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REPUBLIC OF CROATIA
Ministry of Construction and Physical Planning

National Energy Efficiency Policy and Energy Performance Contracting (EPC) projects in Croatia

H. E. Mr. Ivan Vrdoljak, Minister of Construction and Physical Planning

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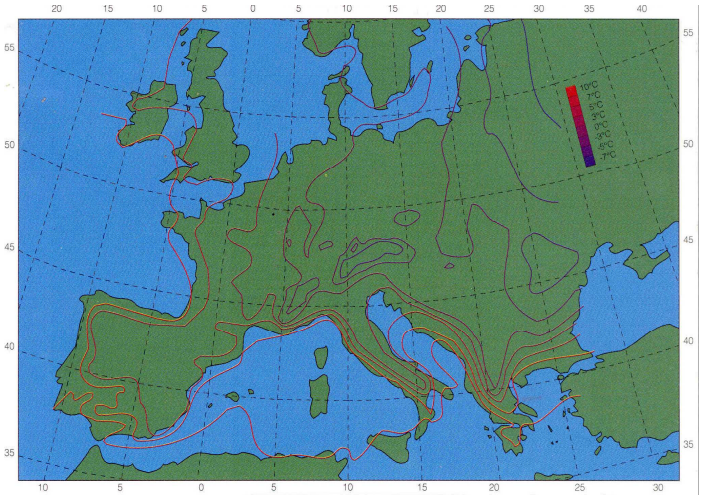
Facts about Republic of Croatia

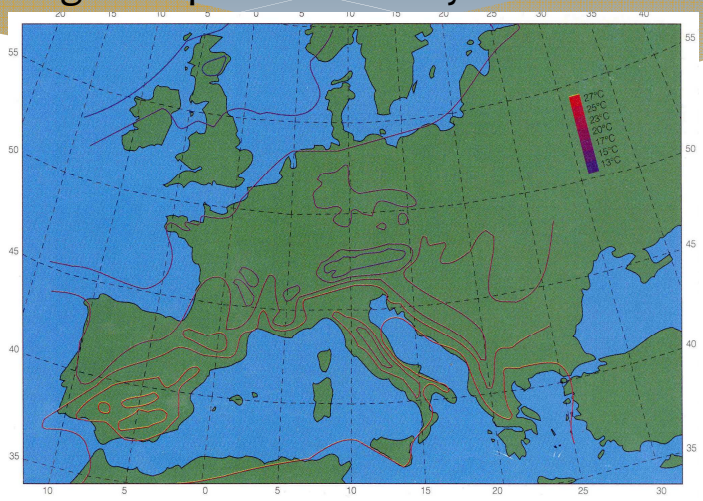
* Surface Area: 56 594 km²
* Total population : 4 290 612
* According to the first results of the population census conducted in 2011 the Republic of Croatia has:
  * 21 counties (including the City of Zagreb)
  * 127 towns, 429 municipalities and 6 756 settlements
  * average density of 75.8 inhabitants per km²
  * total number of households 1 535 635
  * total number of housing units 2 257 515

Climate conditions in Croatia

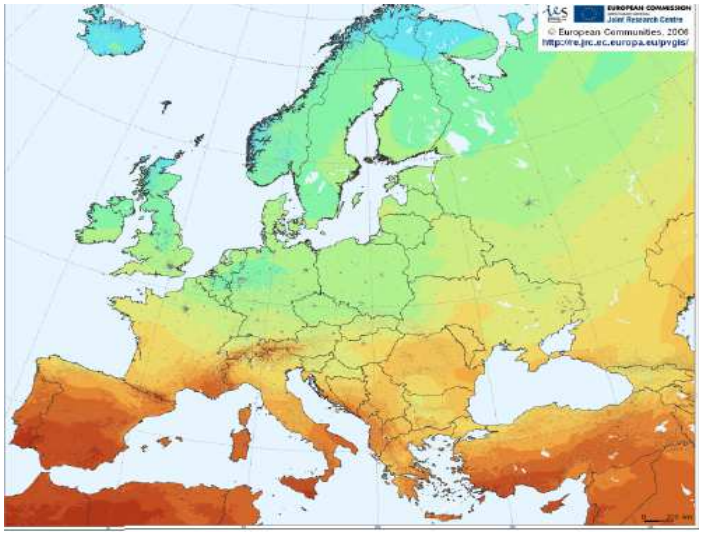
Average temperature in January in Croatia



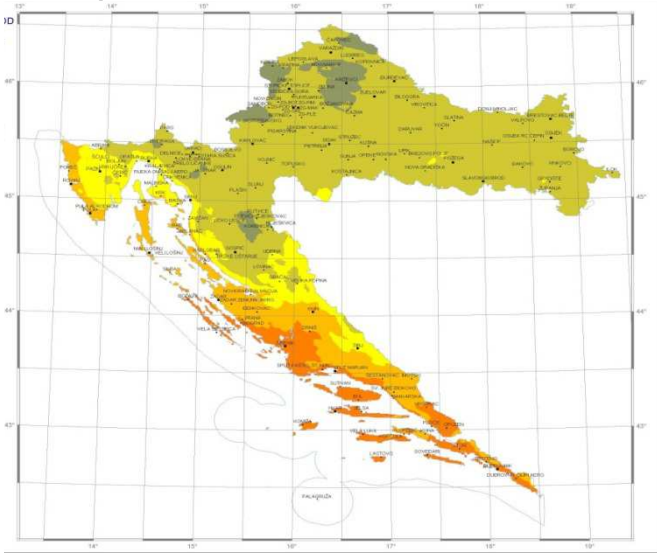
Average temperature in July in Croatia



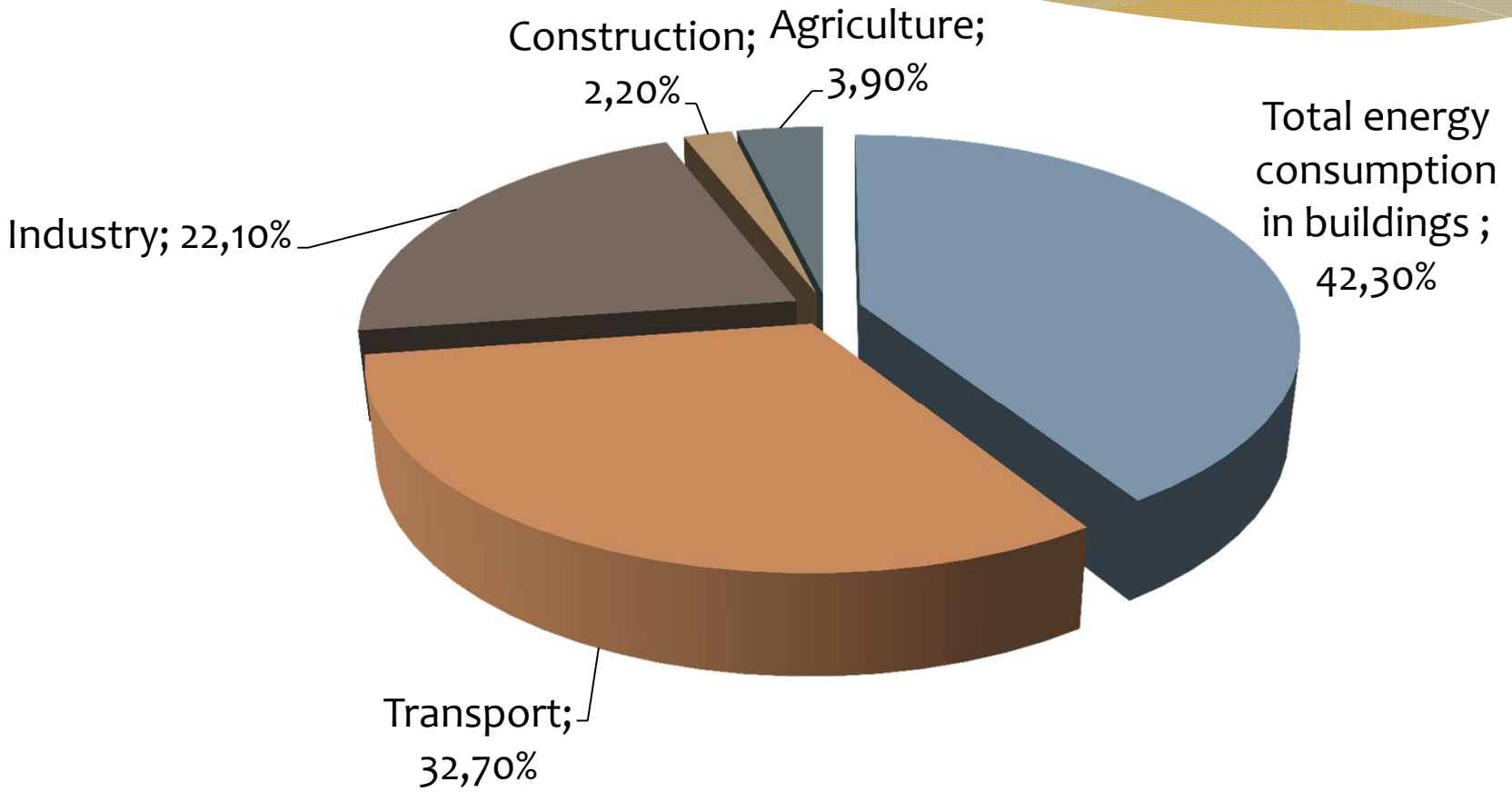
Solar radiation and photovoltaic electricity potential country and regional maps for Europe



Probable optimal range of areas for passive solar performance in Croatia



The share of total energy consumption in buildings in 2010 in final energy consumption



Final energy consumption of energy in the Republic of Croatia

Final energy consumption in other sectors by subsectors

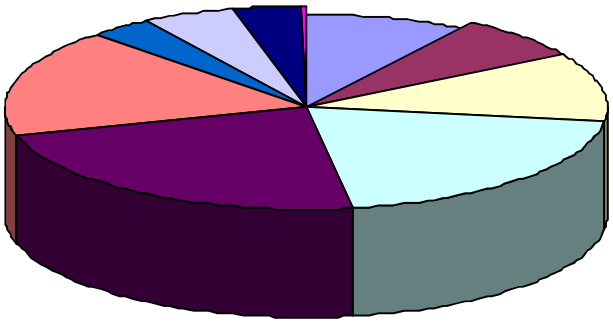
	2005.	2006.	2007.	2008.	2009.	2010.	2010./09.	2005.-10.
	PJ						%	
Kućanstva Households	81,15	78,42	72,96	76,17	77,23	80,81	4,6	-0,1
Uslužni sektor Services	28,24	28,13	27,88	29,76	30,06	31,72	5,5	2,3
Poljoprivreda Agriculture	10,14	10,27	10,05	10,59	10,47	10,27	-1,9	0,3
Građevinarstvo Construction	6,60	7,23	7,69	8,61	6,72	5,85	-12,9	-2,4
UKUPNO OPĆA POTROŠNJA TOTAL OTHER SECTORS	126,12	124,05	118,58	125,12	124,48	128,65	3,3	0,4

Izvor | Source: EIHP

* In Croatia there are approximately 2,2 million buildings/apartments (app. 150 million m^2 of useful surface), 45% of which have been built before 1970
* Non-residential public sector buildings app. 5m^2/inhabitant = 25 million m^2

Residential buildings/apartments in Croatia

Share of inhabited residential buildings/apartments in Croatia



do 1919	9,1%
1919-1945	7,3
1946-1960	10,9
1961-1970	20,1
1971-1980	23,1
1981-1990	17,2
1991-1995	3,4
Iza 1996	5,0
Unknown	3,5
Unfinished dwellings	0,4

Specific annual energy need for heating	do 1950.	1951.-1970.	1971.-1980.	1981 –1987.	1988.-1994.
kWh/m2	250	230	210	200	180

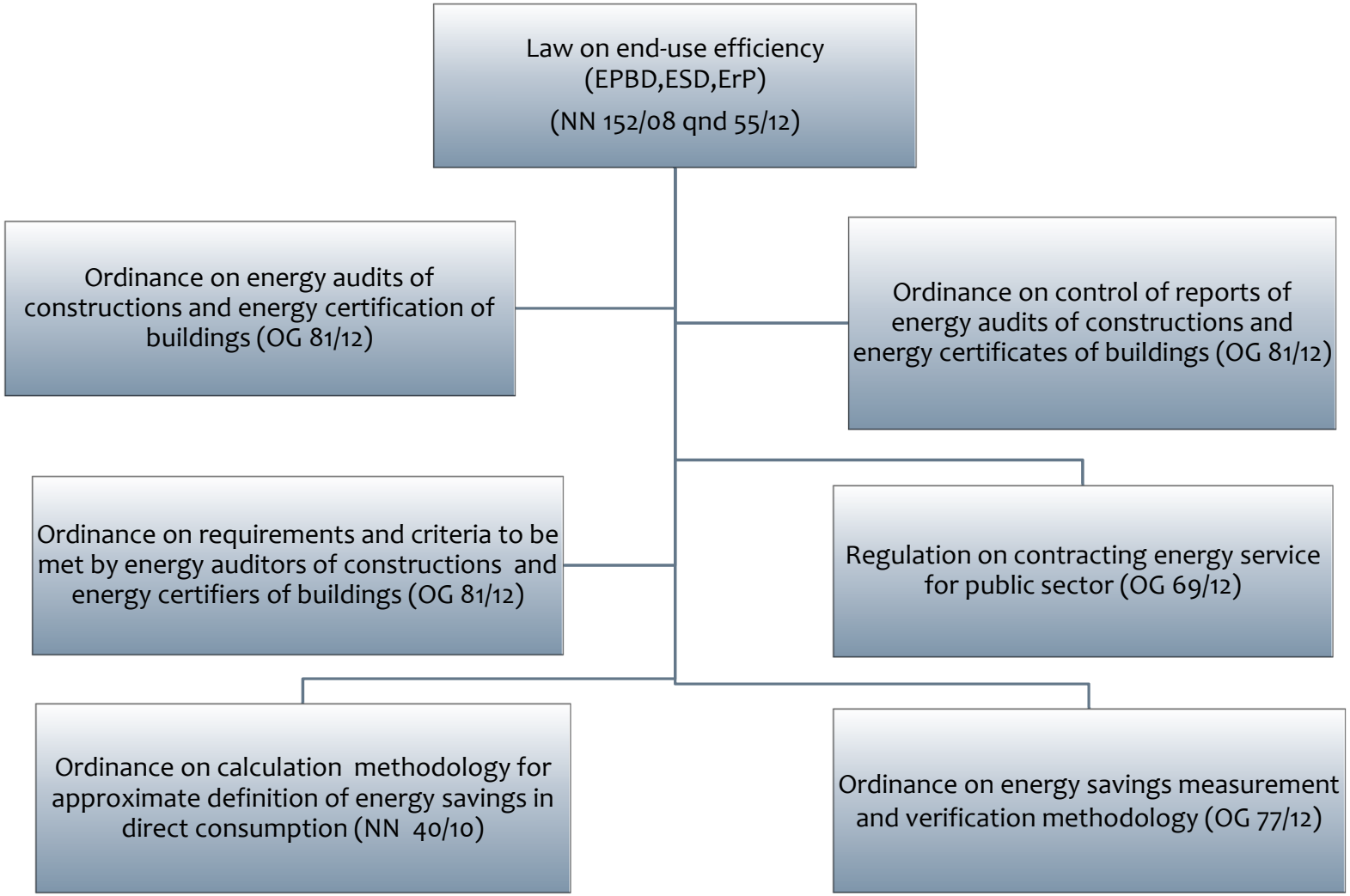
Energy efficiency in buildings - status

- Total useful surface in residential buildings -149.38 million m²
- Total floor area of non-residential buildings – 49.38 million m²
  - Out of which 9,58 million m² public buildings (22%)
- Average consumption of thermal energy for heating 200-250 kWh/m²

Potential savings up to 60% in public buildings

Source: Odyssee indicators, www.buildup.eu

Legal framework for EE in the Republic of Croatia



Energy Efficiency in buildings - actions

* New requirements on energy performance of buildings
* Use of renewable and alternative energy systems for all new buildings as well as for reconstruction of the existing buildings
* Obligatory public display of energy certificates in public buildings for all buildings larger than 500m² and starting from 2015 for all buildings larger than 250m²
* Independent control systems for energy performance certificates

Retrofitting Program for Public Sector Buildings

- Managed by the **Ministry of Construction and Physical Planning**
- **Status**: approx. 11.000 public buildings (1300 energy audits)
  - Average consumption: 252 kWh/m²
  - Average surface: 1,074 m² net useful area
- **Target**: 1% annual reconstruction of all public buildings (app. 100 buildings)
  - Decrease of annual consumption of thermal energy for heating to approx. 50 kWh/m2
  - Systematic integrated reconstruction taking into account the entire lifetime of the buildings - deep reconstruction of buildings in order to achieve maximum savings, 30-60% increase in energy efficiency of public sector buildings
  - Creation of new employment (20.000 jobs annually) that contribute to economic development and sustainable growth
  - Total investment value: € 119 million

Retrofitting Program for Public Sector Buildings

Target groups

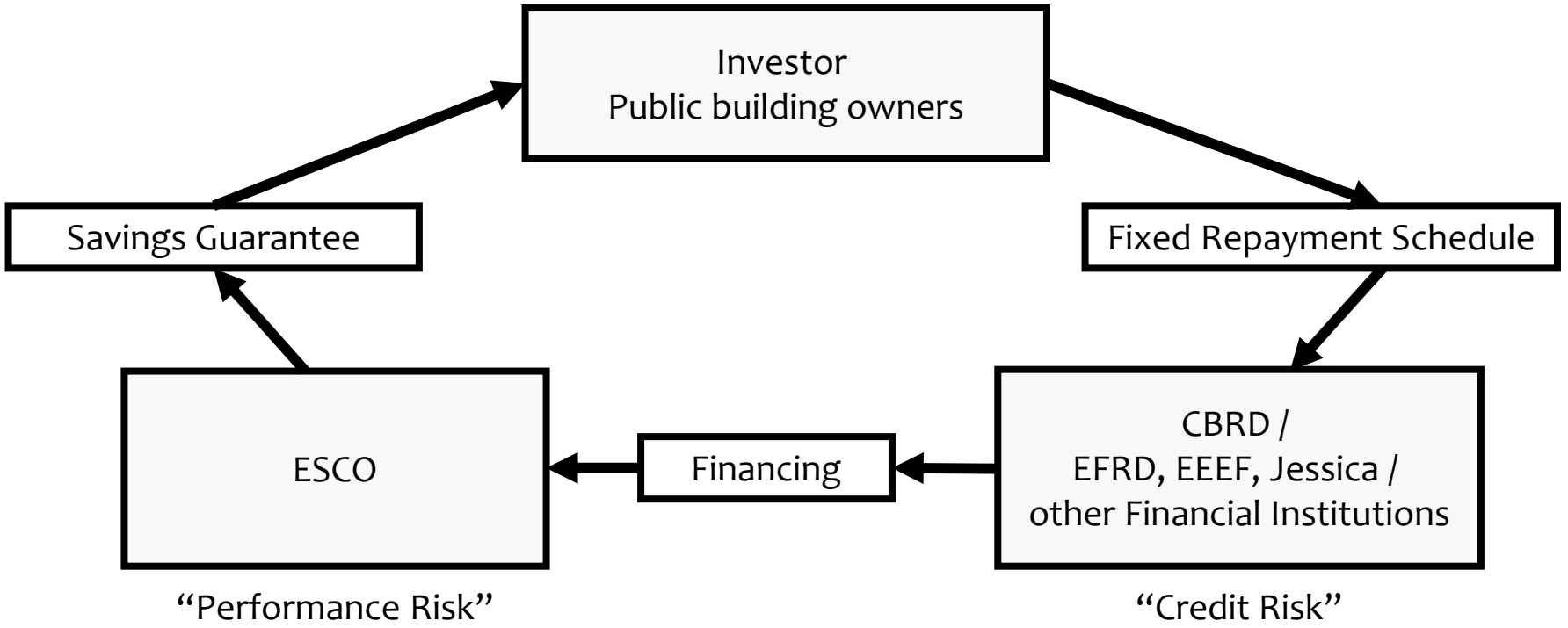
* **buildings owned by local self-government units** (cities, municipalities, and counties)
* **buildings owned by the central government**
  * Budgetary users (ministries, departments, institutes, academies, offices)
  * Extra-budgetary users
* **buildings owned by public sector companies**

Final Beneficiaries

* owners, users, and managers of public sector buildings
* energy service providers (consultants, engineers, ESCO services)
* financial institutions
* certified engineers of architecture, construction, mechanical engineering and electronics
* business and NGO sector
* households
* media

Energy Services Company ("ESCO") and ESCO "Guarantee Saving" Structure

- Creates a Growth Model for the ESCO and Energy Efficiency Industry
- Simplifies Requirements of public building owners and of local banks
- Utilizes Funds to "Buy-Down" Interest Rate to Below Market Rates
- Has 14-Year Repayment Terms



Investment Criteria for EPC projects

* Acceptable project economics (Risk Profile)
* Adequate return to lender
* Compliance with Construction and Environmental Regulations
* Compliance with International Performance Measurement and Verification Protocol “IPMVP”
* ESCO must manage risks of development, construction, technology, cost overruns and performance (savings)
* Public building owners current operating costs will be reduced by an amount at least equal to the debt service required to repay the turn-key construction price for ESCO to implement EEPs

Investment potential

LOCAL SELF-GOVERNMENT UNITS		
Public buildings	**No.**	**Investments (in EUR)**
Hospitals	133	12.063.200
Kindergartens	152	13.151.915
Homes for children	62	9.857.997
Schools	502	153.915.930
Sport facilities	21	4.886.644
Other buildings	163	18.344.758
SUBTOTAL	***1033***	***212.220.444***
GOVERNMENT		
Public buildings	**No.**	**Investmetns (in EUR)**
Health sector buildings (hospitals and clinics)	14	58.178.778
Buildings for social care (homes for children, rehabiliation and educational centers)	253	49.863.300
SUBTOTAL	***267***	***108.042.078***
TOTAL	**1300**	**320.262.522**

Economic and construction industry recovery

* **use energy efficiency measures** to create the proper environment **for inciting investment cycles in construction sector**
* create **new employment** in public and private sectors in multiple branches and industries
* **directly** create **20,000 vacancies** in construction industry, equipment production and maintenance
* **indirectly** create **additional 20,000 vacancies** in other industries and additional employment induced by the development of new positions
* decrease in **fixed public sector energy costs**
* increase in **usage of renewable energy sources**

Thank you for attention!

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