

BUILD UP SKILLS

ENERGY TRAINING
FOR BUILDERS



BUILD UP Skills – Ireland National Roadmap for Energy Training in Construction





The sole responsibility for the content of this publication etc lies with the authors. It does not necessarily reflect the opinion of the European Union. Neither the EACI nor the European Commission is responsible for any use that may be made of the information contained therein.

Further information

More details on BUILD UP Skills Ireland can be found at <http://ireland.buildupskills.eu/>

More details on BUILD UP Skills can be found at www.buildupskills.eu

More details on the IEE programme can be found at <http://ec.europa.eu/intelligentenergy>

Contents

1	Foreword	4
2	Introduction	5
2.1	Build Up Skills Ireland (BUSI) project	5
2.2	Aim of the Roadmap	5
3	Roadmap Development	6
3.1	The process of the roadmap development and endorsement	6
	<i>Workshops</i>	6
	<i>Interviews</i>	6
	<i>Survey questionnaire</i>	6
	<i>Endorsement</i>	6
3.2	Policy drivers for building energy efficiency and renewable energy deployment	7
3.3	Construction sector in Ireland - overview	7
3.4	VET provisions	8
3.5	Skills and knowledge gap	9
3.6	Barriers to up-skilling	11
3.7	Conclusions from the Consultation process	12
4	Strategy for up-skilling Ireland's construction workers in regard to energy in buildings	13
5	Action plan	15
	APPENDIX 1: BACKGROUND TO ACTIONS AND KEY ISSUES	28
	APPENDIX 2: ESTIMATED COSTS FOR TRAINING PROGRAMMES	44

1 Foreword

Ireland is committed to reduce its total energy consumption by 20% by the year 2020, which corresponds to the European 2020 targets. As the Residential and Commercial/Public Sectors account for approximately 40% of energy consumption in Ireland, improving energy efficiency and renewable energy uptake in buildings are important elements of meeting these sustainable energy targets. To facilitate the achievement of higher energy efficiency targets, building regulations and standards have been amended significantly over the past 10 years and are set to reach near zero carbon standards by 2020. These elements will also contribute to Ireland's Climate Change targets by 2020.

It is recognised that to achieve these targets a new approach towards the construction of new buildings as well as escalated retrofitting activities must be implemented. This means that those working in or entering the construction sector will require new knowledge, skills and competences to achieve the standards introduced by the new building regulations.

From the Status Quo analysis completed as part of the Build Up Skills Ireland project and the consultation with the key stakeholders in the construction sector (including construction workers, tradesmen, employees, unions, trade associations and relevant training and government agencies), it is clear that the existing skills in the construction sector are of high quality. Yet they are simply not sufficiently aligned with the approach required to achieve new low energy buildings.

The national qualification roadmap for Ireland sets out the strategy and action plan for bringing the knowledge, skills and competences of Irish construction workers to the level that will allow them to confidently produce low energy buildings meeting the latest building regulations and, therefore, contribute significantly to Ireland's energy reduction targets. It addresses not only the training and qualification issues, but proposes the associated measures required for successful implementation of the training.

The measures proposed by the roadmap may seem challenging, especially in the current fiscal climate, but the BUSI Consortium are of the opinion that they are necessary to help Ireland to achieve its 2020 energy targets. The investment proposed will contribute to significant energy efficiency savings in the future, both for the Irish state as well as building owners and occupiers. Ultimately it will create a construction workforce ready for the challenge achieving near zero carbon buildings.

2 Introduction

2.1 Build Up Skills Ireland (BUSI) project

Build Up Skills Ireland is an 18 month project funded under the Intelligent Energy Europe (IEE) programme. The project focuses on the continuing education and training of craftsmen and other onsite construction workers and system installers in the fields of energy efficiency and renewable energy sources in buildings. The main objectives of the project are to:

- **Initiate national discussion processes** that bring together all relevant stakeholders.
- **Identify and quantify the need** for a workforce qualified in energy efficiency and renewable energy in each member state by 2020 (and beyond).
- **Set up and agree national qualification roadmaps** to achieve the sustainable energy policy objectives for 2020.
- **Support concrete qualification schemes** on the basis of roadmaps to 2020 with identified needs and priorities.

The project commenced in November 2011 and will finish in April 2013. The project consortium includes five members: Limerick Institute of Technology (Coordinator), Dublin Institute of Technology, Institute of Technology Blanchardstown, Construction Industry Federation and Irish Congress of Trade Unions. The Irish project is carried out alongside 29 other similar projects being implemented in 30 European countries with a view of developing the national qualifications platforms and roadmaps in each European Member State. A broad spectrum of relevant stakeholders were engaged in the process, including public authorities, national energy and qualifications bodies, training providers, trade representative organisations, industry representatives, social partners, building design experts and potential financing bodies.

This document presents the national qualifications roadmap, which was developed on the basis of the Status Quo analysis, prepared in the first stage of the project, and an extensive consultation process with the stakeholders through interviews, workshops and questionnaire. This chapter outlines the main results from the Status Quo analysis used for the development of the roadmap, the roadmap aim and objectives and a brief overview of the consultation process with the stakeholders.

2.2 Aim of the Roadmap

The main aim of the Roadmap is to outline a general strategy and a set of specific actions required to overcome the barriers for addressing the knowledge and skills gaps amongst the construction workers to meet the 2020 targets in the building sector.

By identifying specific actions, timelines and stakeholders responsible for their implementation as well as receiving endorsement from these stakeholders, it is envisaged that the roadmap will be a catalyst for change in the construction industry. Its implementation will ensure that construction workers in Ireland have sufficient knowledge and skills to build and retrofit buildings that will achieve low energy performance.

3 Roadmap Development

3.1 The process of the roadmap development and endorsement

The roadmap is based on information collected from multiple sources and through a variety of methods. In the first phase of the project (November 2011-June 2012), a status quo analysis was performed to establish the capacity of the construction workforce to meet the new building construction and renovation standards, identify the skills gaps that exist, and establish a strategy for planned up-skilling of workers through a formal system of qualifications. The results of this analysis were published in the “*Build Up Skills Ireland: Analysis of the national status quo*” report in August 2012.

In the second phase (May – November 2012), an extensive consultation process with stakeholders was carried out. During the consultation process, stakeholders were asked to voice their opinions on the findings from the Status Quo analysis and to contribute their ideas and insights for the content of the Roadmap. The consultation processes consisted of three main methods: workshops, interviews and a survey.

Workshops

Eight workshops were conducted in total. The first, Futures Workshop held on 24th May 2012 in Dublin, aimed to explore the future of energy solutions for buildings up to 2020, identify new skills and competences that may emerge as a result of changes in construction trends in regard to energy, create potential job profiles in the area of energy and construction up to 2020 and identify the main skills and competences these jobs will require with a view towards education and training provision.

Six regional consultation workshops focused on getting the views of the construction industry (employers, employees, trade unions, training providers etc.) on what the overall strategy for fulfilling the training needs should be as well as specific issues, such as the course content, qualifications and barriers for the roadmap implementation. These half-day workshops were conducted in different locations around the country:

DUNDALK	16th October 2012
LIMERICK	19th October 2012
WATERFORD	23rd October 2012
CORK	24th October 2012
DUBLIN	26th October 2012
SLIGO	30th October 2012

The final workshop for the industry suppliers and professionals, such as architects and engineers, took place on 23rd November 2012 in Dublin. The same format was used as for the regional workshops.

Interviews

One to one interviews were carried out with the strategic stakeholders. The interviews focused on the elements of the overall strategy and achieving endorsement.

Survey questionnaire

The questionnaire distributed to the construction workers and employers, aimed to assess their knowledge and attitudes towards low energy buildings. The survey was also used to test some of the results from the consultation process around various issues, such as who should pay for training, main barriers for training uptake and so on.

Endorsement

The report has been presented to the BUSI Steering Committee for review. Following this review amendments were made to the report to reflect their recommendations. The Roadmap has then been presented to relevant Government Departments and Agencies for their endorsement of the proposed actions.

3.2 Policy drivers for building energy efficiency and renewable energy deployment

Ireland is committed through the national policy set out in the “*White Paper on Energy: Delivering a Sustainable Energy Future for Ireland*” **to reduce its energy usage by 20%, provide 16% of total primary energy from renewable sources and to achieve 20% reduction in CO₂ emissions by 2020.** The strategic goals relevant to the BUSI project include:

- Actions to promote the sustainability of energy supply and use;
- Addressing climate change by reducing greenhouse gas emissions;
- Accelerating the growth of renewable energy sources;
- Maximising energy efficiency and conservation;
- Ensuring affordable energy for everyone;
- Creating jobs, growth and innovation in the energy sector.

The majority of Ireland’s energy policy has been driven by EU Legislation and Directives, including the Energy Performance of Buildings Directive (EPBD) and its Recast, Renewable Energy Sources Directive (RES) and Energy Services Directive (ESD). These policies have been driving the development of a nearly zero energy framework for buildings and, as a result, have made low energy buildings the standard rather than a niche sector within the construction industry.

It is recognised that the energy savings targets for the residential sector cannot be achieved solely through the completion of new low energy buildings; hence the **National Energy Retrofit Programme (NERP) was introduced in 2011, setting out a target of 1 million buildings to be retrofitted by 2020** in order to meet Ireland’s energy saving targets.

3.3 Construction sector in Ireland - overview

In 2010, there were approximately **70,000 workers directly employed in the construction related occupations** in Ireland. The number has decreased significantly from **174,000 in 2007** at the peak of construction activity due to prevailing economic conditions. In 2011, the residential sector accounted for 68% of the value of building construction output, with approximately **80% of work taking place in the Repair, Maintenance and Improvement** sector (RM&I). Although, the Irish economy is considered capable of sustaining an industry of around 12% GNP, since 2010 it has been operating at only half of its capacity. **In 2012, there were 5,000 house completions forecasted** and it is estimated that in **2015 11,000 housing units** will be completed compared to almost **94,000 in 2006** at the peak of housing output. This means that between 2013 and 2020, reduction of energy usage in buildings will need to be achieved mainly through retrofitting activity, as a share of new buildings complying with the new energy standards will be too small to meet targets.

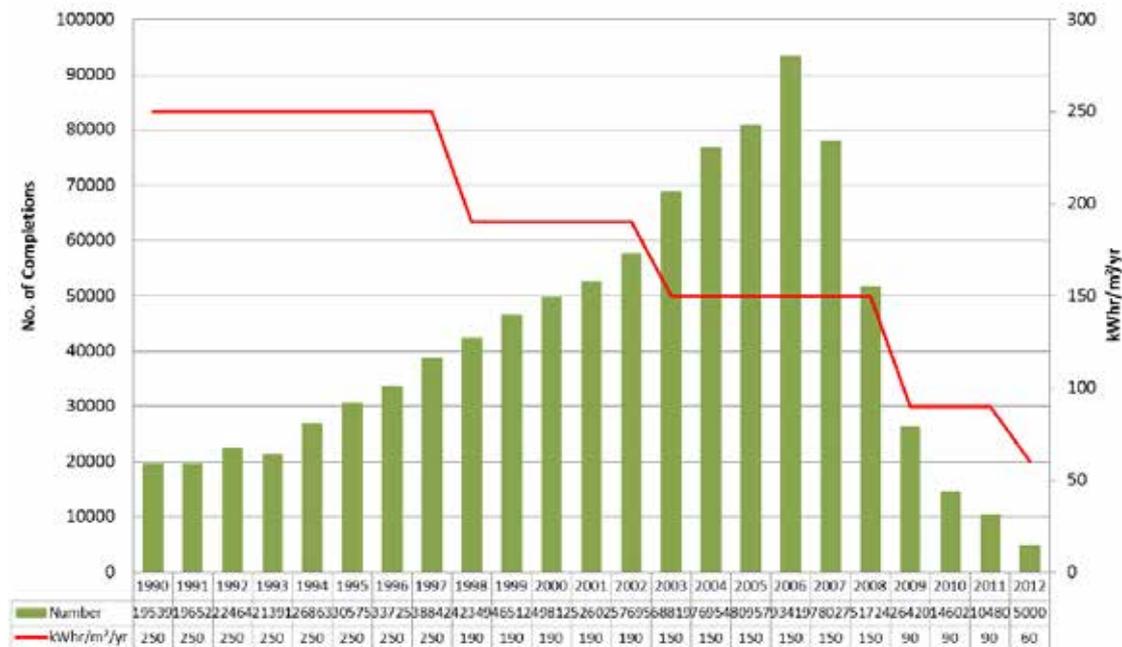


Figure 3-1: Housing Completions 1990 – 2011 and relationship with Building Standards for energy performance¹

3.4 VET provisions

Vocational Education includes number of strands: **apprenticeship training, supplement ad-on training and further education**. FÁS has the statutory responsibility for the organisation and control of apprenticeships in Ireland and has responsibility for promoting and overseeing the training and education of all apprentices, including the construction related crafts: Brick & Stone-Laying, Carpentry & Joinery, Electrical, Plastering, Plumbing and Refrigeration & Air-Conditioning.

A number of construction skills fall outside of the formal apprenticeship system. These include concrete workers, steel workers, roofers and glaziers. All of these workers are associated with the construction and renovation of building fabric and, in light of the new technologies and standards being applied to this field, should receive appropriate training in the future².

In the last five to six years, a number of add-on or supplemental training programmes in energy efficiency and renewable energy have become available for the up-skilling of construction craft workers and system installers in Ireland. Energy policy implementation has led to the development of approved qualifications for renewable energy installers and new regulations for domestic gas installation have resulted in a mandatory qualification requirement for installers. The currently available provision of accredited training in these areas includes FÁS and Private training provision accredited by FETAC; and HETAC accredited training at National Framework of Qualifications (NFQ) level 6 offered by the Institutes of Technology.

Training on energy efficiency and deployment of renewable energy in buildings is provided by a combination of providers, including, FÁS, IoTs, Skillnets³ and a range of private organisations, such as Midlands Energy Training & Assessment Centre (METAC) and Chevron Training. The training programmes offered by private organisations are largely accredited by FETAC, and are on the NFQ, while a number of other awarding bodies include, European Registration Scheme for Personnel Competence (ERS), City and Guilds and the independent UK Blueflame. Some manufacturers and materials/systems suppliers to the building construction sector have also developed product/system specific training.

¹ Note: pre-1997 energy performance standard is approximate and 2012 completions are forecasted Source: DECLG, www.environ.ie

² The crafts listed are relevant to energy training. There are other crafts, like decorators, that are construction crafts, but they do not need energy training.

³ Skillnets is a state funded and enterprise-led support body which promotes and facilitates training and up-skilling with the objective of sustaining national competitiveness

3.5 Skills and knowledge gap

Generally in the building sector, the gap that exists is one of knowledge rather than skills. This knowledge is fundamental for the successful implementation of low energy buildings. It is important to understand the mind set of workers who, based on their years of experience, believe that they already **know** the ‘right way’ to do their job. The challenge lies in fostering a change in attitude and facilitating the acceptance that a new approach to their work is needed.

As a strategy for bridging the skills and knowledge gap a three occupational-tier training model was developed for *operative*⁴, *craft*⁵, and *supervisor*⁶ levels. Such tiered approach will ensure that each worker holds the appropriate level of competency required to carry out the tasks associated with their role. Additionally, the model provides clearly defined progression pathways to more advanced specialist training.

It is clear that construction and retrofitting of low energy buildings requires an integrated approach to on-site implementation.



Figure 3-2: Tiered up-skilling training structure.

⁴ Defines the skill level outside of the formal apprenticeship training structure, i.e. skills acquired through on site experiential learning, e.g. concrete workers, steel workers, glaziers, roofers.

⁵ Defines the occupation level where a formal craft apprenticeship or equivalent training has been successfully completed.

⁶ Defines the specialist, supervisory or project manager level where a craft worker has progressed to autonomous roles such as a system installation specialist, site supervisor, small/medium sized building contractor or similar roles

At operative and craft level, *all* workers involved in building construction and renovation will require training. It is estimated that almost 60,000 workers will need to be trained to at least a foundation level.

Occupational Tier	Qualification Need	NFQ Level	Numbers
Operative Level	Foundation energy training (all construction operatives including concrete workers, steel workers, roofers and glaziers)	5	10,000
	Stage 1: Foundation energy training (for all construction crafts) Stage 2: Craft specific energy training (for all) <ul style="list-style-type: none"> • Carpentry & Joinery • Brick & Stone Laying • Plastering • Plumbing • Electrical 	6	49,000
Craft Level	Total		49,000
	Domestic Heating Technician	7	1,350
	Ventilation Installation Technician	6	500
	Combined Heat & Power (CHP) Technician	7	180
	Site Supervisors/Foremen	7	3,000
	Domestic Energy Retrofit Project Management	7	2,230
Supervisory Level	Total		7,230
	<i>*Note: completion of craft level training assumed</i>		

Figure 3-3: Numbers of workers to be trained by Occupational Tier

Trainers in this sector are usually employed on the basis of trade related qualifications and onsite experience and will, therefore, require up-skilling to support training needs on the scale proposed, perhaps by a ‘train the trainers’ model. It is envisaged that at least 100 trainers would be required to complete Operative and Craft level foundation level training alone within a calendar year.

The additional skills needs for domestic energy retrofit project managers include: history of Irish construction technology, calculation of energy use and cost savings, energy performance assessment tools and procedures, entrepreneurship skills and project management.

Figure 3.4 illustrates the main areas requiring up-skilling for craft workers to supervisor level or domestic retrofit manager dependent on their role. The currently provided training provides the worker with the traditional technical skills of their craft but does not provide core knowledge of low energy building or emphasise the need for onsite coordination with other crafts, i.e. systems thinking.

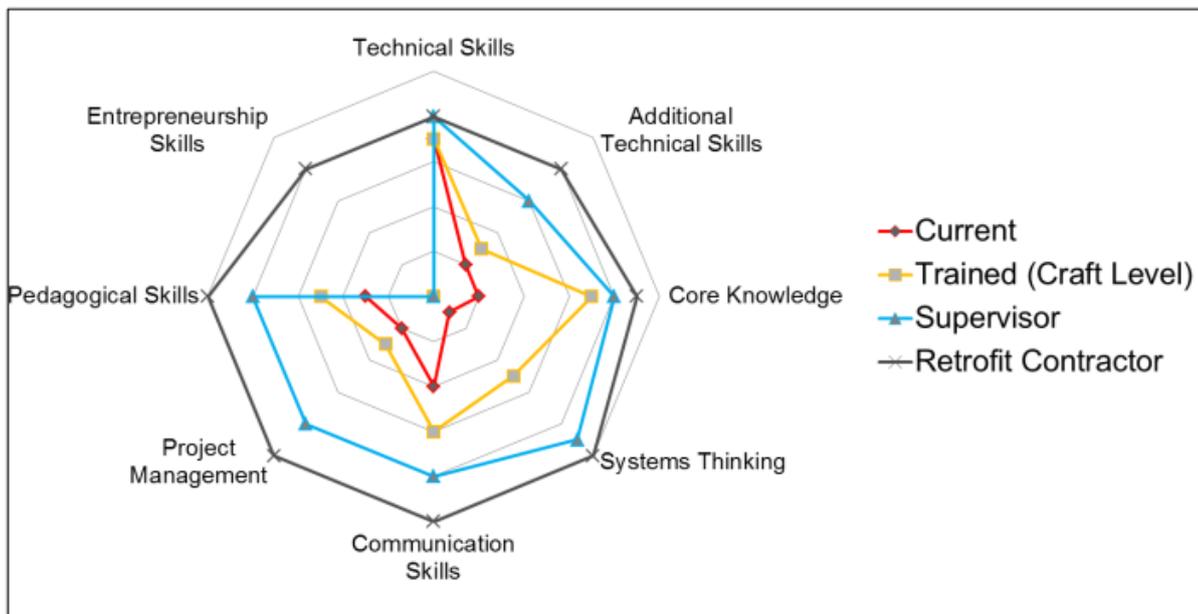


Figure 3-4: Skills and knowledge needs by role

3.6 Barriers to up-skilling

There are a number of potential barriers to the implementation of a new up-skilling initiative for the construction workforce in Ireland at such a scale as is proposed:

- Multi-stakeholder coordination – a large number of stakeholders directly or indirectly involved in the implementation of the energy policy are required to agree on and endorse the initiative.
- Establishment and maintenance of standards for professional practice – currently in Ireland, there is lack of requirement for those employed in the construction industry to provide proof of competence, e.g. there is no licensing requirement for building contractors. Registration system has been introduced in some areas: domestic gas installation and electrical installation.
- Structure of the building sector – changes to the employment models on site in recent years have led to narrow specialisation amongst trades, reducing the number of workers with broad skills in the sector.
- Language barriers – in 2007, non-nationals accounted for 18.3% of all workers employed in the sector, in 2010 this share was reduced to 9.7%. However, it is still a significant number, which requires consideration.
- Capacity of training providers – as a result of the recent downturn, the demands on the traditional providers of craft apprenticeship training have been greatly reduced leading to a loss of experienced trainers in many cases. Significant resources have been redeployed.
- Financial support for energy policy implementation - the current economic situation in Ireland has led to a significant reduction in government expenditure across all sectors, including the withdrawal of financial supports for existing energy policy actions, such as ReHeat, CHP Deployment, and GHS.
- Funding of training – most of government training initiatives target unemployed people, while there is little financial support for up-skilling those in employment.
- Access to training – in the climate of significantly reduced profit margins, loss of productivity as a result of employee absence from work to attend training is a major barrier to participation.
- Barriers to Participation
- Employment opportunities - the main motivation for a construction worker to engage with an up-skilling programme is to improve their prospects for gaining or sustaining employment. Any national programme of training will have to clearly identify a relationship with existing or upcoming job opportunities.
- Awareness - experience from the recruitment of building workers for energy related training programmes suggests that there is a significant lack of awareness of the relevance to construction, with the exception of mandatory training for those wishing to install gas, oil or renewable technologies.

3.7 Conclusions from the Consultation process

The key findings from the national consultation process can be summarised as follows:

- Agreement with the concept of setting a minimum standard of standard of training for those working in the construction sector
- The need to introduce measures to improve quality control in the construction sector such as registration of construction companies, mandatory training requirements and registration of workers
- Improvements in Building Control to be considered
- The need to provide training in a range of modes and locations to facilitate the needs of construction companies and workers
- The importance of the costs of training being reasonable and equally spread across industry, public sector and trainees..

In addition, through the European dimension of the EU Build Up Skill initiative the following were some of the key issues which were discussed

- **Train the Trainers.** It is recognised that in order to successfully implement the training required to address the skills and knowledge gaps of the construction workers, each country will require to up-skill and in many cases train up the trainers that will deliver the training. A European wide initiative to address this need should be explored.
- **Innovative Training methods.** The scale of the training challenge means that traditional approaches may not be effective in completing the work in a time efficient way. Also, the need to focus on practical aspects has been highlighted as important for crafts workers. Issues such as on-site training, mobile training equipment should be considered. For other target groups on-line, blended learning and remote learning need to be considered
- **Integrated financing methods.** The challenge of financing the training requirements is significant. Initial estimates for Ireland for the full economic cost of the training required is in the region of €75 to €100m. Linking training, quality control, regulation and high quality building together presents opportunities to spread the cost of training across a number of contributors. Utilising tools such as the European Social Fund (ESF) is also vital.
- **System Thinking.** It has been recognised that a systems thinking approach is required at different levels: for the workers to see a building as a system and understand how low energy is part of that system; for the various stakeholders to develop an integrated approach towards delivery; and at political level to create a greater correlation between the different national and European policies.

It is important to note, firstly, that from the consultation with the construction industry prior to the roadmap development, it is clear that the roll out of the training is not enough to instigate change in building practices and, therefore, achieve the energy savings in buildings required to meet the 2020 targets. Knowledge and skills gained through up-skilling and training are of course essential to carry out work correctly, however, other stimuli, such as mandatory inspections of the works and regulation and certification of the building industry that will reward high standards of work, are important motivators that will help to ensure that knowledge is fully utilised.

Secondly, the level of knowledge and skills in relation to energy in buildings is varied amongst the construction workers – from very limited to excellent. To ensure that there is at least a basic level of knowledge in this area a short training course on principles underlying low energy construction for all construction workers is a key measure proposed in this strategy. Such training should be undertaken by all workers, from apprentices to those close to the retirement age. To ensure required participation levels mechanisms should be explored to which encourage active engagement. Such measures could include certification requirements, prerequisites as part of relevant funding schemes and ultimately consideration of legislation may be appropriate.

4 Strategy for up-skilling Ireland's construction workers in regard to energy in buildings

In order to meet the 2020 energy targets set out by the Irish and European energy policy we need to up-skill/train the following groups of Irish construction workers:

Current workers
Approx. 60,000

Current and future
craft apprentices

Unemployed and new
construction Workers

With a view to create a workforce that:

- Has the necessary skills and knowledge to comply with the building regulations in relation to energy efficiency in buildings
- Has the basic level of knowledge to achieve low energy performance in retrofitted buildings
- Sees a building as a system rather than a sum of its components
- Has a good understanding of different trades' roles in the achieving low energy buildings and appreciation for their work

To achieve this we need the following actions:

Training Actions:

1. Introduce short Foundation Energy Training for all construction workers.
2. Review apprentice curricula for construction crafts to incorporate knowledge and new skills related to low energy buildings.
3. Develop a specialist training for each relevant craft.
4. Develop a specialist training for arising technician roles.
5. Review, update and develop if needed new programmes for construction managers and site supervisors that will equip them with necessary skills to manage implementation of low energy buildings.
6. Train the Trainers.

Supporting Actions:

1. Introduce Industry driven market led training requirements.
2. To support implementation of the Building Contractors register
3. Provide for the upskilling of Building Control Officers
4. Develop a 'Good Construction Practice' Information and Awareness Campaign
5. Encourage a deeper engagement and exchange of information between the professionals and construction workers in regard to their cooperation in achieving low energy buildings.
6. Identify and develop sustainable funding mechanisms that will facilitate the provision of the training required

The general strategy to meet the 2020 energy targets set out by the Irish and European energy policy is based on the premise that all workers require a certain level of up-skilling in relation to energy in buildings. Three groups were considered:

- workers currently working on construction sites,
- current and future craft apprentices and
- unemployed and unqualified workers that may enter the industry in the future.

The implementation of this strategy should produce a workforce capable of meeting 2020 energy policy targets to be achieved through the application of energy efficiency measures in buildings. Such workforce will be characterised as having the necessary skills and knowledge to comply with active building regulations in relation to energy efficiency in buildings; having the basic level of knowledge to achieve lower energy consumption in retrofitted buildings while maintaining air quality; approaching buildings as systems within which different components influence each other; and consequently having a good understanding of different trades’ roles while realising the implications of their work in achieving low energy buildings.

Two types of actions were developed that are required to implement the strategy. The first set of actions is related to training, while the second, called supporting actions, reflects changes needed to be addressed to ensure the training will have the desired impact. These actions are discussed in detail in Chapter 5. The relationships between them are presented in Table 4.1.

	S1. Introduce Industry driven market led training requirements.	S2. To support implementation of the Building Contractors register	S3 Provide for the upskilling of Building Control Officers	S4. Develop a ‘Good Construction Practice’ Information & Awareness Campaign	S5. Greater collaboration between professionals & construction workers	S6. Sustainable funding mechanisms
T1. Introduce short Foundation Energy Training	●●●	●	●●●	●	●	●●●
T2. Review apprentice curricula for construction crafts	●	●	●●●	●	●	●●
T3. Develop a specialist training for each relevant craft	●	●●	●●	●●	●●	●●
T4. Develop a specialist training for technician roles.	●●	●●	●●	●●	●●	●●
T5. Review, update and develop programmes for construction managers & supervisors	●●	●●●	●●●	●●	●●●	●
T6. Train the Trainers	●●	●	●●	●	●●	●●

Table 4.1: Relationships between Training and Supporting Actions

●●● - essential, ●● - important, ● - relevant

5 Action plan

The Action Plan presented below outlines broad actions needed to implement the strategy. These broad level actions have been presented to the key stakeholders for endorsement. The tables provide the core actions, lead actors, timescale and rationale. Further detail of the background to the action and key issues to take into account is provided in Appendix 1.

The link between the proposed actions and identified gaps and barriers is outlined below.

Training Actions:

1. Introduce short Foundation Energy Training for all construction workers.
 - a. Addresses the core knowledge gap across the construction sector in relation to low-energy buildings
 - b. Creates an opportunity to build a minimum standard of knowledge and address the concept of systems thinking
 - c. Presents an opportunity to build on the experiences from the other certification and training schemes
2. Review apprentice curricula for construction crafts to incorporate knowledge and new skills related to low energy buildings.
 - a. Ensures that future workers have the core knowledge in relation to low-energy buildings
 - b. Addresses the current gaps in relation to knowledge and training within the relevant curricula
3. Develop a specialist training for each relevant craft.
 - a. Creates a progression path in terms of training and skills development for the relevant crafts
4. Develop a specialist training for arising technician roles.
 - a. Creates a progression path in terms of training and skills development for the relevant crafts
5. Review, update and develop if needed new programmes for construction managers and site supervisors
 - a. Builds on the need for systems thinking and an interdisciplinary approach when addressing low energy buildings
 - b. Creates an opportunity to formalise the knowledge of existing managers and supervisors who may not have formal qualifications
6. Train the Trainers.
 - a. Addresses the skills gap within the current trainers (private and public) in relation to low energy buildings
 - b. Generates new learning opportunities for trainers

Supporting Actions:

1. Introduce Industry driven training requirements
 - a. Allows industry to take the initiative on addressing quality control and standards of building
 - b. Builds on experiences from other training
 - c. Allows the industry to lead and implement training with a view to energy efficiency training becoming a requirement for all construction workers
2. To support implementation of the Building Contractors register
 - a. Addresses the need for industry to demonstrate its focus on quality buildings through appropriate controls and systems
3. Provide for the upskilling of Building Control Officers
 - a. Links the training and education focus with the formal Building Control system and regulations
4. Develop a 'Quality Building' Information and Awareness Campaign
 - a. Aims to overcome the poor image associated with building in Ireland at present
 - b. Creates an opportunity to focus on a new, better, quality construction approach
5. Encourage a Quality Building Forum.
 - a. Knowledge gaps will continue to exist with exchange of expertise and information.
 - b. Links with the formal training and education approaches to create an potential CPD mechanism
6. Identify and develop sustainable funding mechanisms that will facilitate the provision of the training required
 - a. Shares the requirement for funding across relevant sectors and bodies
 - b. Creates opportunities for utilising EU, Private and Public funding sources for relevant actions.

TRAINING ACTIONS

T1. Introduce short Foundation Energy Training for all construction workers



Action description

A Foundation Energy Training course should be made available to all construction workers. The training would need to be updated on a three to four year cycle to take account of legislative changes and technological advances.

Stakeholders and resources

- FAS/Solas as coordinators and programme developers subject to the implementation of the necessary legislation to establish Solas⁷
- IOT's as potential providers along with FAS Training Centres
- SEAI, DoEHLG, DCENR, Industry Representatives – input to programme development

Timeline

- 2013-2015 for existing workers (60,000)
- 2015-2020 for new workers coming into the industry
- Upskilling requirement once every 3-4 years

Rationale

The aim is to develop knowledge base on the underpinning principles of low energy buildings and therefore develop a more integrated collaborative approach towards work on-site.

The Foundation Energy Training, the apprentice training as well as further education programmes for construction workers should promote a new approach to construction based on 'systems thinking'.

⁷ FAS/Solas taking the lead on this initiative is dependent on the implementation of the relevant legislation to establish Solas and set out its relevant powers.



T2. Review apprentice curricula for construction crafts to incorporate knowledge and new skills related to low energy buildings.

Action description

Embed the Foundation Energy Training course and other low energy topics, into the new apprenticeship curricula currently being reviewed.

Stakeholders and resources

- National Apprenticeship Advisory Committee (NAAC)
- FAS/Solas
- Employers and Unions
- ITAC
- BUSI consortium to input into the review

Timeline

- 2013-2015

Rationale

Revisions of construction related apprenticeship curricula in recent years have largely failed to reflect the significant amendments to building standards for energy conservation made over the last 10 years. Now may be an opportune time to design a curriculum to meet the needs of a modern society of not just today but into the future also. As the numbers entering apprenticeship are extremely low, there may not be a better time to make the necessary changes that will bring about real change.



T3. Develop specialist training for each relevant craft.

Action description

Building on the 'Foundation Energy Training' outlined in Action 1 each craft will require additional specialist competency training programmes.

Such training programmes would be short in nature, focused and have a practical orientation, and delivered innovatively.

It is vital that this training is accredited.

Stakeholders and resources

- IoTs as core programme trainers and accreditation bodies
- FAS/Solas
- Industry (experts in new technologies, accreditation agencies, trainers, etc.)
- Experienced programme development team

Timeline

- 2013-2020

Rationale

Clearly defined benefits of up-skilling in terms of educational achievements and potential careers development paths associated with them should make it more attractive for construction workers to undertake further training.

Provide a highly competent craftworker with all the practical skills and knowledge necessary to build low energy buildings.



T4. Develop specialist training for arising technician roles.

Action description

Building on the 'Foundation Programme' outlined in Action T1 and potential short specialist training described in Action T3 some crafts may choose to undertake further training with a view of becoming a technician, such as Domestic Heating Technician, Ventilation Installation Technician, Combined Heat and Power Technician, Domestic Retrofit Project Manager.

Stakeholders and resources

- IoTs as core programme trainers and accreditation bodies
- Industry (experts in new technologies, accreditation agencies, trainers, etc.)
- Educational Programme Development expertise
- Train the Trainers

Timeline

- 2013-2020

Rationale

Every construction craftworker should have a very strong set of core specialist skills but with the complimentary skillset to allow a multidisciplinary approach to his/her work taking place.

It provides the opportunity to train to a high technical level for roles requiring a specific skillset through an accredited programme with complimentary soft skills training also included.

Provides clearly recognisable and accredited qualifications for competences relevant to low energy building construction/renovation.



T5. Review, update and develop if needed new programmes for construction managers and site supervisors

Action description

Review third level programmes for construction managers and site managers in regard to their content on managing the construction/retrofitting of low energy buildings.

Where appropriate new training and education programmes should be developed.

Stakeholders and resources

- IoTs as core programme trainers and accreditation bodies
- Industry (experts in new technologies, accreditation agencies, trainers, etc.)
- Educational Programme Development experts
- Construction professionals, Representative bodies (e.g. Engineers Ireland) employers, unions for technical and management input

Timeline

- 2013 Review existing offerings and map requirements
- 2014 Offer pilot training programmes in priority areas

Rationale

Incorporating low energy construction/renovation technology into existing formal programmes for construction managers will equip supervisors with the necessary skills and knowledge to oversee the implementation of near zero carbon building standards.

All site supervisors/managers should be encouraged to formalise their experience through the academic training structures.



T6. Train the Trainers

Action description

Ensure availability of competent trainers to deliver the basic foundation course for all construction workers.

Trainers should be up-skilled in regard to new knowledge, such as changes in building regulations, emerging technologies etc. and how these changes impinge on their teaching content.

Trainers should be required to undertake systematic up skilling through, for example, a mandatory CPD requirement.

Stakeholders and resources

- IoTs as core programme trainers and accreditation bodies
- Industry (experts in new technologies, legislation accreditation agencies, trainers, etc.)
- Educational Programme Development experts
- Construction professionals, Representative bodies (e.g. Engineers Ireland, RIAI, CSI)
- BUSI Pillar 2 options for pilot programme

Timeline

- 2013-2014

Rationale

To provide trainers with the most up to date training and skills to ensure the successful implementation of the required training on a national scale.

To provide trainers with up to date knowledge of revisions to building standards and new technologies which can be incorporated into new training programme development.

SUPPORTING ACTIONS

S1. Introduce Industry driven training requirements



Action description

Action T1 calls for Foundation Energy Training for all workers.

Initially this training requirement should be industry driven with best practices influencing and moulding the future direction of the training. An industry led initiative, led by CIF and other parties should be put in place in the immediate term.

The next phase should be the introduction of appropriate mechanisms to ensure that all construction workers have met a minimum level of energy training should be introduced. This can be informed by the industry led initiative and may consider certification, pre-requests for national funding schemes and appropriate legislative actions.

Existing models will be examined and built upon to reflect best practice in the sector.

Stakeholders and resources

- Initial Phase: CIF, Construction Industry, ICTU, Irish Green Building Council
- Support: DoECLG, DCENR, SEAI, CIF etc.

Timeline

- 2015-2017

Rationale

The Consultation Phase emphasised the fact that training in itself will not be sufficient. Developing an initiative which requires construction workers to complete energy training will give the training value in itself.



S2. To support implementation of the Building Contractors register

Action description

The BUSI project team fully supports the implementation of the Building Contractors register which is proposed in the Building Control Regulations.

The Construction Industry and Government bodies coming together to provide for the legislative framework is positive and fully compliments the creation of a construction sector focused on Quality Building.

BUSI fully supports such a registration initiative as it sees improving the public profile of the Industry as being of primary importance to developing a sustainable quality based approach.

Stakeholders and resources

- DoECLG and DCENR
- CIF

Timeline

- 2014

Rationale

Building on the training approach the development of a construction sector register which could ultimately reflect the competences of construction companies will assist in improving standards within the sector.



S3. Provide for the upskilling of Building Control Officers

Action description

As part of the implementation of the Building Control Act, it is recommended that specific training be provided to Building Control Officers allowing them to have the appropriate level of knowledge in relation to compliance of low energy buildings with Building Regulations.

Stakeholders and resources

- Local authorities
- Department of Environment
- Community and Local Government
- Professional and Training bodies eg IBCI, CIF, FAS

Timeline

- 2013-2015

Rationale

The structure and approach to Building Control is changing as part of the implementation of the Building Control Act. Building Control Officers require specific upskilling to ensure that they have the knowledge of what key control points to review in relation to compliance of low-energy buildings with Building Regulations.



S4. Develop a 'Quality Building' communications campaign

Action description

Launch a communications campaign to raise awareness on the benefits of high quality building and low energy construction. This should complement the existing promotion and information campaigns via SEAI and others in relation to energy efficiency.

The campaign should focus on the need to use competent companies, products and systems and how to recognize such operators and quality.

Stakeholders and resources

- SEAI, Government Departments, CIF and other industry bodies
- Marketing Expertise and Consultancy to develop and launch campaign

Timeline

- 2014-2017

Rationale

The Construction sector will benefit from focusing on changes being made to improve quality control. The systems thinking approach to low-energy buildings presents an opportunity to focus on quality and efficiency of new construction practices.



S5. Establish a 'Quality Building' forum

Action description

Although this document focuses on construction workers and not the professionals, it has been identified that the exchange of information between builders and professionals, such as architects, engineers or surveyors is important for achieving low energy buildings. If professionals are involved in the project they need to provide detailed specification for their design, so they can be closely followed by the builders, and builders need the skills to interpret these details.

A forum where shared views in relation to building performance, training needs, new developments can be exchanged should be created. This could build upon existing structures with a clear agenda which focuses on quality of building in relation to energy needs to be part of the process.

Stakeholders and resources

- Initially led by the BUSI 2 Project with support of Public sector bodies
- Representative Bodies for relevant sectors should then led the Forum
- Regular (6 monthly) meetings of relevant stakeholders to address the issue of construction works training needs and development.

Timeline

- On-going

Rationale

The EU and National consultation phases emphasised the need for 'systems thinking' and ensuring that all parts of the systems are communicating effectively. This is not always the case and a forum for exchanges of information between the relevant.



S6. Identify and develop sustainable funding mechanisms that will facilitate the provision of the training required

Action description

In the short term there may be funding available via the IEE initiative to fund the start up phase of the proposed actions. However, given the current restrictions on state funding there is a need to balance contributions from workers, industry, state and others.

It is proposed that the funding for the implementation of the training should be secured from a diverse pool of funding sources, with input from Government, Industry and all stakeholders. This funding can be clarified following the completion of the detailed action plan agreed with the relevant stakeholders.

The current focus of Exchequer funding on supporting unemployed workers to up-skill is appropriate. However, consideration needs to be given to the priority to up-skill the existing workers who are currently building and retrofitting houses and buildings now.

Stakeholders and resources

- Relevant Government Departments (Finance, Education, Environment, Communications and Energy etc.)
- Professional bodies
- Unions
- Insurance
- Banking sector
- Energy providers

Timeline

- On-going

Rationale

The opportunity to secure funding under the EU Build Up Skills Pillar II programme should be taken but this should only be part of a broader strategic approach to implementing and sustainable financing mechanism.

Appendix 1:

Background to actions and key issues



TRAINING ACTIONS

T1. Introduce short Foundation Energy Training for all construction workers.		
Action description	Stakeholders and resources	Timeline
<p>Foundation Energy Training course should be made available for all. Workers should complete and pass an examination. It should also be repeated at regular intervals (ex. every 2 years). The repetitive nature of training should ensure embedding of new skills and knowledge in the industry as well as facilitate the introduction of new emerging knowledge and skills.</p> <p>Such course should contain information on:</p> <ul style="list-style-type: none"> • Building envelope • Air quality • Ventilation • Condensation • Moisture movement • Construction techniques • Energy use within the building <p>The course should be given to groups of mixed trades. This should facilitate a better understanding of different trades' roles and the impact they have on each other's ability to achieve low energy buildings. This aims to develop a more integrated approach towards work on-site.</p> <p>The Foundation Energy Training, the apprentice training as well as further education programmes for construction workers should promote a new approach to construction based on systems thinking.</p>	<p>Stakeholders:</p> <p>FAS/Solas as coordinators and programme developers.</p> <p>IOT's as potential providers along with FAS Training Centres.</p> <p>SEAI, DoEHLG, DCENR, Industry Representatives – input to programme development.</p> <p>Resources:</p> <p>Programme Development: Development of training content (in different formats); accreditation methods.</p> <p>Train the Trainers: Up skilling of existing trainers with relevant knowledge in retrofitting and low energy buildings.</p> <p>Finance:</p> <p>Estimated total cost to train one craft worker is in the region of €350-400. Details of the costs are provided in Appendix 2. It should be noted that this is the full economic cost. It is proposed that limited new physical or human resources are required to deliver this programme. Existing resources can be utilised.</p>	<p>2013-2015 for the existing workers (60,000).</p> <p>2015-2020 for new workers coming into the industry (unemployed getting re-employed, immigrant workers, those outside formal training, such as GOs).</p> <p>2015-2020 workers to repeat the training at regular intervals.</p>

		<p>It is important to ensure that the Foundation Energy Training is easily accessible. It should be available at local level and at times that would interfere as little as possible with the work time.</p> <p>The Foundation Energy Training should be priced at affordable level and the cost should be shared three-ways between the employee, employer and the government.</p> <p>Delivery modes need to be chosen appropriately to the course level and requirements. Practice and example oriented delivery seems to be most appropriate.</p> <p>It is recognised that it needs to be based on face to face interaction in an environment that allows for a maximum amount of practical demonstrations.</p> <p>Development of such an approach should instigate the change in work practices on site in regard to checking whether work is done correctly at each stage and reporting any errors, so they can be rectified before a start of the next stage.</p> <p>The change initiated in the training rooms should be further promoted and implemented on-site by site supervisors and managers.</p> <p>Funding for this initial phase of the programme development and implementation could be secured under the next phase of the EU Build Up Skills Initiative; however industry and Irish Government resources should also be committed at this stage.</p>

Issues for consideration

- Conflict of interest, on site, between attention to detail and pressure to complete work quickly arising from small job margins
- All programmes and courses should promote the attention to detail as essential for achieving energy efficiency in buildings
- Development of a manual for workers retrofitting buildings that will outline the entire retrofitting process with alternative solutions, potential pitfalls and cost and benefit analysis for systems, materials etc. could be seen as a learning tool. Such manual could be produced in various formats: traditional video, interactive visualisation, written document etc
- It is apparent from the consultation process and the past experience in training delivery that trainees are more committed to a course if they contribute financially. However, a fee has to be set at affordable level so it would not act as a disincentive
- FAS and many IoTs have an extensive network of facilities around the country that could be utilised to deliver the training, especially during the downturn in apprentices' numbers
- The cost to employer of sending a worker to a training course includes not only financial contribution (if applicable) but also time loss, which is especially important for employers working with very tight margins
- It is important to communicate clearly to the construction workers why the change and training to drive it is required. The message should be around the statement that they have been doing a good work so far, but they need to change their current methods because they don't fit anymore to the new standards
- The use of pictograms and videos will assist in overcoming language barriers
- Consideration should be given to the development of a common National programme which can be delivered by public and private sector organisations. The final examination should be carried out independently from the organisations delivering training. This could be developed and made available for use in a regulated manner. This would allow for clear definition and management of training content and quality and also allow for coordinated revisions and updates as appropriate

T2. Review apprentice curricula for construction crafts to incorporate knowledge and new skills related to low energy buildings.

Action description	Stakeholders and resources	Timeline
<p>Embed the Foundation Energy Training course and other low energy topics, into the new apprenticeship curricula currently being reviewed.</p> <p>The priority should be given to updating the content and the assessment strategies to include energy within existing curricula.</p>	<p>Stakeholders: National Apprenticeship Advisory Committee (NAAC) currently oversees the development of the standards based apprenticeship process and advises the board of FÁS, FAS manage the process of curricula revision and implementation or the new agency, employers, unions, ITAC, experts in the field of low energy construction, BUSI consortium to input into a review.</p> <p>Resources:</p> <p>FÁS manage the process in conjunction with the NAAC and are currently active in curricula revision for the main construction trades.</p>	<p>2013-2014, from then on on-going.</p>
<p>Issues for consideration</p>		
<ul style="list-style-type: none"> • As the apprentice numbers are low at the moment, this is convenient time for a significant revision of the apprentice curricula • IT skills should be incorporated into apprentice craft training • Both, the apprentice curricula and programmes for qualified workers should be updated with the changes to building regulations as soon as they are introduced, preferably when they are being drafted • Restructuring of FAS may have an impact on this action 		

T3. Develop specialist training for each relevant craft

Action description	Stakeholders and resources	Timeline
<p>Building on the 'Foundation Energy Training' outlined in Action 1 each craft will require additional specialist training programmes. Some of these exist in different areas e.g. Solar Water Heating System Installation Training, Passive House Training etc. However, there is an urgent need for coordination and mapping of training needs and developing suitable programmes in relevant areas for each craft.</p> <p>Such training programmes would be short in nature, focused and have a practical orientation. There may be opportunities to using Flexible Learning modes for part of these programmes.</p> <p>Such programmes should be examined and accredited and should be taken into account if a craft worker would like to progress to a new role, either in a technician capacity (See Action T.4) or to the supervisory level (See Action T.5).</p> <p>This should be supported by the creation of a clear framework for progression between different levels of construction workers and the education requirements for such progression. Clearly defined benefits of up-skilling in terms of educational achievements and potential careers development paths associated with them should make it more attractive for construction workers to undertake further training.</p>	<p><u>Stakeholders:</u></p> <p>FAS as coordinators of training needs mapping.</p> <p>IoTs as core programme trainers and accreditation bodies.</p> <p>Industry (experts in new technologies, accreditation agencies, trainers, etc.).</p> <p><u>Resources:</u></p> <p>Programme Development: Development of training content (in different formats); accreditation methods.</p> <p>Train the Trainers: Up skilling of existing trainers with relevant knowledge specific craft areas.</p> <p><u>Finance:</u></p> <p>Estimated total cost to train one craft worker is in the region of €700-750. Details of the costs are provided in Appendix 2. It should be noted that this is the full economic cost. It is proposed that limited new physical or human resources are required to deliver this programme. Existing resources can be utilised.</p>	2013-2020
<p>Issues for consideration</p> <ul style="list-style-type: none"> • Fear that this action will promote over specialisation amongst construction workers • This does not have to lead to supervisory role, but could only be an additional competency for craft workers 		

T4. Develop specialist training for arising technician roles		
Action description	Stakeholders and resources	Timeline
<p>Building on the 'Foundation Programme' outlined in Action T1 and potential short specialist training described in Action T3 each craft may choose to undertake further training with a view of becoming a technician, such as Domestic Heating Technician, Ventilation Installation Technician, Combined Heat and Power Technician, Domestic Retrofit Project Manager</p> <p>Such training programmes should be comprehensive and their duration could be from 6 months to 2 years, depending to the intensity of the course as well as level of knowledge of the trainee. Such programmes should focus on the design and integration issues; however, at the end of the course trainees should also have a solid practical knowledge of installation and maintenance</p> <p>Like any other programmes, they should be examined and accredited. Preferably, these programmes should be designed as a set of modules. Crafts that undertook relevant specialist training prior to enrolling on this type of a programme, such as discussed in Action T3, can be exempt from modules covering the same content</p>	<p>Stakeholders:</p> <p>IoTs as core programme trainers and accreditation bodies</p> <p>Industry (experts in new technologies, accreditation agencies, trainers, etc.)</p> <p>Resources:</p> <p>Programme Development: Development of training content (in different formats); accreditation methods</p> <p>Train the Trainers: Up skilling of existing trainers with relevant knowledge specific craft areas</p>	<p>2013-2020</p>
<p>Issues for consideration</p> <ul style="list-style-type: none"> Many of these programmes will require knowledge of software and advanced use of various IT applications. The participants' minimum level of IT competency needs to be considered. This may require additional module at the start of the programme to level out IT competencies amongst the participants 		

T5. Review, update and develop if needed new programmes for construction managers and site supervisors

Action description	Stakeholders and resources	Timeline
<p>Review third level programmes for construction managers in regard to their content on managing the construction/retrofitting of low energy buildings. Such a review may highlight the potential for a new programme or modules specifically related to low-energy building (construction or retrofitting).</p> <p>The training for construction managers, site supervisors and foremen should result in the development of the following knowledge and skills:</p> <ul style="list-style-type: none"> • Understanding of a building as a system and building physics underlying it • Sufficient technical knowledge to ensure that crafts carry out their work correctly • Good knowledge of the current building regulations in relation to energy and their practical application on-site • Good knowledge of building technologies • Good understanding of materials and systems and ability to assess their suitability for a given project • Trouble shooting solutions for recovering from potential mistakes <p>These skills should be accompanied by more general skills related to communication, health and safety, business, pedagogy and mentorship, IT and other.</p>	<p>Stakeholders:</p> <p>IoTs as leading training providers.</p> <p>Construction professionals, Representative bodies (e.g. Engineers Ireland) employers, unions for technical and management input.</p> <p>Resources:</p> <p>Programme Development: Development of training content (in different formats); accreditation methods.</p> <p>Finance: As an initial estimate a 30 day training programme was costed at €2,500 per trainee (full economic cost).</p>	<p>2013 – Review existing offerings and map requirements.</p> <p>2014 offer pilot training programmes in priority areas.</p>
<p>Issues for consideration</p>		
<ul style="list-style-type: none"> • Many site managers/supervisors have no formal qualifications but have been awarded their role on the basis of experience and knowledge obtained outside formal qualifications system. Should some level of training for them be made mandatory in order to perform these functions? • Recognition of Prior Learning (RPL) and Accredited Prior Learning (APL) processes within IoTs will be required to assess existing supervisors' knowledge and expertise for entry onto such programmes 		

T6. Train the Trainers		
Action description	Stakeholders and resources	Timeline
<p>Ensure availability of well-prepared trainers to deliver the basic foundation course for all construction workers.</p> <p>The trainers currently teaching the apprentices require further knowledge and skills to deliver the revised curricula in relation to energy efficiency. Trainers should be up-skilled in regard to new knowledge, such as changes in building regulations, emerging technologies etc. and how these changes affect their areas of teaching on regular basis.</p> <p>Trainers should be required to undertake systematic up skilling through, for example, a mandatory CPD requirement.</p>	<p>Stakeholders: FAS, IoTs, Private Training Providers.</p> <p>Resources: Funding for this train the trainers initiative could be sourced under the IEE Build Up Skills Initiative Pillar II.</p>	<p>2013-2014</p>
<p>Issues for consideration</p> <ul style="list-style-type: none"> • It needs to be considered who will actually deliver the training to trainers? • At peak of apprenticeship training circa 2007, approximately 250 trainers and lecturers were employed in the delivery of the phases for the main construction related trades. It is reasonable to assume that a number were on short term or temporary contracts and that many may have been redeployed to other areas due to the decrease in demand for apprenticeship training 		

SUPPORTING ACTIONS

S1. Introduce Industry driven training requirements		
Action description	Stakeholders and resources	Timeline
<p>Action T1 calls for Foundation Energy Training for all workers.</p> <p>Initially this training requirement should be industry driven with best practices influencing and moulding the future direction of the training. An industry led initiative, led by CIF and other parties should be put in place in the immediate term.</p> <p>The next phase should be the introduction of a appropriate mechanisms to ensure that all construction workers have met a minimum level of energy training should be introduced. This can be informed by the industry led initiative and may consider certification, pre-requests for national funding schemes and appropriate legislative actions.</p> <p>Existing models will be examined and built upon to reflect best practice in the sector.</p>	<p>Stakeholders: DCENR, DoECLG, CIF, SEAL, Fas.</p> <p>Resources: Resources to manage the implementation of schemes to promote a minimum level of energy training.</p>	2013-2014
<p>Issues for consideration</p> <ul style="list-style-type: none"> It is important that the course will finish with independent examination that can be carried out in two phases: first phase – written examination that could be based on the driving licence model. The second phase would be practical examination that could be carried out in the lab The course needs to be accredited 		

S2. To support implementation of the Building Contractors register		
Action description	Stakeholders and resources	Timeline
<p>The BUSI project team fully supports the implementation of the Building Contractors register which is proposed in the Building Control Regulations.</p> <p>The Construction Industry and Government bodies coming together to provide for the legislative framework is positive and fully complements the creation of a construction sector focused on Quality Building.</p> <p>BUSI fully supports such a registration initiative as it sees improving the public profile of the Industry as being of primary importance to developing a sustainable quality based approach.</p> <p>One of the major issues that have been raised during the consultation process was lack of regulation in the construction industry. This means that anyone can become a builder and carry out building work regardless of their competence. This has major impact on the change that needs to happen in relation to energy efficiency in building practices. This also applies to many other aspects of the construction sector.</p> <p>It is recommended that construction companies at all levels should be part of a general construction company register. This applies in particular to SME's and Sole Traders. The minimum registration will then act as a baseline registration. It is proposed that builders should be certified to carry out different types of building work, for example energy retrofitting. Such a registration process could also be part of the process of improving the public profile of the construction sector.</p>	<p>Stakeholders: CIF, Unions, DoECLG.</p> <p>Resources: Resources to manage the implementation and oversight for Contractors register.</p>	<p>2013-2015</p>
<p>Issues for consideration</p> <ul style="list-style-type: none"> • Changing public attitude to building – raising awareness about the building qualifications. RECI is a good example of certification • Competences acquired through informal learning need to be considered 		

S3. Provide for the upskilling of Building Control Officers

Action description	Stakeholders and resources	Timeline
<p>As part of the implementation of the Building Control Act, it is recommended that specific training be provided to Building Control Officers allowing them to have the appropriate level of knowledge in relation to compliance of low energy buildings with Building Regulations.</p>	<p>Stakeholders: Stakeholders: Local authorities, Department of Environment, Community and Local Government, IBCI.</p> <p>Resources: CIF, Fas.</p>	2013-2015
<p>Issues for consideration</p>		
<ul style="list-style-type: none"> • It needs to be correlated with the introduction of Action S2 		

S4.Develop a ‘Quality Building’ communications campaign		
Action description	Stakeholders and resources	Timeline
<p>Launch a marketing campaign to raise awareness on the benefits of high quality retrofitting and low energy construction. This should complement the existing promotion and information campaigns via SEAI and others in relation to energy efficiency.</p> <p>The campaign should focus on the need to use competent companies, organisations and product.</p> <p>A multi-method approach is needed, country wide information campaign, such as RECI ads, and a one-stop independent web portal with neutral information on systems, types of work to be done for retrofit, things to pay attention to, and list of registered builders, their competences and client portfolio.</p>	<p>SEAI, Government Departments, CIF and other industry bodies.</p> <p>Marketing Expertise and Consultancy to develop and launch campaign.</p>	<p>2014-2017</p>
<p>Issues for consideration</p> <ul style="list-style-type: none"> • Develop a manual for retrofitting buildings for clients • Stimulation of the market is an important driver for workers to undertake training • Linking loan approvals and insurance costs to quality of work is also important from the point of view of the consumers 		

S5. Establish a 'Quality Building' forum		
Action description	Stakeholders and resources	Timeline
<p>Although this document focuses on construction workers and not the professionals, it has been identified that the exchange of information between builders and professionals, such as architects, engineers or surveyors is important for achieving low energy buildings. If professionals are involved in the project they need to provide detailed specification for their design, so they can be closely followed by the builders.</p> <p>A mechanism or forum where shared views in relation to building performance, training needs, new developments can be exchanged should be created. This could build upon existing structures with a clear agenda which focuses on quality of building in relation to energy needs to be part of the process.</p>	<p>Stakeholders: Professional bodies representing both groups.</p> <p>Resources: Regular (6 monthly) meetings of relevant stakeholders to address the issue of construction works training needs and development.</p>	On-going
<p>Issues for consideration</p> <ul style="list-style-type: none"> • Working from detailed drawings has been identified as an important issue for achieving low energy buildings 		

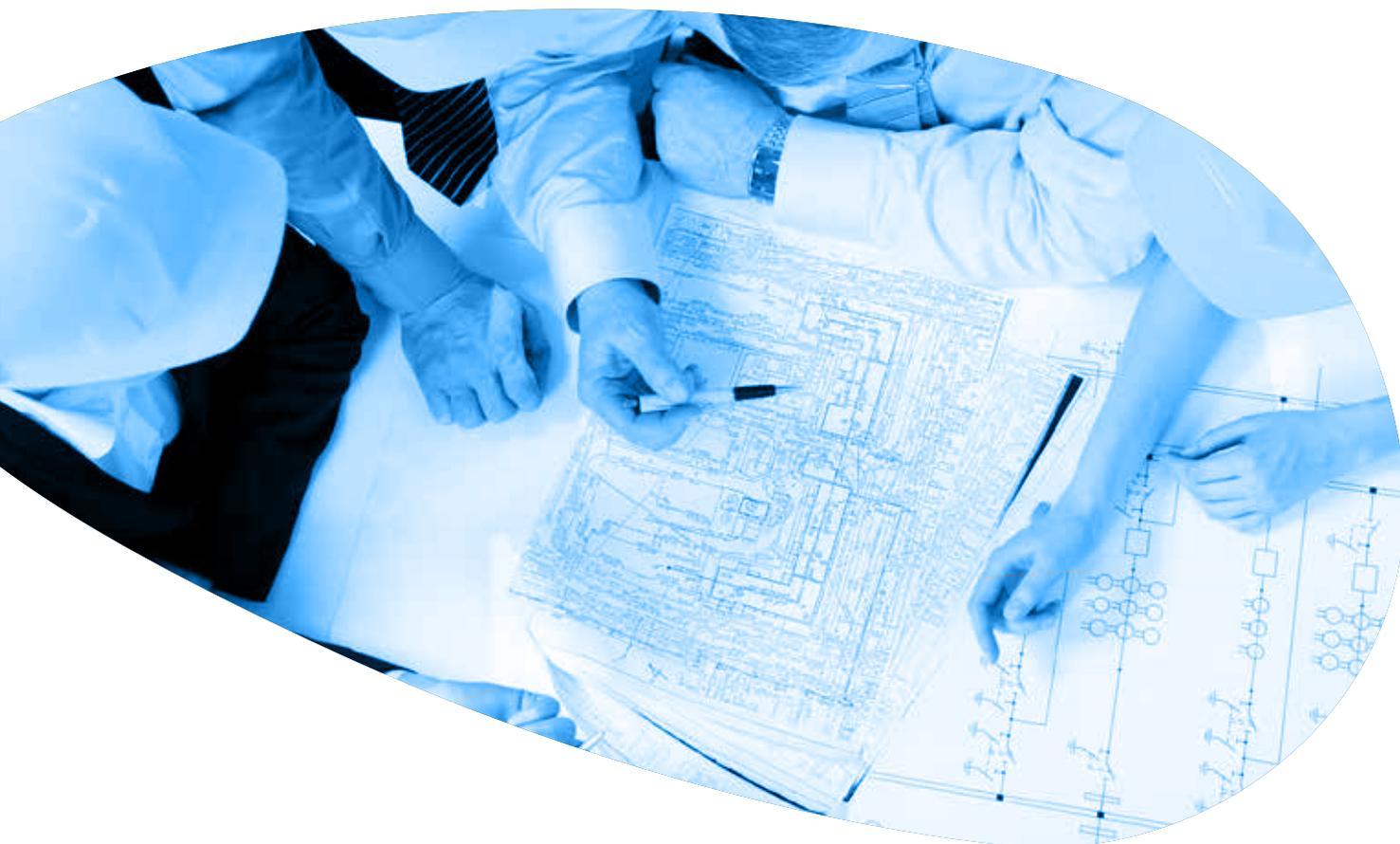
S6. Identify and develop sustainable funding mechanisms that will facilitate the provision of the training required

Action description	Stakeholders and resources	Timeline
<p>In the short term there is funding available via the IEE Build Up Skills initiative to fund the start up phase of the proposed actions under T1-4. However, given the current restrictions on state funding and the need to balance contributions from workers, industry, state and others it is proposed that the funding for the implementation of the training should be secured from a diverse pool of funding sources. It is believed that contributions should be made by all three parties that are likely to benefit from it: the government, employers and employees. For example, the government funding could partly come from the taxation of building materials and redirecting part of funding for training from unemployed to the employed.</p> <p>The current focus of Exchequer funding on supporting unemployed workers to up-skill is appropriate. However, consideration needs to be given to the priority to up-skill the existing workers who are currently building and retrofitting houses and buildings now.</p> <p>Also, there are a number of institutions that have a stake in achieving high quality building work, including energy efficiency. Banks may finance loans to carry out retrofitting projects – the work carried out to poor standards may decrease value of the property, hence they may place conditions on loan that the work will be carried out by a certified builder, who completed required training, consequently creating incentive for training uptake.</p> <p>Builder's insurance can also be linked to the training – the better trained worker the less likely there will be claims made against them. This can be an incentive for training as well as for ensuring that the work is carried out to high standard.</p>	<p>Stakeholders:</p> <p>Relevant Government Departments (Finance, Education, Environment, Communications and Energy etc.) professional bodies, unions, insurance, banking federation.</p>	<p>2013-2014</p>

		<p>Energy service providers have obligations in regard to energy consumption reduction. As the training will benefit achieving these obligations they may be interested in coming on board.</p>
<p>Issues for consideration</p>		
<ul style="list-style-type: none">• Fair contribution from each stakeholder is essential for the strategy to be implemented• The role of other institutions has been already explored in some European countries		

Appendix 2:

Estimated costs for training programmes



Scenario 1	100% Paid by Worker		
Total Costs	Energy Principles	Craft	Supervisor
Cost per Trainer	2,545,455	3,345,455	5,454,545
Cost per event	7,000,000	9,200,000	1,000,000
Cost for Materials/trainee	7,000,000	9,200,000	10,000,000
Total	16,545,455	21,745,455	16,454,545
Mgt Systems (50% overhead)	8,272,727	10,872,727	8,227,273
Total + Overhead	24,818,182	32,618,182	24,681,818
Industry Support	-	-	-
Net Cost	24,818,182	32,618,182	24,681,818
Cost /Person	355	709	2,468
Cost / day	177	177	82
Total Cost	54,745,455		
Total Overhead	27,372,727		
Total Industry Support	0		
Total	82,118,181.82		
% Cost per Trainer Support	100%	Variable	
% Industry Support	0%	Variable	
% venue cost covered	0%	Variable	

Scenario 2	50% of Trainer Costs Already Covered		
Total Costs	Energy Principles	Craft	Supervisor
Cost per Trainer	1272727.273	1672727.273	2727272.727
Cost per event	7,000,000	9,200,000	1,000,000
Cost for Materials/trainee	7,000,000	9,200,000	10,000,000
Total	15,272,727	20,072,727	13,727,273
Mgt Systems (50% overhead)	7,636,364	10,036,364	6,863,636
Total + Overhead	22,909,091	30,109,091	20,590,909
Industry Support	-	-	-
Net Cost	22,909,091	30,109,091	20,590,909
Cost /Person	327	655	2,059
Cost / day	164	164	69
Total Cost	49,072,727		
Total Overhead	24,536,364		
Total Industry Support	-		
Net Cost	73,609,091		
% Cost per Trainer Support	50%	Variable	
% Industry Support	0%	Variable	
% venue cost covered	0%	Variable	

Scenario 3	50% Trainer Costs and 50% Industry Support		
Total Costs	Energy Principles	Craft	Supervisor
Cost per Trainer	1,272,727	1,672,727	2,727,273
Cost per event	7,000,000	9,200,000	1,000,000
Cost for Materials/trainee	7,000,000	9,200,000	10,000,000
Total	15,272,727	20,072,727	13,727,273
Mgt Systems (50% overhead)	7,636,364	10,036,364	6,863,636
Total + Overhead	22,909,091	30,109,091	20,590,909
Industry Support	11,454,545	15,054,545	10,295,455
Net Cost	11,454,545	15,054,545	10,295,455
Cost /Person	164	327	1,030
Cost / day	82	82	34
Total Cost	49,072,727		
Total Overhead	24,536,364		
Total Industry Support	36,804,545		
Net Cost	36,804,545		
% Cost per Trainer Support	50%	Variable	
% Industry Support	50%	Variable	
% venue cost covered	0%	Variable	

Scenario 4	50% trainer & venue cost covered, 50% industry support		
Total Costs	Energy Principles	Craft	Supervisor
Cost per Trainer	1,272,727	1,672,727	2,727,273
Cost per event	3,500,000	4,600,000	500,000
Cost for Materials/trainee	7,000,000	9,200,000	10,000,000
Total	11,772,727	15,472,727	13,227,273
Mgt Systems (50% overhead)	5,886,364	7,736,364	6,613,636
Total + Overhead	17,659,091	23,209,091	19,840,909
Industry Support	8,829,545	11,604,545	9,920,455
Net Cost	8,829,545	11,604,545	9,920,455
Cost /Person	126	252	992
Cost / day	63	63	33
Total Cost	40,472,727		
Total Overhead	20,236,364		
Total Industry Support	30,354,545		
Net Cost	30,354,545		
% Cost per Trainer Support	50%	Variable	
% Industry Support	50%	Variable	
% venue cost covered	50%	Variable	

Energy Principles				
No to be trained	No	70,000.00	Variable	
No Days Training	Days	2.00	Variable	
No people per class	No	25.00	Variable	
No Training Events		2,800.00	Calculated	
Total No Training Days		5,600.00	Calculated	
No Trng Days per Year Per Trainer		220.00	Calculated	
No Years to Train - 1 Trainer (220 trng days/year)		25.45	Calculated	
No Trainers		5.00	Variable	
No Years to Train		5.09	Calculated	
Cost per Trainer	€/yr	50,000.00	Calculated	1,272,727.27
Cost per event	€/event	1,250.00	Calculated	3,500,000.00
Cost for Materials/trainee		100.00	Variable	7,000,000.00
				11,772,727.27

Craft Training				
No to be trained	No	46,000.00	Variable	
No Days Training	Days	4.00	Variable	
No people per class	No	25.00	Variable	
No Training Events		1,840.00	Calculated	
Total No Training Days		7,360.00	Calculated	
No Trng Days per Year Per Trainer		220.00	Calculated	
No Years to Train - 1 Trainer (220 trng days/year)		33.45	Calculated	
No Trainers		5.00	Variable	
No Years to Train		6.69	Calculated	
Cost per Trainer	€/yr	50,000.00	Calculated	1,672,727.27
Cost per event	€/event	2,500.00	Calculated	4,600,000.00
Cost for Materials/trainee		200.00	Variable	9,200,000.00
				15,472,727.27

Supervisor				
No to be trained	No	10,000.00	Variable	
No Days Training	Days	30.00	Variable	
No people per class	No	25.00	Variable	
No Training Events		400.00	Calculated	
Total No Training Days		12,000.00	Calculated	
No Trng Days per Year Per Trainer		220.00	Calculated	
No Years to Train - 1 Trainer (220 trng days/year)		54.55	Calculated	
No Trainers		5.00	Variable	
No Years to Train		10.91	Calculated	
Cost per Trainer	€/yr	50,000.00	Calculated	2,727,272.73
Cost per event	€/event	1,250.00	Calculated	500,000.00
Cost for Materials/trainee		1,000.00	Variable	10,000,000.00
				13,227,272.73

Total Costs	Energy Principles	Craft	Supervisor
Cost per Trainer	1,272,727.27	1,672,727.27	2,727,272.73
Cost per event	3,500,000.00	4,600,000.00	500,000.00
Cost for Materials/trainee	7,000,000.00	9,200,000.00	10,000,000.00
Total	11,772,727.27	15,472,727.27	13,227,272.73
Mgt Systems (50% overhead)	5,886,363.64	7,736,363.64	6,613,636.36
Total + Overhead	17,659,090.91	23,209,090.91	19,840,909.09
Industry Support	8,829,545.45	11,604,545.45	9,920,454.55
Net Cost	8,829,545.45	11,604,545.45	9,920,454.55
Cost /Person	126.14	252.27	992.05
Cost / day	63.07	63.07	33.07
Total Cost	40,472,727.27		
Total Overhead	20,236,363.64		
Total Industry Support	30,354,545.45		
Net Cost	30,354,545.45		

% Cost per Trainer Support	50%	Variable
% Industry Support	50%	Variable
% venue cost covered	50%	Variable

Base Cost Trainer	100,000.00
Base Cost Venue Operative	2,500.00
Base Cost Venue Craft	5,000.00
Base Cost Venue Supervisor	2,500.00

BUILD UP Skills

The EU Sustainable Building Workforce Initiative in the field of energy efficiency and renewable energy

BUILD UP Skills is a strategic initiative under the Intelligent Energy Europe (IEE) programme to boost continuing or further education and training of craftsmen and other on-site construction workers and systems installers in the building sector. The final aim is to increase the number of qualified workers across Europe to deliver renovations offering a high energy performance as well as new, nearly zero-energy buildings. The initiative addresses skills in relation to energy efficiency and renewable energy in all types of buildings.

BUILD UP Skills has two phases:

- I. First, the objective is to set up national qualification platforms and roadmaps to successfully train the building workforce in order to meet the targets for 2020 and beyond.
- II. Based on these roadmaps, the second step is to facilitate the introduction of new and/or the upgrading of existing qualification and training schemes.

Throughout the whole duration of the initiative, regular exchange activities are organised at EU level to underline the European dimension of this important initiative and to foster the learning among countries.

The BUILD UP Skills Initiative contributes to the objectives of two flagship initiatives of the Commission's 'Europe 2020' strategy — 'Resource-efficient Europe' and 'An Agenda for new skills and jobs'. It is part of the Commission's Energy Efficiency Action Plan 2011. It will also enhance interactions with the existing structures and funding instruments like the European Social Fund (ESF) and the Lifelong Learning Programme and will be based on the European Qualification Framework (EQF) and its learning outcome approach.



**BUILD UP
SKILLS**

ENERGY TRAINING
FOR BUILDERS



BUILD UP Skills – Ireland
National Roadmap for Energy
Training in Construction