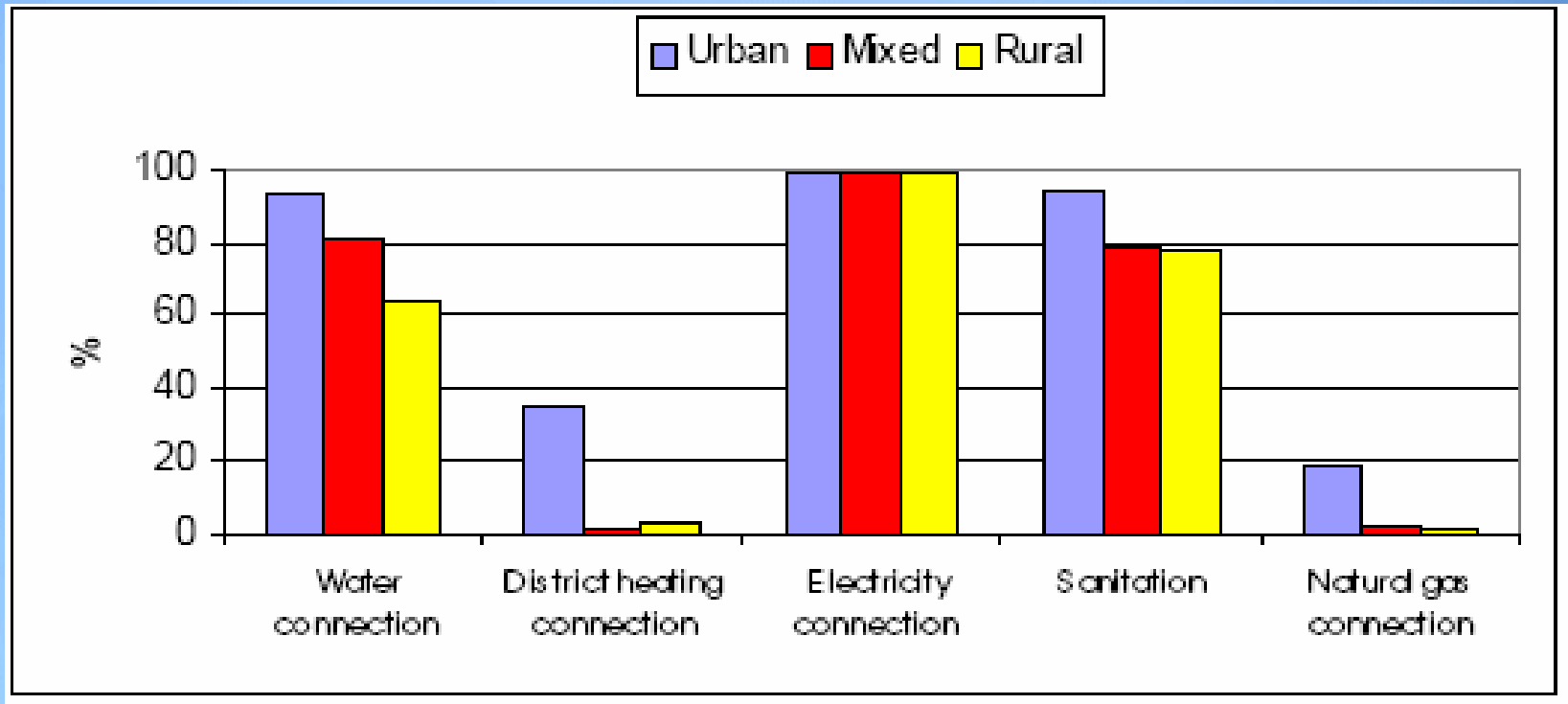
The B&H Experience in Residential Energy Efficiency

Lena Bratic
President
Center for Energy Efficiency (CEEF)
B&H

B&H – Basic Data

- Estimated population 3,8 mil
- Lower middle-income country with a gross National income per capita of US$2,040 (2003)
- 1 million refugees in various countries and
- 1.2 million of internally displaced
- 17,8% of population below poverty line (PRSP2004)
- Unemployment rate (official data 43%) (un-official 25% due to black market)

B&H – Basic Data: Utility Coverage



Utility service coverage (PRSP)

B&H – Basic Data: Political Situation

- Two Entities (RS and FBIH) + District Brcko
- FB&H 10 Cantons/147 municipalities
- 187 ministries on various levels
  (Outstanding barrier in introducing new laws and harmonizing them on the State Level)
- Heating in RS on Municipal in FBIH on Cantonal Level
- Law on Consumer Protection (2003): individual metering not in practice due to non-harmonization

B&H – Basic Data: Housing

- Housing Privatization still underway
- Housing Maintenance Companies Introduced (no housing associations/condominiums as legal entities yet)
- 75% needed for any intervention in buildings

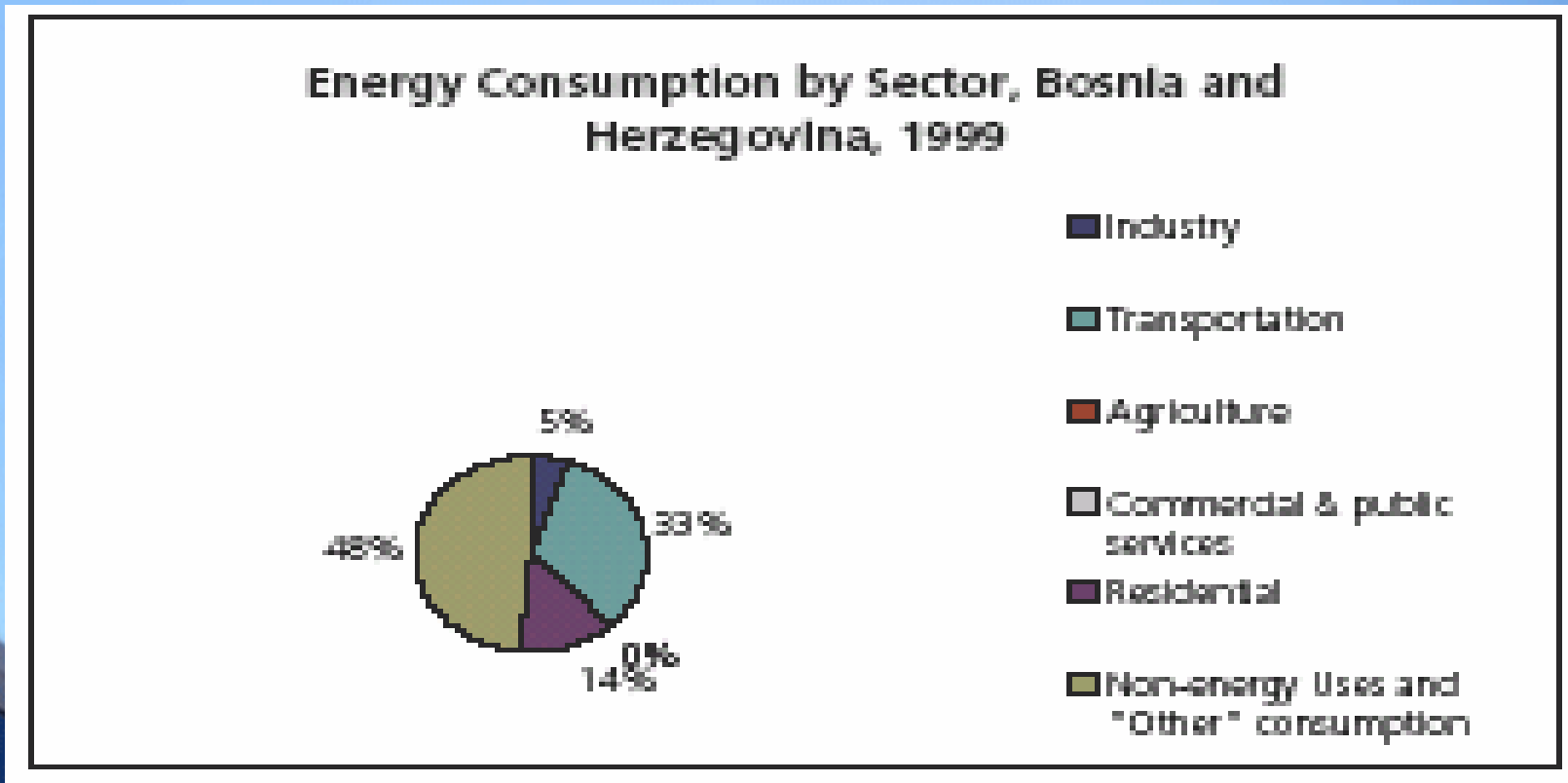
- Housing stock ca.1,290.000 in 1991
- 412000 damaged or destroyed (32%)
- Complete rehabilitation equals to KM 6.1 billion.

EE in Post-war Restructuring: Missed Opportunity

- IMG Standards (Aimed at improving living conditions not EE):
  - Roofs should have thermal insulation (according to national regulations and climate zone), hydro insulation and vapour barrier to be applied on apartment buildings if the roof is flat;
  - The windows should be glazed if possible with thermal insulation glass;
  - Any type of warm floor or suitable alternative, insulated with thermal insulation should be fixed if the ground floor will be inhabited;
  - Remaining external openings must be closed against the weather (weatherization) and interaction on suitable way i.e. plastic sheeting.

B&H Energy Consumption by Sector

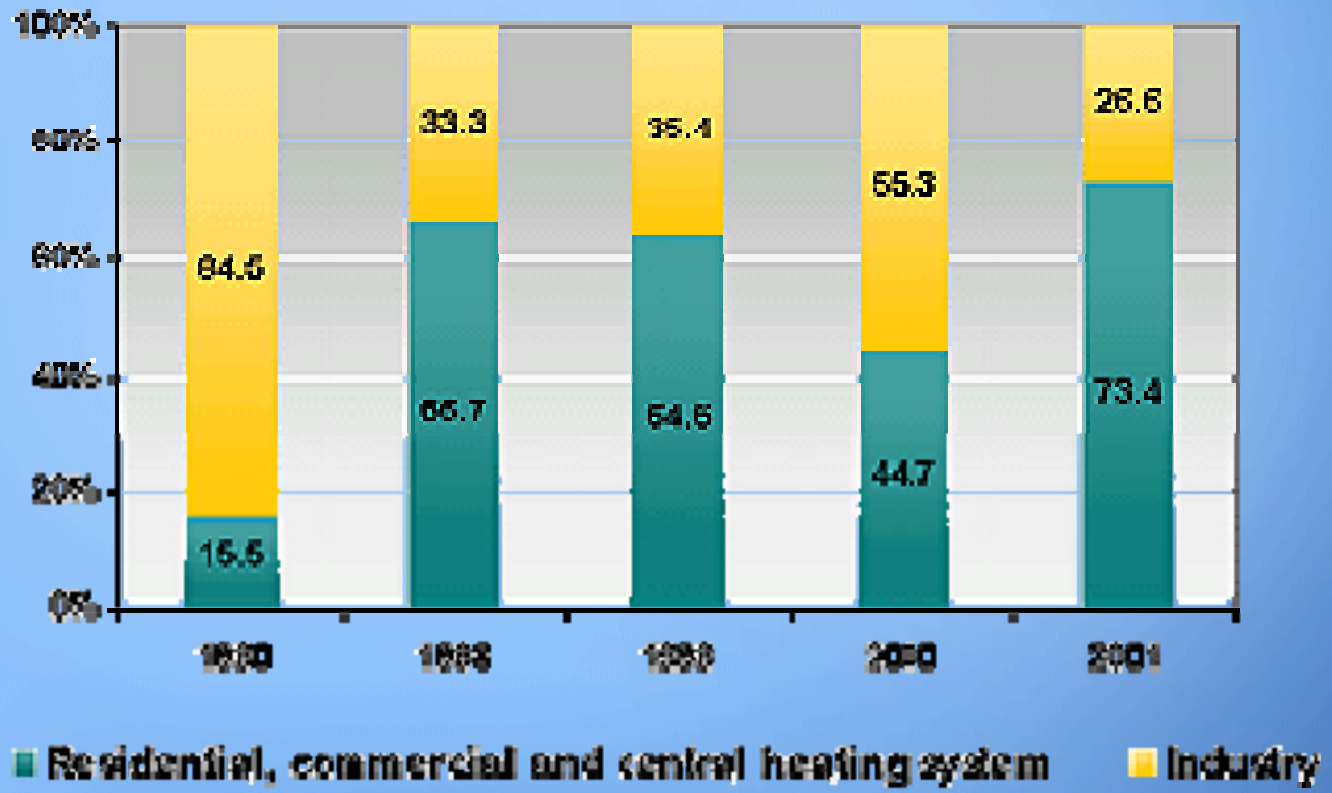
- No reliable data on State Level on electricity, heat and gas



B&H – Increased Gas Consumption

Pre-war: Industry accounted for 85% of total natural gas consumption;

Post-war: Consumption structure changed with **peak use in residential sector**



Energy Prices in B&H

- **Set by the government/kept artificially low**
- Still trend in **price increase** is obvious (in focus related to gas price increase on the international market)

	Electricity (USc/kWH)	Gas (USc/m3)	Heat (US$/MWh)
Households	4.71	24	38-42
Industry	4.54	16.5-29	38-42

Data from 2002

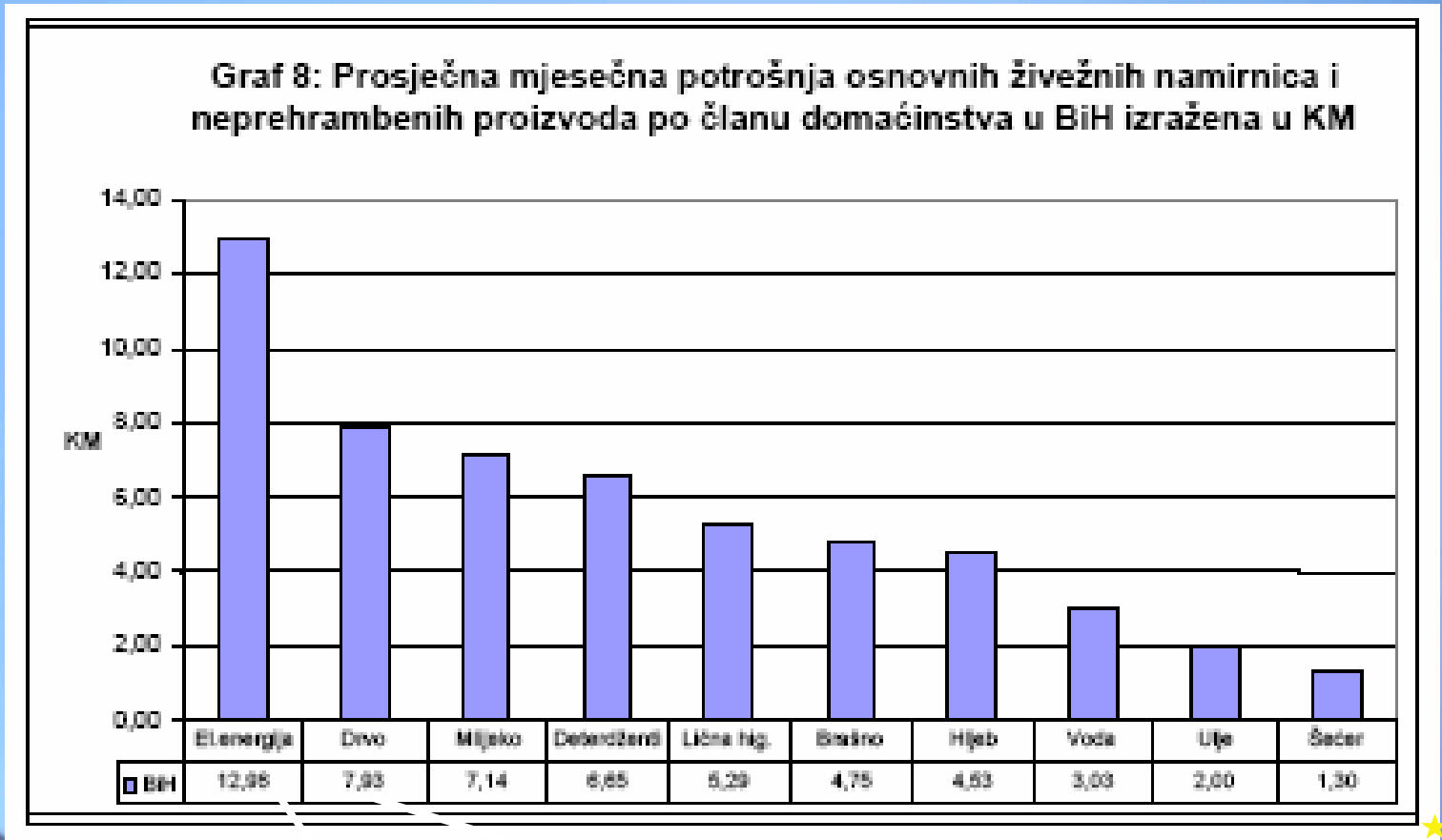
	Electricity (USc/kWH)	Gas (USc/m3)	Heat (US$/MWh)
Households	5.5	32	51-57
Industry	5.5	22-39	51-57

Data from 2004

B&H Income and Social Welfare

- Increase of prices (VAT Jan 2006)
- Average Salary July 2005 556,20KM: electricity 54,55KM, gas 1,73KM, heating 60KM (over to 20%)
- No Social –Net Programs on State Level
- Average pension 221,81KM and other low-income (over 50%)

B&H Households spending / energy (PRSP)



Electricity 12,5% Wood for heating, 7,95%

B&H Basic Data: Energy Trends

- Energy prices are still set low, non- payment; non-metering (Electricity and Gas are exemption); payment made per m2
- Subsidies (refugees,war veterane invalides, pensioners, low-income)
- Dept from post-war period (refugees-return)
- No Social program on State Level
- Limited private investment

B&H Basic Data: Energy Trends

- Mil$ invested into economically unsustainable systems that are relying on import of oil and natural gas (not meeting costs of the service delivery)
- Gas and Oil Import Dependence: 610 mil m3 pre-war/3 billion,2 billion, 1.5 billion until 2020; dept 100mil$
- DH companies heavily (Electricity Law and Law on Consumers) subsidized
- Strong Oil and Gas Import Lobbies
- No Legislation on the State Level
- No metering (except electricity and gas)

Institutional and Legal Surrounding for EE in B&H

1. State Level: Law on Transmission, Regulator and System Operator (2002), Law on electricity (2004); Law on consumer protection (2003)
2. FBIH&RS: Action plans on restructuring and privatization of electro-energy sector; Decision on methodology of determination of level of electricity price from renewable energy for plants of 5MW electric (*public utilities at the territory of the Federation of Bosnia and Herzegovina are obliged to accept electricity from renewable energy sources if producer has the Use Permit for production plant and Work Permit.)

Development of legislation for other sectors, such as oil, gas, heat, energy efficiency or renewable energy limited or none

Energy Efficiency Market in B&H

- Post-war reconstruction: B&H has developed large-scale construction industry spanning design and structural engineering, building construction, civil engineering and building material production.

- Market of energy efficiency appliances is developed

EE Projects in Residential Sector: 1st ESCO COMPANY in B&H

NARODNO GRIJANJE, Sarajevo

www.narodnogrijanje.com

- **PRODUCTION OF HOUSEHOLD STOVES AND BOILERS USING BIO MASS**
- **PRODUCTION OF SOLAR COLLECTORS**
- **ENERGY SERVICE (ESCO SYSTEM)**
- **EE IN RESIDENTIAL SECTOR THROUGH THE USE OF INDIVIDUAL BIOMASS FIRED BOILERS**

Narodno Grijanje

VELIKA KLADUSA CASE

- DH System (oil) damaged in the war/650 housing units

SCENARIO 1:

- Reconstruction of the old system estimated to 10 mil KM/price would be 2KM per m2/12 months
- Heating Costs: 930.000 KM per yer/10 mil KM investment

SCENARIO 2:

- Installment of mini-heat boilers estimated to 800.000KM price would be 1KM Per m2
- Heating costs per year 411.000KM / 800.000KM Investment

FACILITY/ MULTY FAMILY BUILDINGS	HEATING SPACE m2	PREVIOUS HEATING COST	NEW HEATING COSTS	SAVINGS	PROJECT COSTS	PAY BACK IN YEARS
		PER H.SEASON (EUR)	PER H.SEASON (EUR)	PER H.SEASON (EUR)		
		0,69/m2	0,44/m2			
ZENICA	2200 m2	18,216	11,616	6,600	48400	7
		0,69/m2	0,45 /m2			
VELIKA KLADUŠA	5000 m2	41,400	27,000	14,400	110000	8
		0,69/m2	0,45 /m2			
GRADAČAC	3500 m2	28,980	18,900	10,080	77000	8
		0,69 /m2	0,45/m2			
BANJA LUKA 1	2200 m2	18,216	11,880	6,336	48400	8
		0,69 /m2	0,45/m2			
BANJA LUKA 2	5000 m2	41,400	27,000	14,400	110000	8
		0,69 /m2	0,45/m2			
BANJA LUKA 3	3000 m2	24,840	16,200	8,640	66000	8

CHP – Heating Sarajevo from Kakanj

- USAID-Parsons Feasibility Study “Heating Sarajevo from Kakanj Term. Power Plant (CHP)

  Study findings:

  1. Reduced dependence on Natural Gas import
  2. Reduced price for end users 50% down
  3. Reduced CO2 Emmisions

***Total reserves of coal in BIH are estimated to about 3,856 million tons**

Mayor Obstacles for Energy Efficiency in Residential Sector in B&H

- Complicated Political structure (hard to pass laws)
- Lack of energy statistics / in order to prepare EE strategy in all sectors
  (obstructions are made on purpose, not to publish data)
- Energy Strategy not based on the use on national energy sources
- Restructuring not seen through in terms of potential EE improvement
- Strong Oil and Gas Lobby
- Poverty
- No Legislation in support of EE measures
- Insufficient Institutional and Human Component (lack of knowledge on all levels)
- Poor Practical Experience – energy audit, energy management, energy measurement
- Lack of funding mechanisms
- Inadequate Financing/Investment in EE

Goal/Recommendations:

1. **REDUCE CONSUMPTION OF IMPORTED OIL AND NATURAL GAS FOR HEATING BY USING NATIONAL ENERGY RESOURCES: COAL, HYDRO, BIOMASS (industrial wood waste 1,500.000 cub. meters per year);**
2. **INCREASE OF NUMBER OF CHP SYSTEMS (ELECTRICITY AND HEATING PRICES FOR RESIDENTIAL SECTOR WILL REDUCE)**
4. **INTRODUCE METERING TO STIMULATE ENERGY SAVINGS IN THE RESIDENTIAL SECTOR**
4. **INCREASE EE IN RECONSTRUCTION STILL TO BE DONE**

5. PUBLIC AWARENESS (SO THAT ENERGY IS RECOGNIZED AS A NATIONAL INTEREST)
6. PROMOTE USE OF INDIVIDUAL BIOMASS FIRED BOILERS IN RESIDENTIAL SECTOR WHERE POSSIBLE
7. INITIATE EMPLOYMENT PROGRAMS FOR THOUSANTS OF WORKERS IN METAL INDUSTRY AND IN COLLECTING AND PROCESSING OF WOOD WASTE (20,000 – 1000)
8. CAPACITY BUILDING/TRAINING CENTERS AND JOB CREATION IN THE WOOD WASTE SECTOR AND RENEWABLE ENERGY SECTORS
9. INTRODUCE LAWS ON EE (BUILDING CODES ETC.)

THANK YOU!:

Lena Bratic
lbratic@ceef.co.ba

Center for Energy Efficiency (CEEF)
Dr.Mustafe Pintola 7, Sarajevo, B&H
(+387) 33 638 167

www.ceef.co.ba