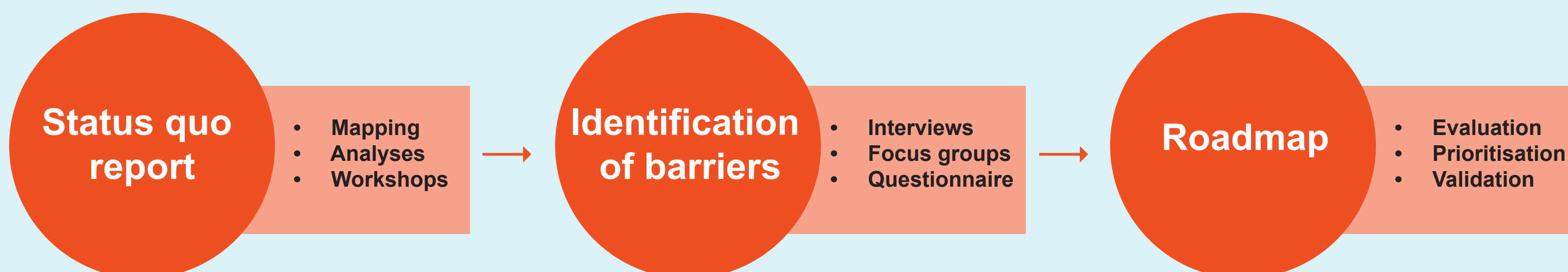


DENMARK

LINK BETWEEN STATUS QUO AND ROADMAP



STATUS QUO OVERALL CONCLUSIONS

STATUS EDUCATIONAL LEVEL

25 % unskilled labour 75 % skilled
4-year vocational education
Well-established system for continuing education

TARGET FULFILMENT REQUIRES...

- Massive effort in buildings erected before 1979
- Between 6,000-13,000 extra on-site workers
- Stronger abilities to look at the building as a whole
- Better cross-functional cooperation and insight
- Enhanced communication between architects/engineers and on-site workers

CHALLENGES

- Lack of skilled and unskilled workers in coming years
- Many structural, economic and image barriers in existing education system
- Lack of incentive structure to stimulate interest for continuing education

ENDORSEMENT PROCESS

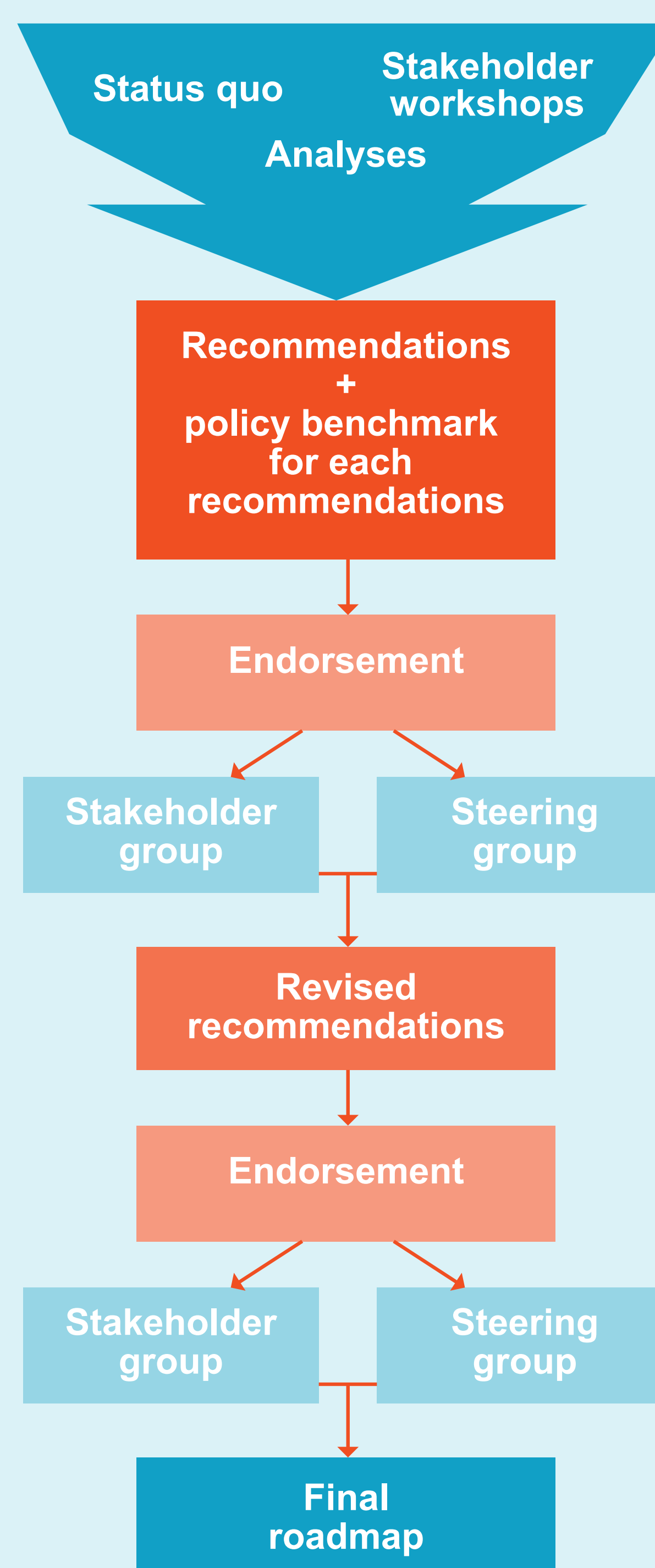
- Project followed closely by steering group
- Workshops and meetings throughout the project period
- Extensive discussions with steering group and stakeholder group based on status quo and analysis findings

STEERING GROUP

- BAT-Kartellet (umbrella organisation for building workers unions)
- The Danish Mechanical and Electrical Contractors' Association (employers association)
- The Danish Construction Association (employers' association)
- The Confederation of Danish Industry (employers' association)
- The Danish Education and Training Board of Building and Construction (common secretariat for employers and employee organisations regarding the education programmes for the building sector)
- DS Trade and Industry (employers' association)
- Danish Energy Authority and other consortium partners for Build Up Skills DK

STAKEHOLDER GROUP

- Broad group of players within education related to the building sector including heads of public schools, education consultants, private education providers, industry, etc.



HOLISTIC APPROACH

Three main roads to solving lack of qualified workers:

1. The influx of labor could be increased
2. The existing workforce could be trained further in order to increase the level of competence
3. The loss of qualified labour to other sectors could be addressed

BUS-DK steering group recommended holistic approach by looking at all three roads.

ANALYSES FOR DEVELOPMENT OF ROADMAP

Goal: To identify barriers and needs

EXTENSIVE DESK RESEARCH

Existing reports, studies and notes, etc. concerning energy competences in education and continuing education

IN-DEPTH INTERVIEWS AMONG

- Specialist teachers
- Education managers
- Heads of schools
- Heads of training
- Education consultants
- Engineers and architects
- Alternative education providers
- Industry associations and suppliers
- Knowledge and competence centres
- Employer and employee organisations

RESEARCH AMONG CRAFTSMEN

- Telephone interviews
- Focus groups
- Web survey

RESULTS

28 identified needs, giving input and a qualified platform to the discussions in the stakeholder group and steering group and to the development of the final roadmap. Covered the following areas:

- Energy competences in upper secondary vocational education
- Intake and recruitment to vocational education and the construction sector
- Materials and praxis in upper secondary vocational education and adult vocational training
- Specialist teacher competences in upper secondary vocational education and adult vocational training
- Adult vocational training and alternative continuing education provision



DENMARK

ENDORSED ROADMAP RECOMMENDATIONS

Final roadmap: Nine overall endorsed recommendations and 26 recommended initiatives



RECOMMENDATION 1: Upper secondary vocational education (EUD)

Development and introduction of new joint competence outcomes for energy topics in both school-based and enterprise based portions of upper secondary vocational education.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Develop new joint competence outcomes for energy topics	Establish a strategic collaboration in order to formulate new joint competence outcomes	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges Other occupational experts 	2013	1-2 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education 	1
Develop guidelines for the interpretation of new joint competence outcomes	Develop new subjects and guidelines for the interpretation of new competence outcomes	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges Other occupational experts 	2014	2-4 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education 	1
Interdisciplinary continuing education for specialist teachers	Carry out a systematic investigation among specialist teachers to establish the need for skills upgrading of interdisciplinary competences related to energy topics. Subsequently, implement tailored continuing education initiatives.	<ul style="list-style-type: none"> Vocational colleges Consultancy Suppliers of tailor-made continuing and further education of specialist teachers 	2013	2-4 years	<ul style="list-style-type: none"> Vocational colleges The Ministry of Children and Education 	12

RECOMMENDATION 2: Upper secondary vocational education (EUD)

The trade committees review their education programmes to assure sufficient content regarding energy.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Develop energy subject matter (modules) for standard vocational programmes and for relevant add-on courses.	Establish a strategic collaboration in order to carry out a systematic review of current education programmes and subsequent development of needed energy subjects in upper secondary vocational programmes	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges Other occupational experts 	2013	1-2 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education 	1
Develop an extension of relevant vocational programmes, for example with an energy theme, lasting six months.	Establish a strategic collaboration in order to develop programme extensions dealing with energy topics for the relevant vocational education programmes.	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges Other occupational experts 	2014	2-4 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education 	1
Increase joint information efforts - with trade associations, education institutions, youth counsellors, etc. - about new and existing opportunities for energy specialisation.	Establish a strategic collaboration in order to systematically review existing information material, and subsequently develop joint communication strategies and materials.	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges UUUC (Youth Counselling Centres) Occupational experts Communication agencies 	2014	1-2 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education Occupational and trade associations 	1.5

RECOMMENDATION 3: Upper secondary vocational education (EUD)

Increased recruitment to vocational education programmes.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Raise the priority of vocational education programmes at the Municipal Youth Guidance Centres. Counsellors should acquire greater familiarity about vocational programmes and what they can lead to of further education opportunities.	Carry out a systematic review of counsellors to assess any lack of knowledge about the need for energy competences in the labour market. Subsequently, implement tailored continuing education initiatives.	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education UUUC (Youth Counselling Centres) Other occupational experts 	2013	1-2 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education UUUC (Youth Counselling Centres) 	2
Establish a talent programme for energy effective construction and energy renovation.	Establish a strategic collaboration in order to develop a talent programme.	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education Other occupational experts 	2014	2-4 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education 	2
Information campaigns about EUX (general upper secondary vocationally oriented) programmes and opportunities for further study in energy and energy sustainability.	Carry out a systematic review of existing information channels and materials. Subsequently, develop joint communication strategies and materials.	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education UUUC (Youth Counselling Centres) Communication agencies Other occupational experts 	2013	1-2 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education UUUC (Youth Counselling Centres) 	2
Strengthen recruitment from general upper secondary to vocational programmes through visible credit transfer opportunities.	Establish a strategic collaboration in order to review existing information channels and materials. Subsequently, develop joint communication strategies and materials.	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education UUUC (Youth Counselling Centres) Communication agencies Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Trade committees Social partners Vocational colleges The Ministry of Children and Education UUUC (Youth Counselling Centres) 	2

RECOMMENDATION 4: Continuing and further education

Develop short-cycle academy profession modules in energy topics.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Develop new, national professional modules as short as 5 ECTS points. These modules can be incorporated into a complete academy profession qualification.	Establish a strategic partnership in order to develop new academy profession modules in energy topics.	<ul style="list-style-type: none"> Academy profession institutions Ministry of Science, Innovation and Higher Education Social partners Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Academy profession institutions Ministry of Science, Innovation and Higher Education Social partners 	2

RECOMMENDATION 5: Continuing and further education

Make craftsman enterprises aware of the value of skills upgrading through the adult vocational training system (AMU)

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Certify course packages consisting of existing AMU outcomes.	Establish a strategic collaboration among all relevant sector stakeholders in order to certify course packages consisting of existing AMU outcomes.	<ul style="list-style-type: none"> Vocational training committees Local training committees Social partners Vocational colleges Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Vocational training committees Social partners Vocational colleges The Ministry of Children and Education 	1
Develop of new course packages that can lead to an industry certification	Establish a strategic collaboration in order to develop new course packages not yet specified in terms of AMU outcomes, and concurrently assure national recognition of certification.	<ul style="list-style-type: none"> Vocational training committees Local training committees Social partners Vocational colleges Other occupational experts Adult continuing training (VEU) centres 	2014	2-4 years	<ul style="list-style-type: none"> Vocational training committees Social partners Vocational colleges The Ministry of Children and Education 	3
Establish professional networks etc. to disseminate the value of skills upgrading	Establish new networks or strengthen existing networks regarding the value-added of continuing education and training.	<ul style="list-style-type: none"> Social partners Manufacturers Education institutions Adult continuing training (VEU) centres Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Social partners Manufacturers Education institutions Adult continuing training (VEU) centres 	1

RECOMMENDATION 6: Continuing and further education

Develop more and better information to the target group about continuing and further education in energy topics.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Gather all information on continuing and further education and training in energy topics in an interdisciplinary portal - including information about course opportunities	Establish a strategic collaboration in order to systematically review existing communication platforms and materials.	<ul style="list-style-type: none"> Vocational training committees Social partners Adult continuing training (VEU) centres Education institutions Other occupational experts The Ministry of Children and Education 	2014	0-1 years	<ul style="list-style-type: none"> Vocational training committees Social partners Adult continuing training (VEU) centres Education institutions The Ministry of Children and Education 	1
Adult continuing training (VEU) centres must be better prepared to offer counselling on continuing education opportunities in energy topics.	Carry out a systematic investigation of VEU counsellors to assess any need for skills upgrading of knowledge regarding continuing and further education in energy topics. Subsequently, implement tailored continuing education initiatives.	<ul style="list-style-type: none"> Vocational training committees Social partners Adult continuing training (VEU) centres Education institutions Consultancy Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Vocational training committees Social partners Adult continuing training (VEU) centres Education institutions 	3
Establish a hotline	Establish a strategic collaboration in order to implement a joint hotline.	<ul style="list-style-type: none"> Vocational training committees Social partners Adult continuing training (VEU) centres Education institutions Other occupational experts The Ministry of Children and Education 	2014	0-2 years	<ul style="list-style-type: none"> Vocational training committees Social partners Adult continuing training (VEU) centres Education institutions The Ministry of Children and Education 	1

RECOMMENDATION 7: Continuing and further education

Carry out a systematic skills upgrading in energy topics for teachers in the adult vocational training system, and further develop a quality assurance system for the assessment and assurance of specialist teacher competences in energy topics.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Systematic investigation of the need for skills upgrading in energy topics of specialist adult vocational training teachers	Carry out a systematic investigation of specialist teachers to assess any need for continuing education in energy topics. Subsequently, implement tailored continuing education initiatives.	<ul style="list-style-type: none"> Vocational training committees Education institutions Other occupational experts Social partners Trade associations The Ministry of Children and Education 	2014	1-2 years	<ul style="list-style-type: none"> Vocational training committees Education institutions Social partners Trade associations The Ministry of Children and Education 	12
Develop better teaching resources for energy topics	Review existing material and develop new teaching resources.	<ul style="list-style-type: none"> Vocational training committees Education institutions Social partners Trade associations The Ministry of Children and Education Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Vocational training committees Education institutions Social partners Trade associations The Ministry of Children and Education 	2
Develop a framework for quality assurance of teacher competences in energy topics	Establish a strategic collaboration in order to develop a framework for a quality assurance system.	<ul style="list-style-type: none"> Vocational training committees Education institutions Social partners Trade associations The Ministry of Children and Education Other occupational experts 	2015	1-2 years	<ul style="list-style-type: none"> Vocational training committees Education institutions Social partners Trade associations The Ministry of Children and Education 	2
Develop a framework for uniform national continuing education opportunities for teachers	Establish a strategic collaboration in order to develop a framework for a uniform national continuing education concept.	<ul style="list-style-type: none"> Vocational training committees Education institutions, including academy profession Social partners Trade associations The Ministry of Children and Education Other occupational experts 	2014	0-1 years	<ul style="list-style-type: none"> Vocational training committees Education institutions, including academy profession Social partners Trade associations The Ministry of Children and Education 	1
Develop a portal for teaching resources for specialist teachers	Develop and establish a joint portal for teaching resources regarding energy topics.	<ul style="list-style-type: none"> Vocational training committees Education institutions, including academy profession Social partners Trade associations The Ministry of Children and Education Other occupational experts 	2014	0-1 years	<ul style="list-style-type: none"> Vocational training committees Education institutions, including academy profession Social partners Trade associations The Ministry of Children and Education 	2

RECOMMENDATION 8: Tertiary education

Promote collaborative models between architects, engineers, constructing architects, and construction craftsmen regarding energy topics. This should apply both to upper secondary vocational education programmes and to continuing and further education and training.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Establish pilot projects such as interdisciplinary teacher collaboration, interdisciplinary courses shared between education institutions, and interdisciplinary continuing education courses in energy topics.	Carry out interdisciplinary pilot projects in energy topics.	<ul style="list-style-type: none"> Vocational colleges Schools of architecture University colleges Business academies Schools of engineering Social partners Other occupational experts 	2013	1-2 years	<ul style="list-style-type: none"> Vocational colleges Schools of architecture University colleges Business academies Schools of engineering Social partners 	2
Prepare a motivational catalogue that clearly shows the bottom-line value of interdisciplinary understanding in construction.	Develop a case-based "information catalogue" that clearly describes the value of ongoing continuing education, targeting for example SME enterprises and employees.	<ul style="list-style-type: none"> Trade associations Social partners Education institutions Other occupational experts 	2014	1-2 years	<ul style="list-style-type: none"> Trade associations Social partners 	1

RECOMMENDATION 9: Structural conditions

Increase collaboration and communication between trade committees and vocational training committees regarding energy topics.

Initiatives	Description	Possible participants	Expected start	Expected time frame	Own/ co-financing	Estimated costs (million DKK)
Establish binding collaboration between trade committees and vocational training committees, including a concrete strategy for the provision of joint interdisciplinary energy subjects and courses.	Develop a strategy and form of collaboration for joint energy courses and subjects offered by trade committees and vocational training committees.	<ul style="list-style-type: none"> Trade committees Vocational training committees Social partners The Ministry of Children and Education Other experts 	2015	1-2 years	<ul style="list-style-type: none"> Trade committees Vocational training committees Social partners The Ministry of Children and Education 	1
Evaluate how improved committee structure could promote collaboration between trades on energy topics	Carry out a systematic review of existing collaboration on energy topics, and prepare a proposal for possible structural improvements.	<ul style="list-style-type: none"> Trade committees Vocational training committees Social partners The Ministry of Children and Education Other experts 	2014	0-1 years	<ul style="list-style-type: none"> Trade committees Vocational training committees Social partners The Ministry of Children and Education 	1

