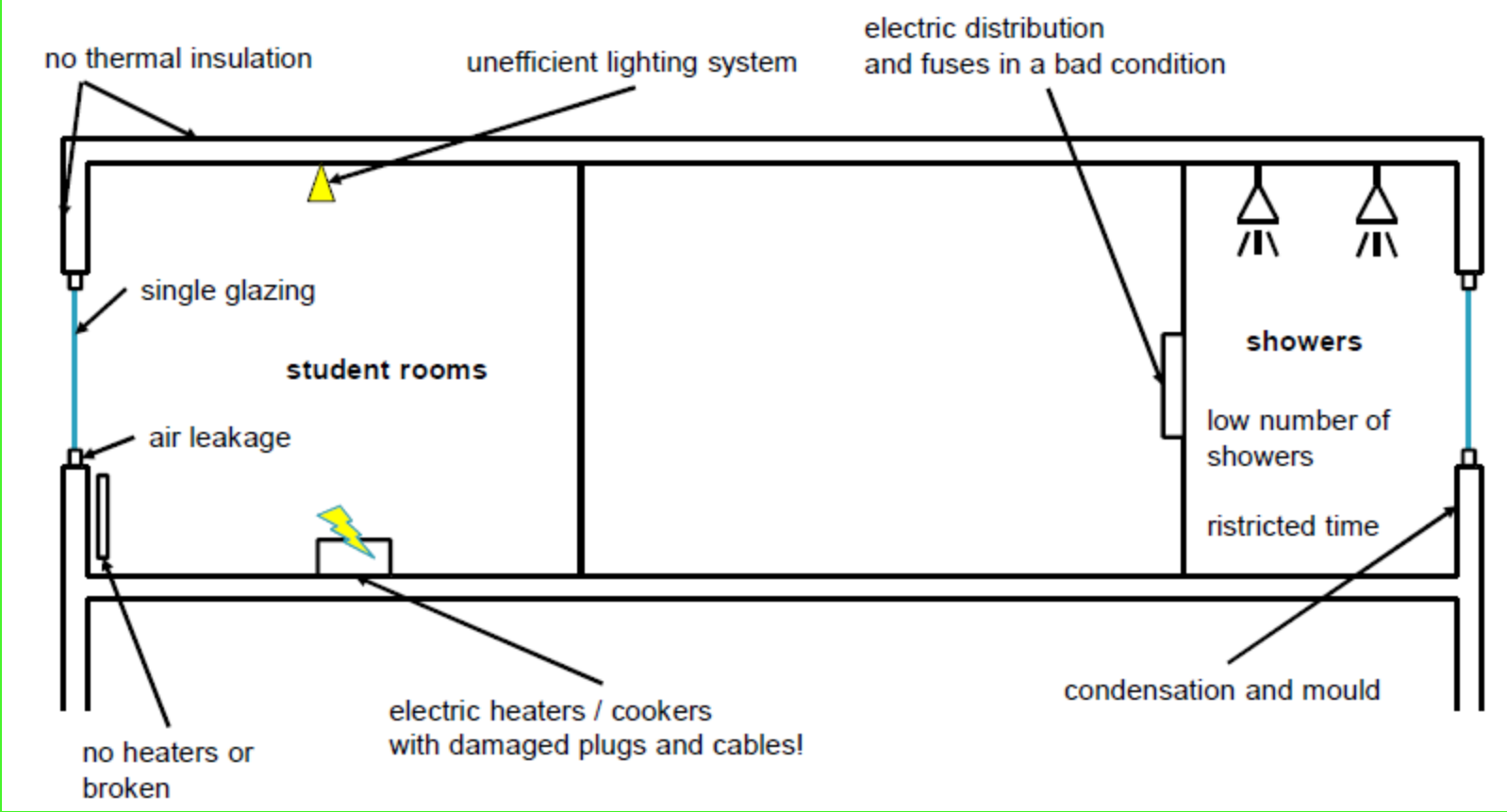
# Public buildings actions (Student City, Tirana)



## Public buildings actions (Student City, Tirana)



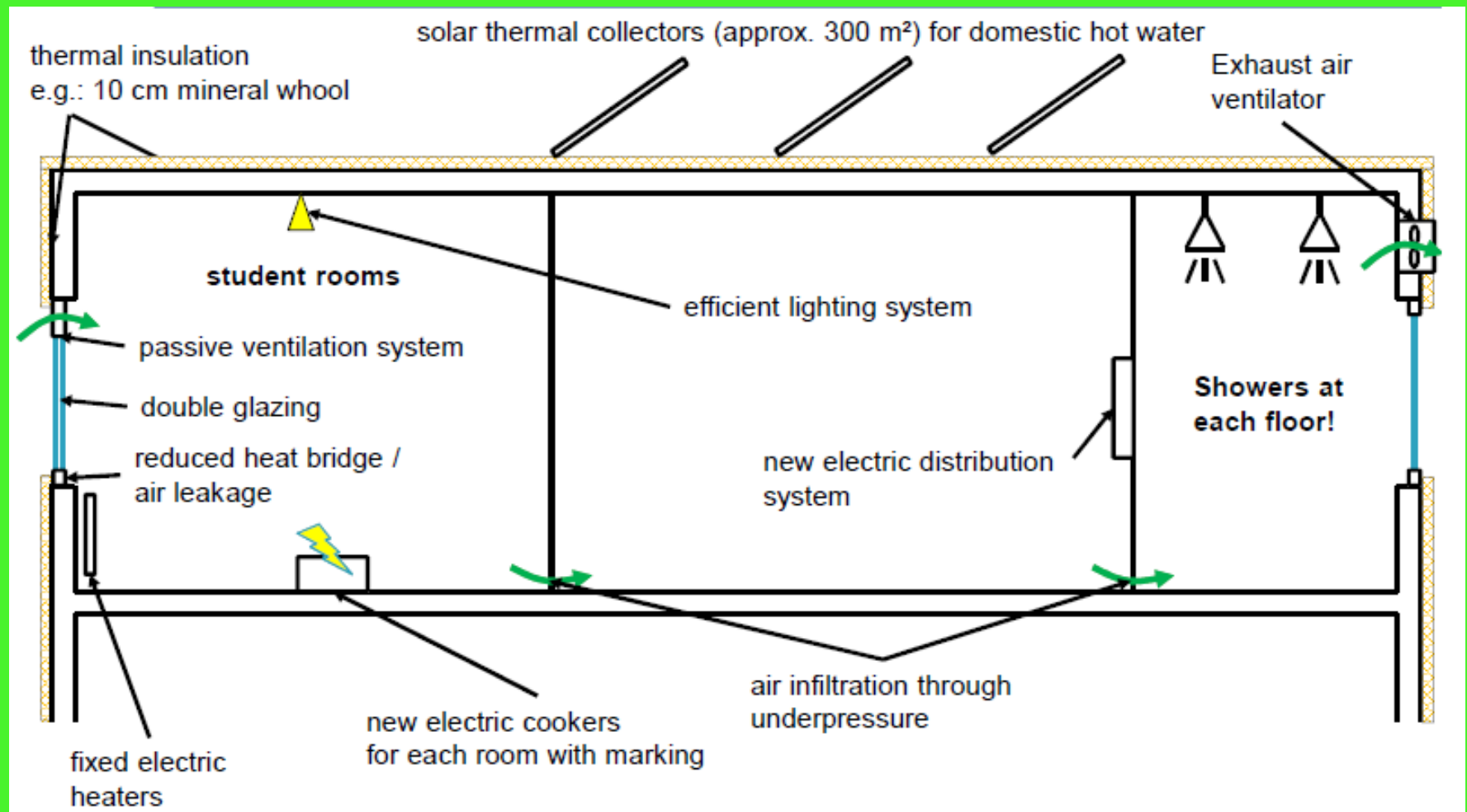
# Student City 1/2 – Actual Situation



## Situation in student City



# Basic Ideas of Renovation



# Student City 2 -After improvement



## CURRENT FINANCIAL for Intervention

- Solar thermal system: 300 m<sup>2</sup> collector area
- Thermal insulation walls: 1 900 m<sup>2</sup>
- Thermal insulation roof: 660 m<sup>2</sup>
- New windows: 290 m<sup>2</sup>
- Electric radiators: 123 rooms Exhaust
- ventilation system: 6 shower rooms
- New electric system 2 500 m<sup>2</sup> living area
- Electric boiling plates: 123 rooms

## Energy efficiency measures

- Installation of ETICS (external thermal insulation compound system; 10 cm;  $\lambda \leq 0,04 \text{ W}/(\text{m}^2\text{K})$ ) at the walls
- Thermal roof insulation (10 cm;  $\lambda \leq 0,04 \text{ W}/(\text{m}^2\text{K})$ )
- New windows ( $U_w \leq 1,4 \text{ W}/(\text{m}^2\text{K})$ )
- Solar thermal system for domestic hot water
- New heating system (oil boiler or electrical heaters)

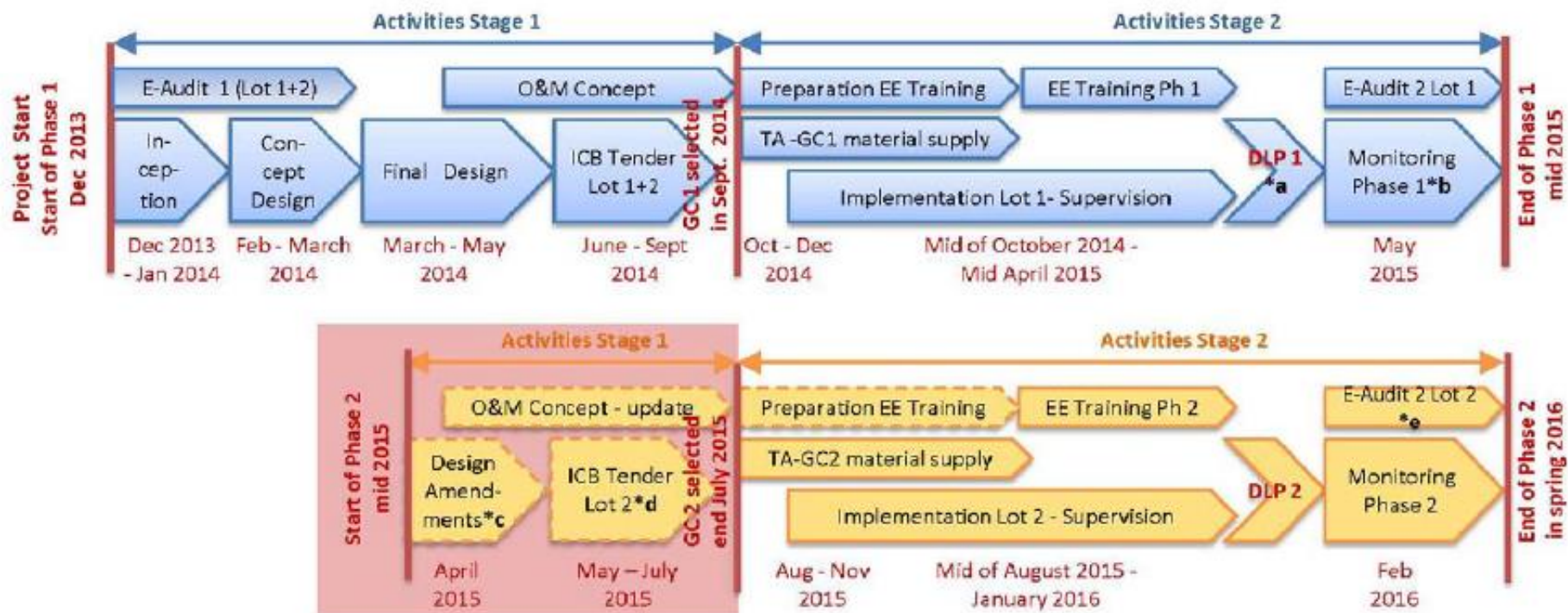


## Table of Investment (estimation for one building)

proposed EE measures	estimated investment cost (€)	useful energy saved (MWh/year)	end energy saved (MWh/year)	saving potential (€/year)	payback period (years)	percentage of useful energy savings (%)	percentage of end energy savings (%)
ETICS (external thermal insulation compound system)	64.000	97	99	9.587	6,7	26,2	21,2
Thermal insulation and sealing of roof	40.000	53	54	5.282	7,6	14,4	11,7
Replacement of doors and fenestration	54.000	43	44	4.294	12,6	11,7	9,5
Solar thermal system and electric boiler	188.000	28	118	13.052	14,4	7,6	25,3
Total package and electric heaters	369.000	222	315	32.216	11,5	60,0	67,8
Total package and split units	415.000	222	348	35.328	11,7	60,0	74,8
Total package and oil boiler	463.000	222	299	29.289	15,8	60,0	64,2

Total investment costs for the renovation of the complete SC 2 with all its 4 buildings with 3960 m<sup>2</sup> is estimated between MEUR 5.2 –without 20% VAT

# Project Schedule



**Legend:**

- Project Phase 1
- Project Phase 2
- Project Phase 2 – optional components

- \*<sup>a</sup> DLP-1 (12 months) will now exceed Consultants' Contract Time ca. 2 months.
- \*<sup>b</sup> EA2 (Lot1) and Monitoring NOT ideal in spring! Shift to next winter months?
- \*<sup>c</sup> Design Amendment time (if required) TOO SHORT.
- \*<sup>d</sup> ICB Tender Lot 2 (optional) to be shortened, to discuss with Client / KfW.
- \*<sup>e</sup> EA2 (Lot1) and Monitoring NOT ideal in spring (in case construction gets delayed).

# CONSIDERATIONS

The national target is being calculated on the basis of the average energy final consumption 2004-2008.

It considers:

- the potentials for efficiency improvements in to different sectors,
- the level of policy interventions in the sectors;
- shares of individual sectors within the final energy consumption;

# CONCLUSIONS AND RECOMANDATIONS

↕ Legal and regulatory gaps; strengthening of the EE legislation is necessary with secondary legislation and enforcement mechanisms;

↕ Technical standards, norms, codes, certification and labeling to be implemented and improving them;

Albania, do not have EE standards in place for equipment and appliances or modernized building codes, and have no regulations promoting or mandating building energy efficiency;

# CONCLUSIONS AND RECOMANDATIONS

- ↕ Investment mechanisms;
  - the transition from subsidy (state grant) funds to loan funds,
  - Legal authority for municipalities and other large energy consumers in the building and utility sectors borrowing money to pay for energy efficiency investments;
  - Legal authority for ESCOs to implement projects using energy performance contracting.

# CONCLUSIONS AND RECOMANDATIONS

## ↕ Institutional structures;

- designated energy efficiency agencies need capacity to design and implement policies and programs and identify cost-effective energy efficiency potentials;
- municipalities and public institutions needed;
- energy efficiency commissions, associations and NGOs involvement;

## ↕ Awareness Raising and Capacity Building providing information, advice and publicity on best practice ;

## CONCLUSIONS AND RECOMANDATIONS

- ↕ The municipalities (ROLE) should integrate energy efficiency into the municipal development plans as one of the key components of the local development agenda;
- ↕ There is need for an underlying effort to collect and analyze the energy data in each major economic sector, to project future trends, to identify and assess the energy efficiency potential, and to indicate the measures to be implemented.

## SUMMARIESED CONCLUSIONS & CHALLENGIES

- Increasing of the institutional responisibilities + (cooperation between local and govermental institutions)
- Legal framework harmonised with EU directives and strictly implementation;
- Financing sources attracting; (EE and RES Funds)
- ESCO-s to be introduced;
- Energy Database improvement;
- Awarness campaign increasing;





# THANK YOU FOR YOUR ATTENTION

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