



Partnership of
European Regions
SUSTAINABLE
CONSTRUCTION



**Partnership of European Regions on Energy
Efficiency in Buildings**

Preliminary results of the survey

Brussels, 24th January 2018



Topics	Subtopics	N (priorities)	N (answers)	N Topics (priorities)
Eco Construction, Bioclimatism and Institution of Buildings	New Materials with low carbon footprint	5	8	6
	Innovative constructive processes	4	7	
	Bioclimatic solutions based on plant elements	4	5	
Renewable Energy Integration in Buildings	Climatisation with renewable energies	5	7	11
	Self-consumption and energy storage	5	7	
	Low cost solutions aimed at vulnerable groups	8	4	
Systems of maximum Energy Efficiency use in Buildings and Cities	Innovative solutions of high energy efficiency	8	8	12
	Smart Energy management systems and IoT	9	7	
	Advanced solutions for energy rehabilitation	7	5	

Systems of maximum Energy Efficiency use in Buildings and Cities

Smart Energy management systems and IoT

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
Észak-Alföld Region	2	3	4	3	3
NWC	3	3	4	4	3
South-Karelia	5	4	4	4	4
Central Slovenian Region	5	5	4	4	2
Primorska	5	5	4	4	4
ASTURIAS	3	3	2	3	3
Friuli Venezia Giulia	5	4	4	4	3

Assets offered

Regions	Know-how	Basic infra	Specific infra	Leading companies
Észak-Alföld Region	YES	YES	YES	YES
NWC	YES	YES	YES	YES
South-Karelia	YES	YES	YES	YES
Central Slovenian Region	YES	YES	YES	NO
Primorska	YES	YES	NO	NO
ASTURIAS	YES	NO	YES	NO
Friuli Venezia Giulia	YES	YES	NO	YES

Challenges

Regions	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
Észak-Alföld Region	NO	NO	YES	YES	YES
NWC	YES	YES	YES	YES	YES
South-Karelia	YES	YES	NO	NO	YES
Central Slovenian Region	YES	YES	YES	YES	YES
Primorska	YES	YES	YES	YES	YES
ASTURIAS	YES	YES	YES	YES	YES
Friuli Venezia Giulia	YES	YES	YES	YES	YES

Assets looked for

Regions	Competitiveness needs	Training needs	Standardisation needs	Information needs
Észak-Alföld Region	YES	YES	NO	YES
NWC	YES	YES	YES	YES
South-Karelia	YES	NO	YES	YES
Central Slovenian Region	NO	NO	YES	YES
Primorska	YES	YES	YES	YES
ASTURIAS	YES	NO	YES	YES
Friuli Venezia Giulia	YES	NO	NO	YES

Systems of maximum Energy Efficiency use in Buildings and Cities

Smart Energy management systems and IoT

- **Missing capabilities/assets**
 - Less capabilities at higher TRLs
 - Lack of leading companies
- **Suggested areas for cross regional collaborations:**
 - Pilot project to install a smart management system in public buildings at local level (Észak-Alföld Region)
 - 5G technologies in energy management (South-Karelia)
 - Energy-Saving University of Ljubljana (Central Slovenian Region)
 - Monitoring of power flows in a micro grid (Friuli Venezia Giulia)

Systems of maximum Energy Efficiency use in Buildings and Cities

Advanced solutions for energy rehabilitation

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
NWC	3	3	3	4	3
Central Slovenian Region	2	2	2	1	1
Primorska	4	4	3	3	3
ASTURIAS	1	1	1	1	1
Friuli Venezia Giulia	5	5	4	4	4

Assets offered

Region	Know-how	Basic infra	Specific infra	Leading companies
NWC	YES	YES	YES	YES
Central Slovenian Region	NO	NO	NO	NO
Primorska	YES	YES	NO	NO
ASTURIAS	NO	NO	NO	NO
Friuli Venezia Giulia	YES	YES	NO	NO

Challenges

Region	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
NWC	YES	YES	YES	YES	YES
Central Slovenian Region	NO	NO	NO	NO	NO
Primorska	YES	YES	YES	YES	YES
Friuli Venezia Giulia	YES	YES	YES	YES	YES

Assets looked for

Regions	Competitiveness needs	Training needs	Standardisation needs	Information needs
NWC	YES	YES	YES	YES
Central Slovenian Region	NO	YES	NO	YES
Primorska	YES	YES	YES	YES
ASTURIAS	YES	YES	YES	YES
Friuli Venezia Giulia	YES	NO	NO	NO

Systems of maximum Energy Efficiency use in Buildings and Cities

Advanced solutions for energy rehabilitation

- **Missing capabilities/assets**
 - Strong complementarities
 - Lack of specific infrastructures and leading companies
- **Suggested areas for cross regional collaborations:**
 - *SmarT€R*: Smart solutions and Technologies for Energy saving and emission Reduction (Friuli Venezia Giulia)
 - *SmarT€ST*: SmarT Energy saving and maintenance Solutions Technologies (Friuli Venezia Giulia)

Systems of maximum Energy Efficiency use in Buildings and Cities

Innovative solutions of high energy efficiency

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
Pomorskie	5	5	5	5	4
NWC	3	3	4	4	4
South-Karelia	4	3	3	4	5
Campania	5	5	1	1	1
Central Slovenian Region	4	4	2	1	1
Primorska	4	4	4	4	4
ASTURIAS	3	2	2	2	3
Friuli Venezia Giulia	5	5	4	5	5

Assets offered

Region	Know-how	Infra basic	Infra specific	Leading companies
Pomorskie	YES	YES	YES	NO
NWC	YES	YES	YES	YES
South-Karelia	YES	YES	YES	NO
Campania	YES	YES	NO	YES
Central Slovenian Region	YES	NO	NO	NO
Primorska	YES	YES	NO	NO
ASTURIAS	NO	NO	NO	NO
Friuli Venezia Giulia	YES	YES	YES	YES

Challenges

Region	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
Pomorskie	YES	YES	YES	YES	YES
NWC	YES	YES	YES	YES	YES
South-Karelia	NO	YES	NO	NO	YES
Campania	YES	YES	YES	YES	YES
Central Slovenian Region	YES	YES	YES	YES	NO
Primorska	YES	YES	YES	YES	YES
Friuli Venezia Giulia	YES	YES	YES	NO	YES

Assets looked for

Region	Competitiveness needs	Training needs	Standardisation needs	Information needs
Pomorskie	YES	YES	YES	YES
NWC	YES	YES	YES	YES
South-Karelia	YES	YES	YES	YES
Campania	YES	YES	YES	YES
Central Slovenian Region	NO	YES	NO	YES
Primorska	YES	YES	YES	YES
Friuli Venezia Giulia	YES	YES	NO	YES

Systems of maximum Energy Efficiency use in Buildings and Cities

Innovative solutions of high energy efficiency

- **Missing capabilities/assets**
 - Strong complementarities
 - Lack of specific infrastructures and leading companies
- **Suggested areas for cross regional collaborations:**
 - Energy efficiency and Renewable Energy in Hospital (Public buildings) (Campania)
 - Financing tools for energy efficiency in private buildings (Condominium) (Campania)
 - Uni-UD-T smart fan coil through IoT paradigm (Friuli Venezia Giulia)

Eco Construction, Bioclimatism and Institution of Buildings

New materials with low carbon footprint

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
Pomorskie	3	3			
NWC	2	3	2	2	2
South-Karelia	2	4	3	4	3
Lapland	3	3	3	3	2
Central Slovenian Region	4	3	3	2	2
Primorska	5	5	5	4	5
ASTURIAS	4	4	3	2	2
Sud Provence Alpes Côte d'Azur	2	4	5	5	3

Assets offered

Region	Know-how	Infra basic	Infra specific	Leading companies
NWC	YES	YES	YES	NO
South-Karelia	YES	YES	YES	YES
Lapland	YES	YES	YES	YES
Central Slovenian Region	YES	YES	YES	NO
Primorska	YES	YES	YES	NO
ASTURIAS	YES	YES	YES	NO
Sud Provence Alpes Côte d'Azur	YES	YES	NO	YES

Challenges

Regions	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
NWC	YES	YES	YES	YES	YES
South-Karelia	YES	YES	YES	NO	YES
Lapland	YES	YES	YES	NO	YES
Central Slovenian Region	NO	NO	NO	YES	NO
Primorska	YES	YES	YES	YES	YES
ASTURIAS	YES	YES	YES	NO	YES
Sud Provence Alpes Côte d'Azur	NO	YES	YES	YES	YES

Assets looked for

Region	Competitiveness needs	training needs	Standardisation needs	Information needs
NWC	YES	YES	YES	YES
South-Karelia	YES	NO	YES	NO
Lapland	YES	YES	YES	NO
Central Slovenian Region	NO	YES	NO	YES
Primorska	YES	YES	YES	YES
ASTURIAS	YES	NO	YES	YES
Sud Provence Alpes Côte d'Azur	YES	YES	YES	YES

Eco Construction, Bioclimatism and Institution of Buildings

New materials with low carbon footprint

- **Missing capabilities/assets**
 - Less capabilities at higher TRLs
 - Lack of leading companies
- **Suggested areas for cross regional collaborations:**
 - Geopolymer concrete (South-Karelia)
 - Low carbon robust wood constructions (Lapland)
 - Smart campus (Sud Provence Alpes Côte d'Azur)
 - Energy saving in secondary schools buildings (Sud Provence Alpes Côte d'Azur)

Eco Construction, Bioclimatism and Institution of Buildings

Bioclimatic solutions based on plant elements

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
South-Karelia	1	1	1	1	1
Lapland	1	1	1	1	1
Central Slovenian Region	2	2	1	1	1
Primorska	5	5	5	4	5
ASTURIAS	1	1	1	1	1

Assets offered

Region	Know-how	Infra basic	Infra specific	Leading companies
South-Karelia	NO	NO	NO	NO
Lapland	YES	YES	YES	NO
Central Slovenian Region	NO	NO	NO	NO
Primorska	YES	YES	NO	NO
ASTURIAS	NO	NO	NO	NO

Challenges

Region	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
South-Karelia	NO	NO	NO	NO	NO
Lapland	NO	NO	NO	NO	NO
Central Slovenian Region	NO	NO	NO	NO	NO
Primorska	YES	YES	YES	YES	YES

Assets looked for

Region	Competitiveness needs	training needs	Standardisation needs	Information needs
South-Karelia	NO	NO	NO	NO
Lapland	NO	NO	NO	NO
Central Slovenian Region	YES	YES	NO	YES
Primorska	YES	YES	YES	YES

Eco Construction, Bioclimatism and Institution of Buildings

Bioclimatic solutions based on plant elements

- **Missing capabilities/assets**
 - Limited capabilities in all TRLs, except Primorska
 - Lack of most assets
- **Suggested areas for cross regional collaborations:**
 - No concrete suggestions

- Additional slides

Renewable Energy Integration in Buildings

Self consumption and energy storage

Capabilities ((From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
Andalusia	5	5	4	4	4
NWC	3	3	3	3	2
South-Karelia	5	5	4	4	3
Central Slovenian Region	3	3	3	2	1
Primorska	3	3	3	3	3
ASTURIAS	2	1	1	2	1
Friuli Venezia Giulia	4	4	4	3	3

Assets

Region	Know-how	Basic infra	Specific infra	Leading companies
Andalusia	YES	NO	YES	NO
NWC	YES	YES	YES	YES
South-Karelia	YES	YES		YES
Central Slovenian Region	YES	NO	NO	NO
Primorska	YES	YES	NO	NO
ASTURIAS	YES	NO	NO	NO
Sud Provence Alpes Côte d'Azur	YES			YES
Friuli Venezia Giulia	YES	YES	YES	YES

Challenges

Region	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
Andalusia	YES	YES	YES	YES	YES
NWC	YES	YES	YES	YES	YES
South-Karelia	NO	YES	YES	YES	YES
Central Slovenian Region	NO	NO	NO	NO	NO
Primorska	YES	YES	YES	YES	YES
ASTURIAS	NO	NO	YES	YES	YES
Friuli Venezia Giulia	YES	YES	YES	YES	YES

Assets looked for

Region	Competitiveness needs	Training needs	Standardisation needs	Information needs
Andalusia	YES	NO	YES	NO
NWC	YES	YES	YES	YES
South-Karelia	YES	NO	YES	YES
Central Slovenian Region	NO	YES	NO	YES
Primorska	YES	YES	YES	YES
ASTURIAS	YES	YES	YES	YES
Friuli Venezia Giulia	YES	YES	YES	NO

Self consumption and energy storage (2/2)

- **Missing capabilities/assets?**
 - Strong complementarities but relatively weaker at higher TRLs
 - Lack of specific infrastructures
- **Identified possible areas for cross regional collaborations:**
 - Industrialisation / Competitiveness – Standardisation
 - Involvement of regional actors and integration of interregional ones
 - Information
- **Suggested areas for cross regional collaborations:**
 - Low carbon robust wood constructions (Lapland)

Climatisation with renewable energy (1/2)

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Region	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
Pomorskie	5	5	5	4	4
NWC	3	3	3	3	3
South-Karelia	5	5	4	4	3
Central Slovenian Region	5	5	4	3	2
Primorska	5	5	5	4	5
ASTURIAS	1	1	1	1	1
Sud Provence Alpes Côte d'Azur		4		4	

Assets offered

Region	Know-how	Basic infra	Specific infra	Leading companies
Pomorskie	YES	YES	YES	YES
NWC	YES	YES	YES	YES
South-Karelia	YES	YES	YES	YES
Central Slovenian Region	YES	YES	YES	NO
Primorska	YES	YES	NO	NO
ASTURIAS	NO	NO	NO	NO
Sud Provence Alpes Côte d'Azur	YES	YES		YES

Challenges

Region	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
NWC	YES	YES	YES	YES	YES
South-Karelia	YES	YES	YES	NO	YES
Central Slovenian Region	NO	NO	NO	NO	NO
Primorska	YES	YES	YES	YES	YES
Sud Provence Alpes Côte d'Azur	YES		YES	YES	YES

Assets looked for

Region	Competitiveness needs	Training needs	Standardisation needs	Information needs
NWC	YES	YES	YES	YES
South-Karelia	NO	NO	YES	YES
Central Slovenian Region	NO	YES	NO	YES
Primorska	YES	YES	YES	YES
Sud Provence Alpes Côte d'Azur	YES	YES	YES	YES

Climatisation with renewable energy (2/2)

- **Missing capabilities/assets?**
 - Strong complementarities but relatively weaker at higher TRLs
- **Identified possible areas for cross regional collaborations:**
 - Internationalisation / Integration of interregional actors
 - Industrialisation
 - Standardisation
 - Training
 - Information sharing
- **Suggested areas for cross regional collaborations:**
 - Testing demand elasticity in district heating and cooling grids (South-Karelia)

Innovative constructive processes (1/2)

Capabilities (From 1 (very low capabilities) to 5 (very strong capabilities))

Regions	TRL1	TRL 2-4	TRL 5-6	TRL 7-8	TRL 9
NWC	2	3	3	2	2
South-Karelia	1	1	2	3	4
Lapland	2	2	2	2	1
Central Slovenian Region	3	3	3	2	2
Primorska	5	5	5	4	5
ASTURIAS	2	3	2	2	2
Sud Provence Alpes Côte d'Azur	2	3	5	5	3

Assets offered

Region	Know-how	Basic infra	Specific infra	Leading companies
NWC	YES	YES	YES	YES
South-Karelia	NO	NO	YES	YES
Lapland	YES	YES	YES	NO
Central Slovenian Region	YES	YES		
Primorska	YES	YES	NO	NO
ASTURIAS	NO	NO	NO	NO
Sud Provence Alpes Côte d'Azur	YES	NO	NO	YES

Challenges

Region	Internationalisation	Market Uptake	Industrialisation	Involvement of regional actors	Integration of interregional actors
NWC	YES	YES	YES	YES	YES
South-Karelia	YES	YES	YES	NO	YES
Lapland	YES	YES	YES	YES	YES
Central Slovenian Region	NO	NO	NO	NO	NO
Primorska	YES	YES	YES	YES	YES
ASTURIAS	YES	NO	YES	NO	YES
Sud Provence Alpes Côte d'Azur		YES	YES	YES	YES

Assets looked for

Region	Competitiveness needs	Training needs	Standardisation needs	Information needs
NWC	YES	YES	YES	YES
South-Karelia	YES	NO	YES	YES
Lapland	YES	YES	YES	YES
Primorska	YES	YES	YES	YES
ASTURIAS	YES	NO	YES	YES
Sud Provence Alpes Côte d'Azur	YES	YES	YES	YES

Innovative constructive processes (2/2)

- **Missing capabilities/assets?**
 - Strong complementarities
 - Lack of leading companies and infrastructures (relatively)
- **Identified possible areas for cross regional collaborations:**
 - Industrialisation and competitiveness
 - Standardisation
 - Information
- **Suggested areas for cross regional collaborations:**
 - Low carbon robust wood constructions (Lapland)

Additional slides

- **Complementarities need to be further prioritized and elaborated (additional collection of information and analysis → Thematic Workshops)**
- **Transversal ‘challenges’ : standardization, market uptake and information sharing – Cross sub thematic projects?**