



High-performance energy efficiency standards in buildings in UNECE Region.

Topic 2. Main barriers in implementation of high-performance standards for various building types, including multi apartment buildings

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Role of regional and municipal administrations in implementation of high-performance standards in buildings



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- Regulation of construction and retrofits process
- Adapt regulations for various building types, (private and public, residential and non-residential)
- Prioritization of relevant EE measures for mandatory implementation
- Development of public procurement plan and procedure

Main barriers in implementation of high-performance standards



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- Building owners and managers need reliable information on the energy performance information of their buildings. It is particularly important to be able to quantify the impact of investments in energy efficiency, on reducing energy consumption and improving thermal comfort and health.
- Difference between anticipated or predicted at the design stage energy consumption and actual operational energy performance of buildings when already occupied (in-use energy consumption) is known as the performance gap.

Main barriers in implementation of high-performance standards



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- 61 percent respondents have indicated that the International Performance Measurement & Verification Protocol (IPMVP) as a compliance verification tool to measure the actual performance of the buildings is not used, 17 percent of respondents indicated the IPMVP was used, and 50 percent of respondents have confirmed the existence of software used for compliance verification.
- 68 percent of respondents pointed to the absence of a mandatory requirement to assess post-construction requirement of the thermal bridge and 74 percent indicated that there was no mandatory requirement for the air tightness testing.

Main barriers in implementation of high-performance standards



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- There is an increasing evidence of a performance gap between design intent (i.e. theoretical performance as modelled using national calculation methods) and the actual energy performance in-use. This may suggest one or more of the following issues: the calculation methods are flawed; the enforcement regime is not being undertaken with sufficient rigour; or designers and builders are failing to satisfactorily deliver the outcome intended.
- Closing the performance gap between design intent and regulatory requirement is likely to become an important issue over the next decade if countries are to deliver the climate and environmental targets related to buildings.

Implementation of Energy Performance Certificates (EPC).

Regional level barriers



- Large disparity between the EPC implementation across member States, with sub-region C lagging behind on the use, stringency and coverage as well as quality and monitoring of EPC.
- Specific incentives and enforcement mechanisms are also not widely used in countries in sub-region C.
- Lack of satisfactory quality of EPC in some countries. There are inconsistencies across member States on the choice and design of the assessment methodology which hinders the EPC implementation process, success of which is also constrained by the lack of enforcement, training and monitoring mechanisms.

Regional building codes adjustment practice. Russia



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- Regional codes are mandatory for all Russian and foreign entities involved in construction in the given region, even in isolated cases where federal codes do not apply.
- All regional codes are developed according to criteria described above – they may be consistent with federal codes, or more stringent.
- Regional codes also contain detailed climate parameters not contained in the federal code, including heating-season degree days and solar radiation under real cloud conditions. In a few regions, climate data are provided on a district-by-district basis.

Regional building codes adjustment barriers



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- Regional codes require selective inspection and review to determine compliance with relevant codes, or to assess the need for renovation. The results of this review must reflect technical, energy-related, and thermal aspects, as well as technical and economic analysis of options for renovation.
- To ensure quality in energy-related aspects of building design, the new federal code and regional codes also require the preparation of a special section of the building design, entitled “Energy Efficiency.” This section must include summary parameters for energy performance for various parts of the building design.
- Parameters are presented side-by-side with code-required values in issuing final approvals, regional or municipal plan review agencies must specifically confirm the compliance of the pre-design and design energy-efficiency documentation with relevant codes.

Energy Management Systems on regional (provincial/local level)



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- The Energy Management Systems (EnMS) is the complex of technical and administrative measures, which aimed to reduce the energy consumption of municipal buildings (schools, hospitals, sport facilities, communal service and other public buildings):
 - Herewith EnMS provides:
 - Analysis and monitoring of information about energy consumption for all municipal buildings in the city
 - Opportunity for City Energy Action Plan (CEAP) development
 - Constant control of consumed energy resources of each municipal building
 - A rapid response for changing energy parameters which goes from the buildings

Regional energy management implementation practice.

Kazakhstan



Kazakhstan Law on energy efficiency (2012 edition)

Implementation of regional and city level EnMS is mandatory on country level according to the Law on Energy Efficiency and National Program of Republic Kazakhstan “Energy Saving – 2020”

Complex plan of energy efficiency increase of Republic Kazakhstan 2012-2020

#	Name of the action	Completion form	Responsible	Action start	Expected financing	Source of investment
1	2	3	4	5	6	7
Residential and utilities sector						
9	Include official position of energy manager to all Regional Akimats and city Akimats of Almaty and Astana	Information to the Government of Republic Kazakhstan	Ministry of Industry and New Technologies, Ministry of Economical Development	20 January 2013	n/a	-

Regional energy management implementation practice. Kazakhstan



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Regional (and local) normative acts for EnMS implementation

Development of city and municipal level EnMS actions were integrated in Complex Energy Savings Plan of Karaganda Region:

1) **Chapter Administrative Actions, bullet 2.**

Implementation of international Energy Management Standard ISO 5000:1 to the members of State Energy Register in the Region.

2) **Chapter Energy Saving in public buildings, bullet 181**

Implementation of thermal modernization of buildings envelope, energy metering units, automated heat regulation equipment, exchange internal lighting to EE ones.

3) **Chapter Promotion of energy saving and energy efficiency, bullet 188**

Conduction of seminars and education events.

Barriers in adaptation of EnMS to regional provincial conditions



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- Most of the buildings are outdated and need capital repairs which leads to tremendous investment costs. Most cases are not attractive for private investors
- Difficulties to work with energy supply companies to gather energy data for energy management (integration of servers as one online working system)
- The absence of position of energy manager in Department of Energy and Housing and Communal Services due to local legislation

Barriers in adaptation of EnMS to regional provincial conditions



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- No motivation and interest to reduce the energy consumption in municipal buildings for end users
- The absence of unified automatic system of energy monitoring, collection and analysis of energy consumption (including global GIS)
- Weak technical equipment in municipal buildings (including meters)
- Absence of education for end users (municipal buildings) on regular basis in terms of energy/energy efficiency
- Lack of awareness and understanding of the situation by the city administration for the establishment of EnMS – initial technical assistance is needed

Practical steps of Regional/City EnMS implementation



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Empowerment of energy managers role in working structure municipal and regional administrations

— Nomination of regional energy manager positions within city administration and consultancy support in terms of project planning and operations of these energy managers

— Integration of energy managers into the Coordination Committee for energy and energy efficiency

— Development and implementation of a package of regulatory and administrative documentation, secure and fix the operation of energy managers on the level of city and regional coordination

— Empowerment of energy managers in working with all participants of the current structure of the energy structure administration

Practical steps of Regional/City EnMS implementation



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Implementation of energy monitoring system as a pilot project technical solution

Implementation of “traditional” technical solution of energy monitoring system for municipal buildings

Purchase/installation of necessary server equipment.
Integration of a pilot energy monitoring solution to the server.

Application of energy monitoring software as the main analytical tool for energy manager’s operation

Practical steps of Regional/City EnMS implementation



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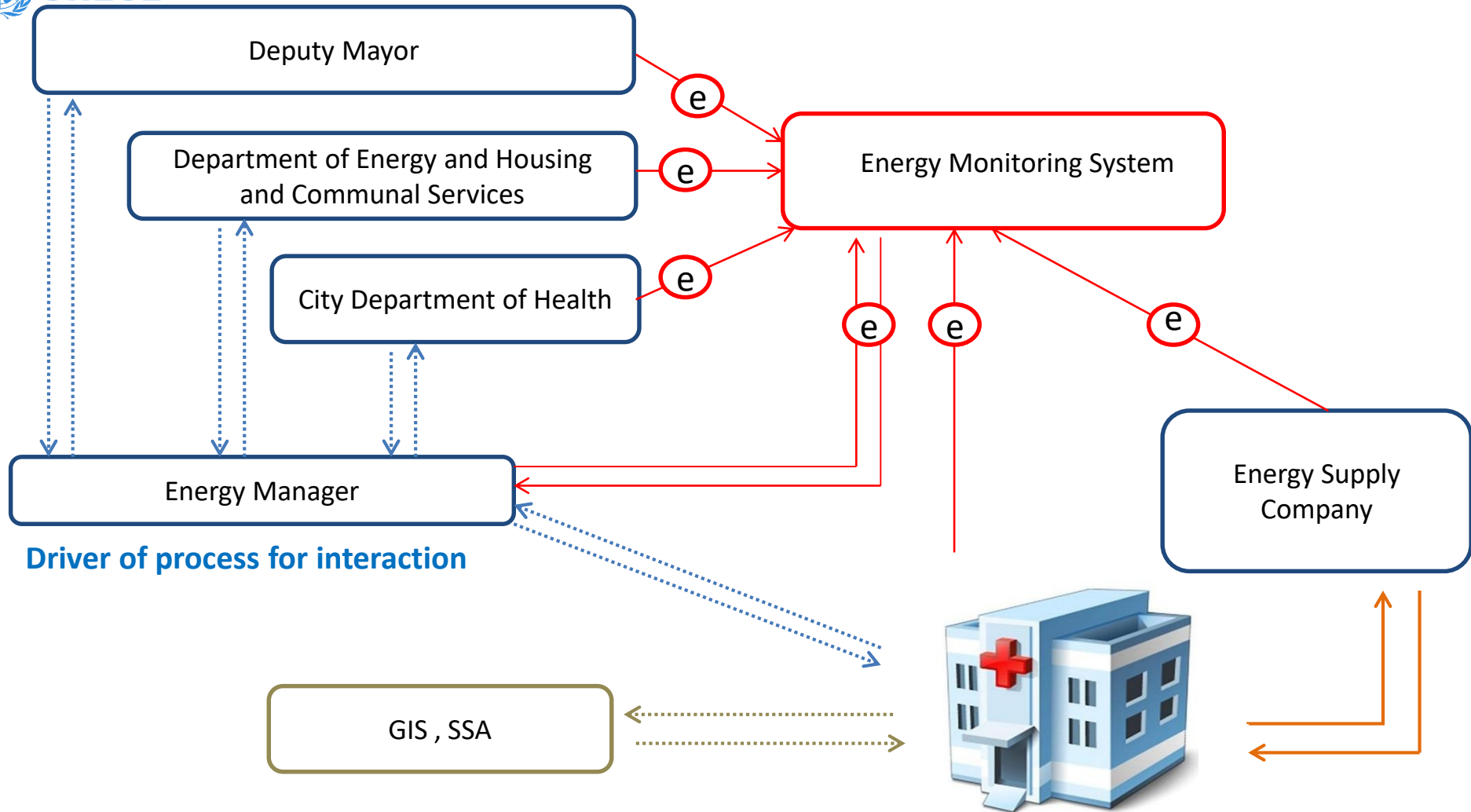
Development of the action plan for energy manager

- Analysis of existing city administration structure in terms of energy use
- Preparation of CENMS methodology for mid and long term perspective (algorithm of actions and related work plans)
- Development of methodology for CEAP development (municipal buildings)
- Train the trainers courses for energy managers (education of all participants of the existing city administrative structure)
- Development pilot feasibility studies for municipal buildings as further methodology

Regional/City EnMS operation scheme



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Only complex approach ensure the proper operation of CEnMS !!!!

Conclusion



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- Adjustment of EE building construction and retrofit codes requires deep involvement of regional and local responsible governmental authorities into the process.
- There are several directions recommended for adjustment and further implementation on sub-country level:
 - high-performance standards for buildings construction and retrofit (both private and public sectors)
 - implementation of EPC, and improvement of local enforcement
 - development and integration of EnMS into administrative regulations

Practical task



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- PRACTICAL TASK TOPIC 7 PART 1.