# Environmental Technologies Skills and Training

**SQA Energy Seminar**

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Summit SKILLS

Alliance Sector Skills Councils

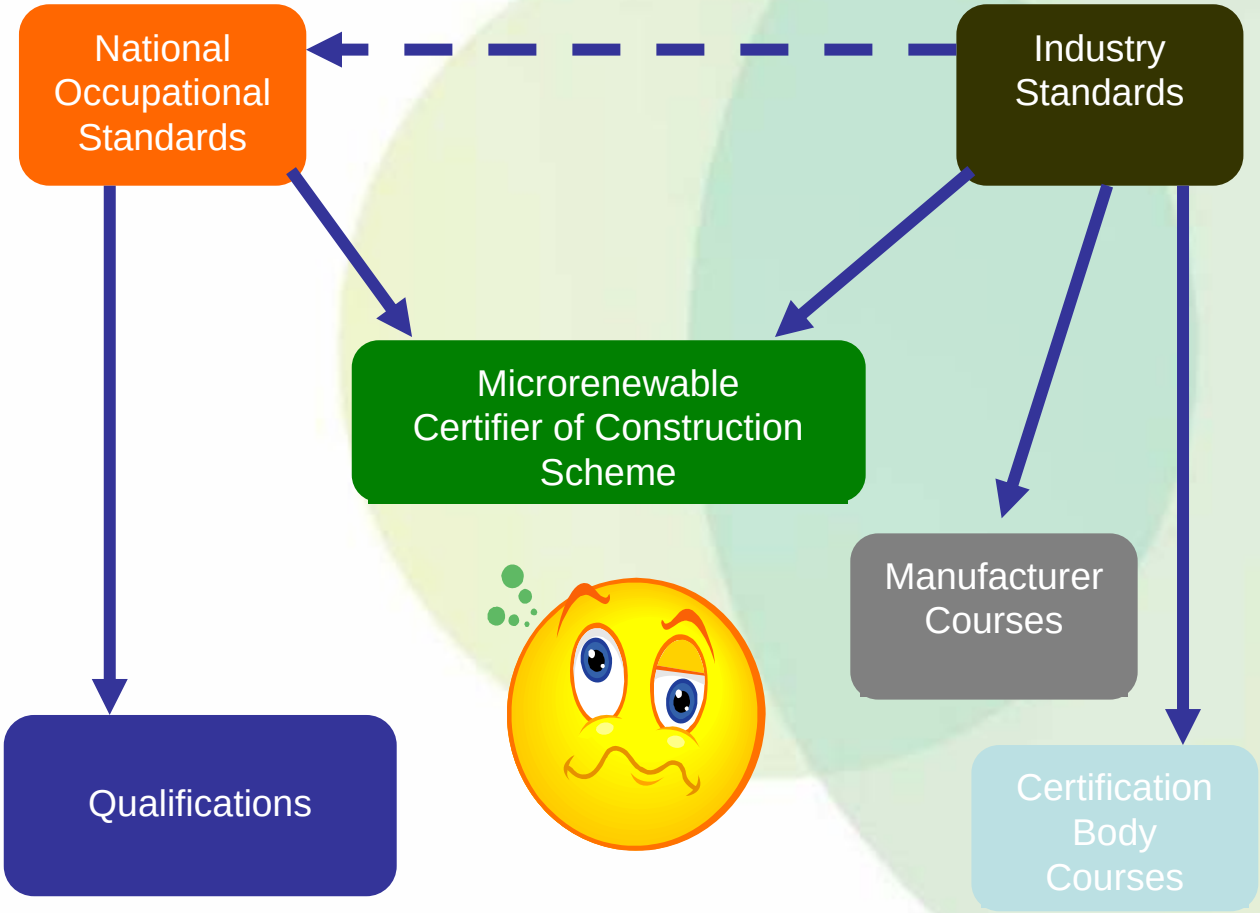
# Content

- SummitSkills sector footprint
- The potential for confusion
- SummitSkills National Occupational Standards for environmental technology systems
- The importance of the installer
- Competence level for the Certifier of Construction Schemes
- New SQA competence qualifications
- Where do we want to be?
- Key messages

# SummitSkills - the sector footprint

| Typical Job Roles | Occupational Area | | | | | |
|---|---|---|---|---|---|---|
| | **Electrotechnical** | **Electrical and Electronic Servicing** | **Heating and Ventilation** | **Domestic Heating** | **Plumbing** | **Refrigeration and Air Conditioning** |
| **Skilled worker** | • Electrical Installation<br>• Electrical Maintenance<br>• Audio Visual Systems Installation<br>• Electrical Instrumentation Installation<br>• Data/Communications Systems Installation<br>• Electrical Panel Building<br>• Electrical Machine Rewind and Repair<br>• Building Management Systems Installation and Maintenance<br>• Security Systems Installation | • Domestic Appliance Installation<br>• Commercial Electronic Equipment Installation<br>• Domestic Electronic Equipment Installation<br>• Signal Reception Systems Installation | • Heating and Ventilating Ductwork Installation<br>• Heating and Ventilating Industrial and Commercial Installation<br>• Heating and Ventilation Systems Maintenance<br>• Heating and Ventilation Systems Servicing and Commissioning | • Domestic Heating Systems Installation and Maintenance | • Domestic Plumbing Systems Installation and Maintenance<br>• Industrial and Commercial Plumbing Systems Installation and Maintenance | • Refrigeration Systems Installation<br>• Refrigeration Systems Testing and Commissioning<br>• Refrigeration Systems Service and Maintenance<br>• Air Conditioning Systems Installation<br>• Air Conditioning Systems Testing and Commissioning<br>• Air Conditioning Systems Service and Maintenance |
| **Technical worker (Roles stated may be across occupational areas)** | • Building Services Engineering Design Engineer<br>• Building Services Engineering Commissioning Engineer<br>• Building Services Estimator<br>• Building Services Engineering Contract or Project Engineer | | | • Building Services Engineering Computer Aided Design Technician<br>• Building Services Engineering Service and Maintenance Engineer<br>• Building Services Engineering Quantity Surveyor<br>• Building Services Engineering Site Supervisor | | |
| **Professional worker** | • Higher level roles as stated for technical worker<br>• Building Services Engineering Contract or Project Manager | | | • Building Services Engineering Consulting Engineer | | |
| **Environmental Technologies/ Microgeneration** | The design, installation and maintenance of systems employing the following environmental technologies fall within the SummitSkills footprint:<br>• Solar Water and Heating<br>• Combined Heat and Power<br>• Ground Source Heat Pumps<br>• Air Source Heat Pumps<br>• Biomass<br>• Bio-Fuels (Liquid)<br>• Rainwater Harvesting<br>• Grey Water<br>• Mechanical Heat Recovery Ventilation<br>• Photovoltaics for Micro-generation<br>• Micro Wind Energy<br>• Micro Hydro Generation Systems<br>• Fuel Cell Technology<br>In relation to the above technologies, the footprint that is primarily covered by SummitSkills is typically associated with the production of electrical energy up to 50 kilowatts, and the production of heat up to 45 kilowatts thermal. | | | | | |

# The potential for confusion



# SummitSkills Environmental Technology National Occupational Standards (Operative)

| NOS Units | | Environmental Technology Systems |
|---|---|---|
| EVTS 1 | Plan for EVT Systems, Equipment and Components | **Solar Thermal**<br>**Solar Photovoltaics**<br>**Heat Pumps**<br>**Micro CHP**<br>**Biomass/Biomass Fuels (Liquid)**<br>**Rainwater Harvesting**<br>**Grey Water**<br>**Mech. Heat Recovery Ventilation**<br>**Micro Wind Energy**<br>**Micro Hydro Gen. Schemes**<br>**Fuel Cell Technology**<br>***Units may be contextualised for one or more of the above systems*** |
| EVTS 2 | Install EVT Systems, Equipment and Components | |
| EVTS 3 | Test EVT Systems, Equipment and Components | |
| EVTS 4 | Commission EVT Systems, Equipment and Components | |
| EVTS 5 | Inspect EVT Systems, Equipment and Components | |
| EVTS 6 | Diagnose Faults in EVT Systems, Equipment and Components | |
| EVTS 7 | Rectify Faults EVT Systems, Equipment and Components | |
| EVTS 8 | Service and maintain EVT Systems, Equipment and Components | |

# SummitSkills Environmental Technology National Occupational Standards (Higher)

| NOS Units | | Environmental Technology (ET) Systems |
|---|---|---|
| EVTS 9 | Determine Environmental Legislation and Working Practice Requirements for ET Systems | **Solar Thermal**<br>**Solar Photovoltaics**<br>**Heat Pumps**<br>**Micro CHP**<br>**Biomass/Biomass Fuels (Liquid)**<br>**Rainwater Harvesting**<br>**Grey Water**<br>**Mech. Heat Recovery Ventilation**<br>**Micro Wind Energy**<br>**Micro Hydro Gen. Schemes**<br>**Fuel Cell Technology**<br>***Units may be contextualised for one or more of the above systems*** |
| EVTS 10 | Develop ET System Design Solutions | |
| EVTS 11 | Evaluate and Advise on ET System Designs | |
| EVTS 12 | Prepare and Agree ET System Designs | |
| EVTS 13 | Plan and Implement Work Methods and Resources to Achieve ET Systems Installation Requirements | |
| EVTS 14 | Implement Works to Achieve ET Systems Installation | |
| EVTS 15 | Commission and Handover ET Systems after Installation | |
| EVTS 16 | Manage Installation, Servicing and Maintenance of ET Systems | |

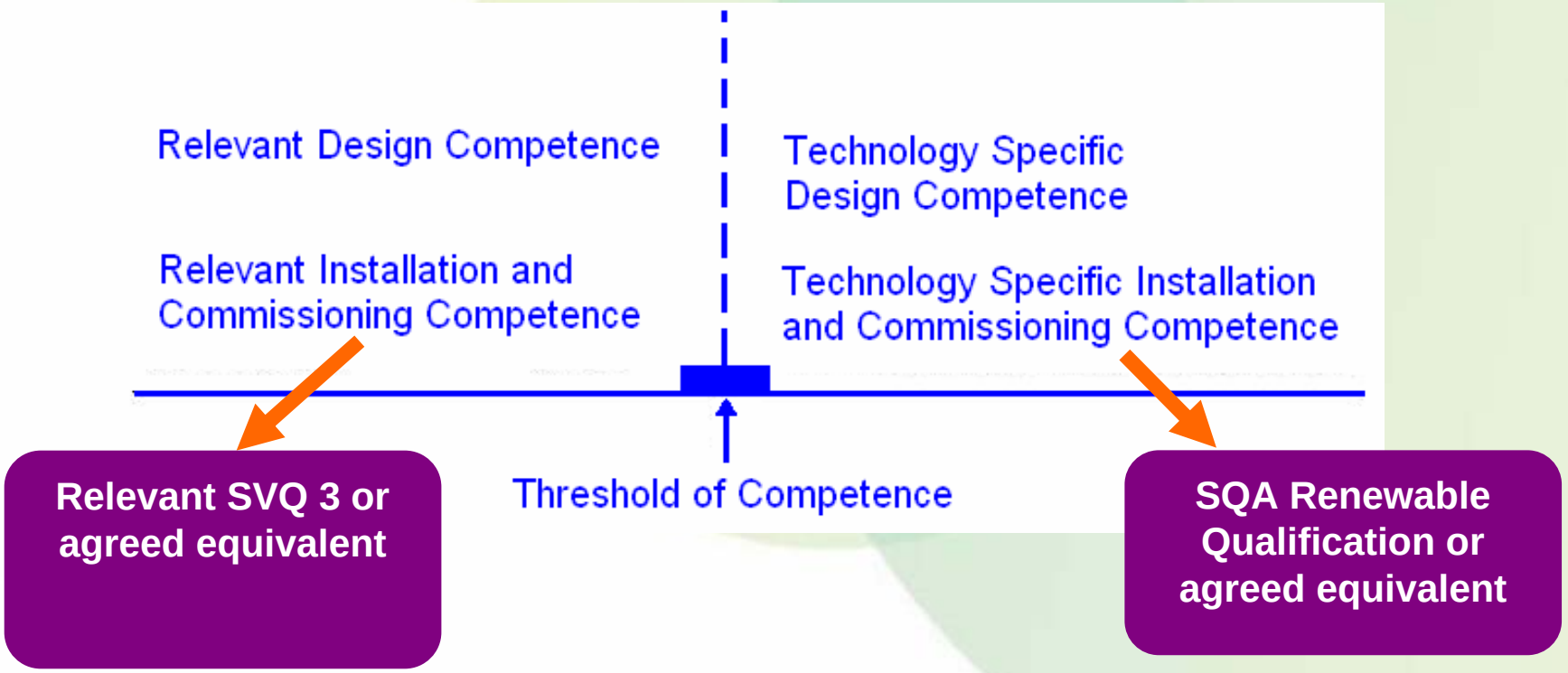
# The importance of the installer

- Approximately 71% of customer decisions are based upon installer guidance and recommendations

- Failure to recognise the importance of the installer and engage and up-skill a sufficient number of installers/installation businesses is likely to have a significant negative impact upon the deployment of environmental technology systems leading to a negative impact on emission reduction targets and renewable energy targets

# Competence for the Microrenewable Certifier of Construction Scheme

Key features of competence model



# SQA Unit Development: Solar Thermal

- Unit 1: Underpinning knowledge and occupational competence for installation, testing, commissioning and handover

- Unit 2: Underpinning knowledge and occupational competence for inspecting, service and maintenance

The units cover ‘active’ systems for domestic hot water production only. The units focus upon systems with up to 20$m^2$ of solar collector area.

# SQA Unit Development: Solar Photovoltaics

- Unit 1: Underpinning knowledge and occupational competence for installation, testing, commissioning and handover

- Unit 2: Underpinning knowledge and occupational competence for inspecting, service and maintenance

The units focus upon grid connected systems that are within the scope of Engineering Recommendation G83/1 with an electrical output of up to 5 kilowatt peak (kWp) connected to both single and three–phase installations

# SQA Unit Development: Heat Pumps

- Unit 1: Underpinning knowledge and occupational competence for installation, testing, commissioning and handover
- Unit 2: Underpinning knowledge and occupational competence for inspecting, service and maintenance

The unit focus upon systems up to 45kW load and include air source, water source and ground source systems. The units cover connection to collector loops and the fundamental requirements of collector loops installation. However, the unit does not cover collector loops installation in detail. The units cover the requirements for appropriate qualifications as required by The Fluorinated Greenhouse Gases Regulations 2008, in relation to heat pump work but the unit does not cover aspects of heat pump work that involves handling fluorinated greenhouse gases

# Proposed SQA Unit Development.

- Skilled Worker Units:

- Water harvesting and recycling.
- Biomass
- Micro CHP.
- Micro/small scale wind.
- Micro hydro.

# Proposed SQA Unit Development.

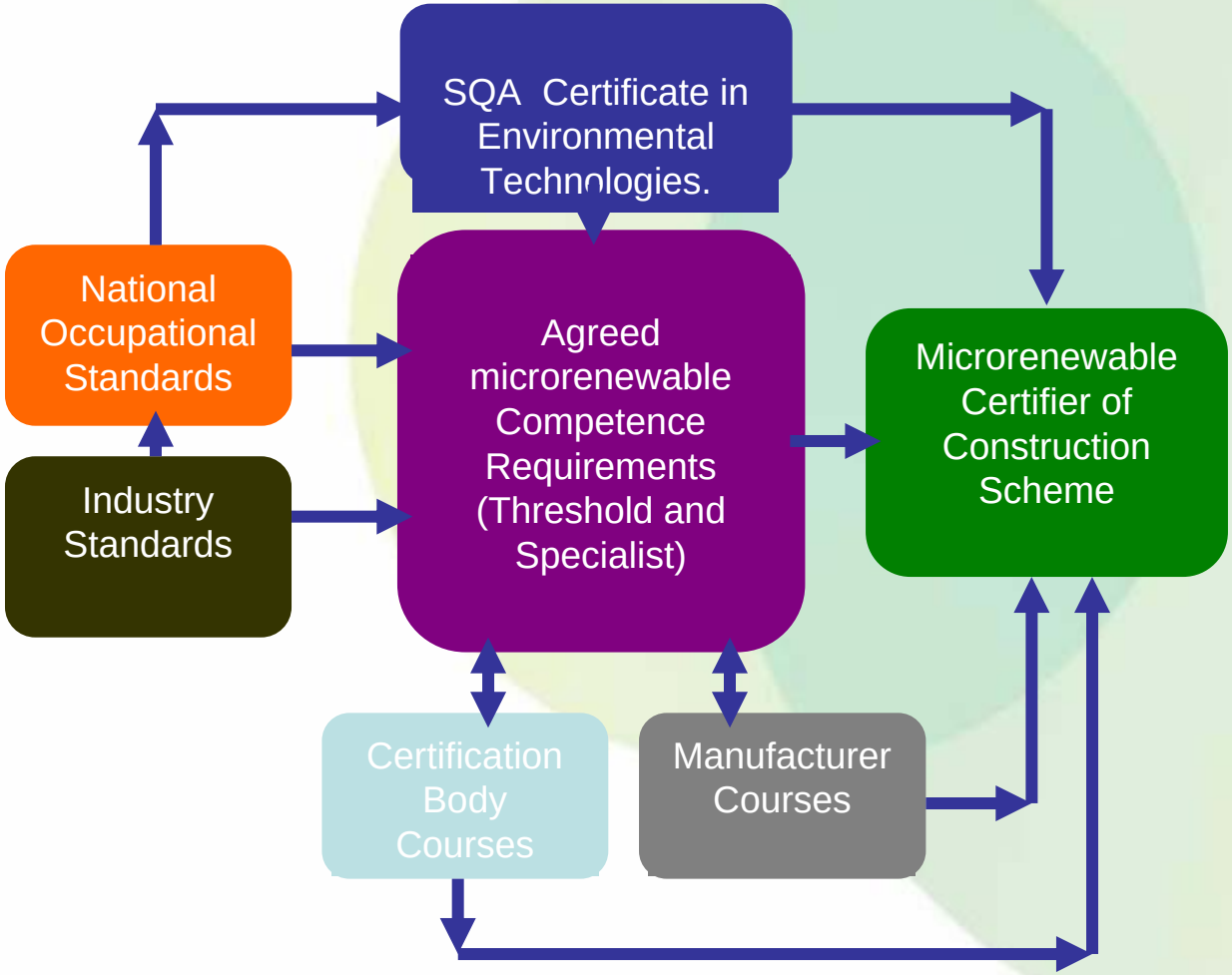
- Technical Design Units:

- Solar Thermal
- Solar Photovoltaic
- Heat Pumps
- Water harvesting and recycling
- Micro/small scale wind
- Micro hydro.

# Mapping Exercise.

- Certification Bodies Training Courses.
- SummitSkills Mapping Documents
- Evaluation of Mapping Exercise
- Recognition of Certification Bodies Training.
- Manufacturers Training.

# Where we would like to be



# Accessing the SQA Qualification Route

FE Colleges

Private Training Providers

Industry Environmental Technologies Training Centre

# Key Messages

- Only trained and competent individuals should be able to install, maintain and services these technologies
- BSE operatives already have the core competences, and will use the new competence based units to add the additional skill-sets and gain installer accreditation
- Support funding is urgently required to allow this up-skilling training to be undertaken
- A competent workforce is key to achieving the reductions in carbon emissions and the generation of electricity from non fossil fuel sources that the government is seeking