

BUILD UP Skills - IRELAND

Energy Training for Builders

August 2012

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EXECUTIVE SUMMARY - NATIONAL STATUS QUO REPORT



**BUILD UP
SKILLS**

ENERGY TRAINING
FOR BUILDERS



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Energy use in buildings accounts for over 40% of total final energy consumption in Ireland (Figure 0.1). At a national policy level, Ireland has committed to reducing its total energy consumption by 20% by the year 2020. As a pathway to meeting this target, building regulations and standards have been amended significantly over the past 10 years, establishing a new approach to construction and renovation to prescribed energy performance standards. These standards will continue to evolve toward a near zero carbon framework for buildings by 2020, necessitating the integration of renewable energy systems to achieve the set energy and carbon performance levels.

However, the pace of change in building construction and renovation standard has not been matched by availability of compatible training provision for the construction workforce. Consequently, there is gap in the requisite skills and knowledge that is required for onsite implementation of energy efficiency measures and the integration of renewable energy systems.

The objectives of this report are, 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 qualification.

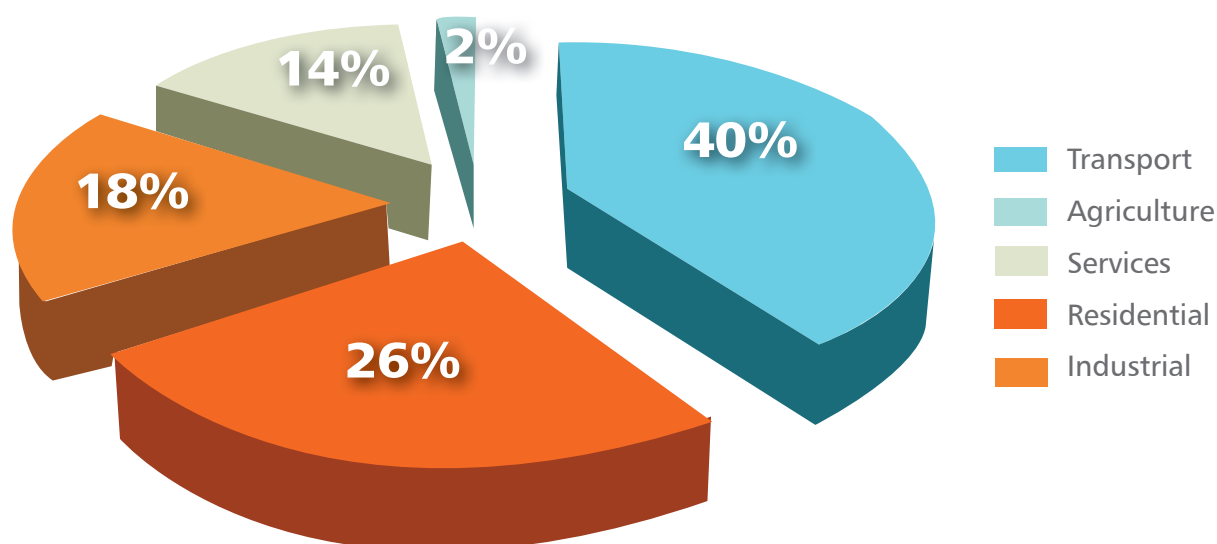


Figure 0.1: Total final energy consumption in Ireland by sector (in % of total Mtoe)
Source: EC (ESTAT, ECFIN), EEA – June 2011

Policy Drivers for Building Energy Efficiency and Renewable Energy Deployment

The 2020 energy saving targets for Ireland are outlined in Table 0.1. The European Performance of Buildings Directive (EPBD) 2002 and Irish Government were the catalyst for changes to Irish building regulations for energy performance, resulting in a number of amendments since 2002. Further changes are imminent as a nearly zero energy framework for buildings is developed. Low energy buildings are now the standard, rather than a niche market within the construction industry.

Table 0.1: 2020 energy saving targets

	2012 targets
Energy Efficiency	20% saving
Renewable Energy (overall)	16% of total final energy consumption
Renewable energy in electricity, RES – E	40%
Renewable energy in transport, RES – T	10%
Renewable energy for heat & cooling, RES - H	12%

A National Energy Retrofit Programme (NERP) was introduced in 2011, setting out a target of 1 million buildings to be retrofitted by 2020. Currently, the initiative is exchequer supported through grant-aided programmes for incremental retrofit measures administered by the Sustainable Energy Authority of Ireland (SEAI). The NERP will need to be escalated significantly to meet the 2020 targets, based on currently available data, in the rate and levels of retrofit activity both in terms of the percentage of buildings renovated and the depth of measures applied.

Overview of the Building Sector in Ireland

The prevailing economic condition in Ireland has resulted in an unprecedented fall in commercial and residential construction projects and, consequently, the employment opportunities in the sector. However, there are still approximately 70,000 workers in the sector (Figure 0.2). The residential sector accounted for 68% of the value of building construction output in 2011 with approximately 80% of this activity in Repair, maintenance and Improvement (RM&I). Specifically relevant to the construction sector are the potential of the energy retrofit market and the impact of quantity forcing policies, i.e., setting a minimum renewable energy contributions in the current building regulations.

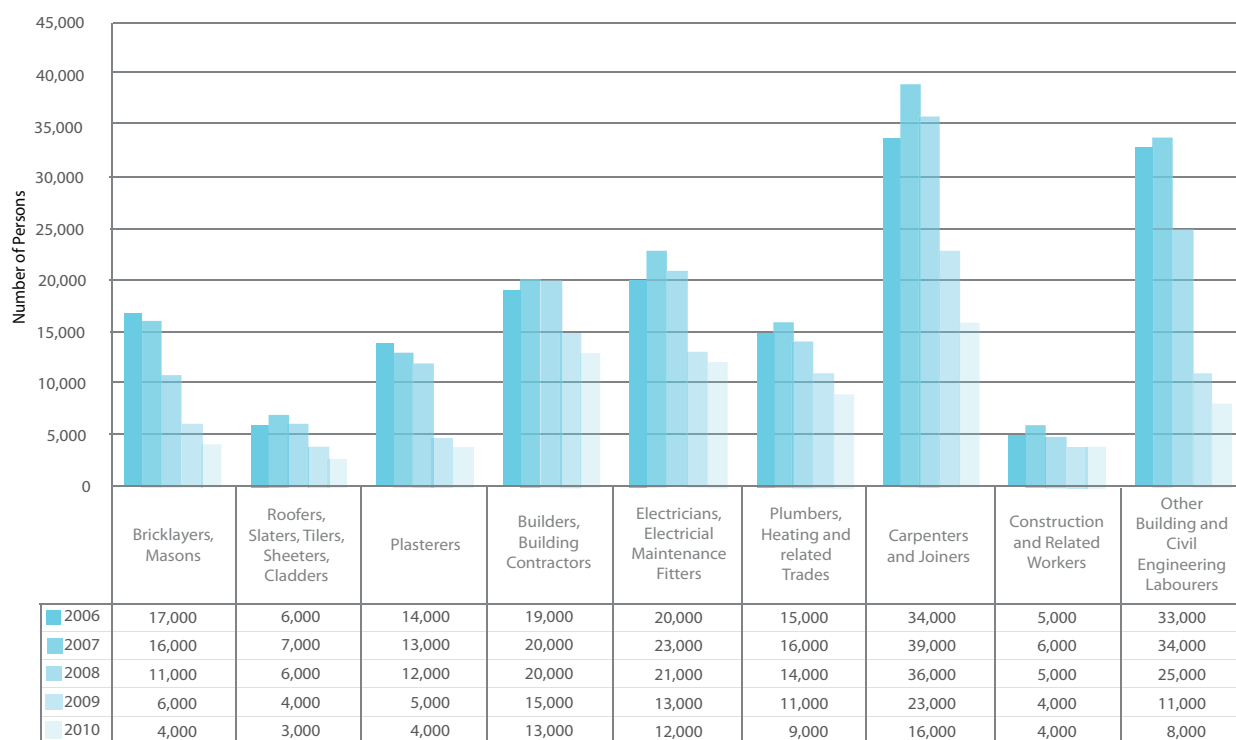


Figure 0.2: Total Numbers Employed in Construction Related Occupations 2006 -2010

Source: FÁS SLMRU

Strategies for Bridging the Skills Gap

As a strategy for bridging the skills gap, this report considers a three occupational-tier training regime; at operative, craft, and supervisory levels (Table 0.2). Such tiered approach will ensure that each worker holds the appropriate level of competency required to carry out the tasks associated with their role.

Table 0.2: Occupational Tiers

Level	Description
Operative level	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.
Craft level	Defines the occupation level where a formal craft apprenticeship or equivalent training has been successfully completed.
Supervisory level	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.

Generally in the building sector, the gap that exists is one of knowledge rather than skills.

However, 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 science that underpins energy efficient building should be presented and demonstrated in a format that is familiar to construction workers, in order to foster a change in attitude and enable acceptance of the necessity for a new approach to their work.

The tiered model of up-skilling is designed to provide the foundation skills and knowledge with clearly defined progression pathways to more advanced specialist training where appropriate to workers' roles (Figure 0.3).

This report has identified the importance of a homogeneous approach to on-site implementation of low energy construction/renovation. Maintaining insulation and airtight fabric envelopes, while integrating mechanical and electrical installations will require a common knowledge base and understanding of individual responsibilities among all those involved in the process.

At operative and craft level, all workers involved in building construction and renovation will require training.

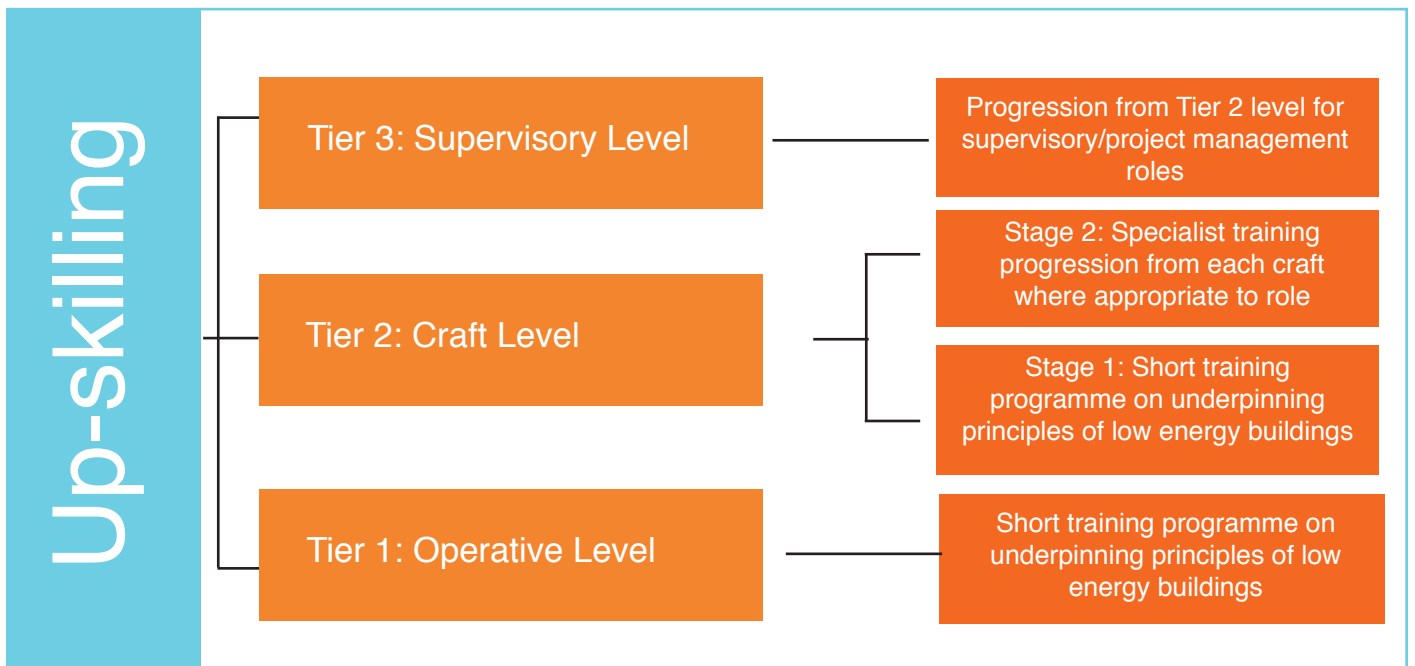


Figure 0.3: Tiered up-skilling training structure

Training at the third tier supervisory level provides for a progression of learning from craft level dependent on the nature of the role to be supported. This will be similar to the traditional progression route from a craft worker to supervisory role. Requisite project management and ICT skills alongside the prescribed specialised technical training reflect the additional responsibility of those engaged at supervisory level. Comprehensive training on domestic retrofit project management is included at this level.

The projections for the volume of training required are based on construction industry employment figures in 2010 and forecasts to 2015 with consideration also given to the demands associated with the implementation of energy policy actions. Also a supervisor to worker ratio of 1:10 is assumed for Tier 3 numbers, a general ratio used in the construction industry to forecast skills need for projects. Table 0.3 outlines the volume of training required by craft and skill for each 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. It is envisaged that at least 100 trainers would be required to complete Operative and Craft level training alone within a calendar year.

Table 0.3: Numbers of workers to be trained by Occupational Tier

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
Craft Level	Stage 1: Foundation energy training (for all construction crafts)	6	49,000
	Stage 2: Craft specific energy training (for all)		
	• Carpentry & Joinery		16,000
	• Brick & Stone Laying		4,000
	• Plastering		4,000
	• Plumbing		9,000
	• Electrical		6,000
		Total	49,000
Supervisory Level	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	2,200
		Total	7,230
	<i>*Note: completion of craft level training assumed</i>		

Key Conclusions & Recommendations

The building sector has the potential to make a significant contribution to the reduction in energy consumption in Ireland while achieving many secondary benefits. Beside the advantage to society of greater energy security, tackling fuel poverty and environmental protection, the construction industry which has been so adversely affected by the recent economic downturn has the opportunity to consolidate and ensure a more sustainable future through the development of a highly skilled workforce.

The rapid evolution of the building standards for energy performance has resulted in a skills gap across the current workforce. The efforts by individual training providers to develop and offer programmes that seek to address this gap have not been efficiently coordinated nationally, which has limited their impacts. **It is noteworthy that all those currently employed in the construction and renovation of buildings require some level of up-skilling and those entering the sector should have similar training incorporated into their formal apprentice education.**

Improving the energy performance of the existing building stock offers the most practicable intervention towards meeting Ireland's 2020 energy saving targets. With the high contribution to energy savings expected from the retrofitting of existing dwellings, there is a need for competent contractors/supervisors to oversee works and technicians with an in depth knowledge of heating system design, integration and control. The demand for such skills will be intrinsically linked to the level of energy policy implementation.

The establishment and maintenance of a framework of mandatory qualifications for professional practice would serve a dual purpose of improving work standards while establishing a real motivation for participation on training programmes. This participation should be promoted and funded for those in employment to support the sustainability of the construction industry tasked with implementation of building standards.

The introduction of a nearly zero energy framework for buildings presents a challenge to the construction industry that will require a highly skilled workforce to implement. The Build Up Skills Ireland project is a timely opportunity for the main actors in the building and energy sectors to reach agreement on a framework for the up-skilling that will be required.



