EN/04

Q-DIRECT - Results

Development of referentials for belgian quality in distributed renewable energy concepts

DURATION OF THE PROJECT
01/01/2007 – 31/01/2011

BUDGET
778.545 €

KEYWORDS
Renewable Energy Technology; Integrated Quality Scheme; Small-scale distributed energy system;

CONTEXT

Until 2008, the development of renewable energy was driven by a loose legislative framework of non-binding targets.
Since the adoption of the Renewable Electricity Directive and the EU RES Directive, energy and environmental policies have to reach legally-binding objectives and should therefore dispose of real performance evaluation systems.
Some Renewable Energy Technology (RET) markets are increasing at a fast pace, giving rise to constant evolutions.
In Belgium, major differences exist in terms of market penetration and supply chain of RETs, a.o. because of differentiated regional public support schemes.
Some support schemes attracted large numbers of suppliers and installers, leading to a highly diversified offer of products and to a lack of qualified professional structures.
On the other hand, end-users wishing to buy or lease small generation units usually expect good to high quality of related products and services.
Quality insurance for (emerging) RET have proven to be of utmost importance for their sustainable market deployment.
A particular aspect of the research consisted in approaching the design of a quality scheme at multiple levels according to the target group, the market chain level and the technologies covered.

OBJECTIVES

The main goal of the research was to set-up guidelines for policymakers to encompass the growth of distributed small-scale energy systems in Belgium, according to common ambition levels and requirements and high quality standards.
The so called Integrated Quality Scheme (IQS) should be designed to be further operated by an independent third party and offer the same confidence level & guarantees on product quality, system design, performance and installation reliability to the end-user, no matter the technology.

The aim of the first phase was to structure the quality requirements for each technology in order to provide policy and market instruments allowing policymakers and the professional sector to help the renewable energy sector to meet higher quality standards.

The overall objective of the second phase was to assess the interest and opportunity to integrate global & specific quality requirements and verification means into a comprehensive quality scheme, covering the full market chain for the reviewed renewable energy technologies, producing heat or electricity in the residential housing sector.
The key elements of such an integrated Quality System are shown below

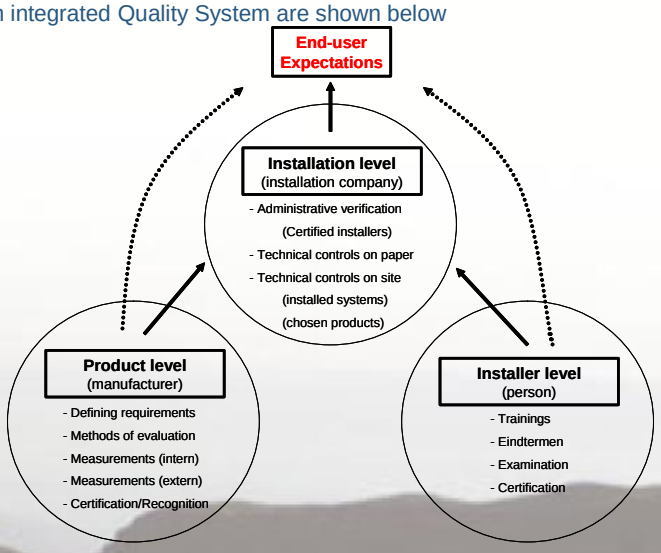

Figure 1: key elements of the integrated Quality System'

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CONCLUSIONS

Quality schemes with self-commitment and generic content can be considered as an initial ambition level in quality assurance.
Those with independent control and based on specific references can be recommended as a higher ambition level.
Quality assurance from the end-user perspective covers the whole market chain, from component to product, from system design to installation, up to commissioning, monitoring and maintenance of the installation in operation.
Common quality requirements (cross-technology) should cover the following areas:

- Components and system design
- Installation works, guarantee and after sale service
- Function control and monitoring of performance
- Third party evaluation of systems in operation.

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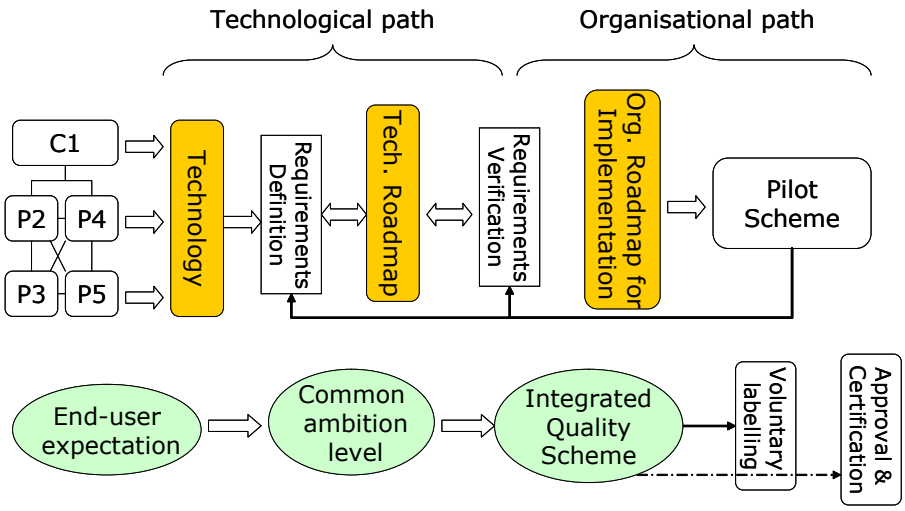

An important insight that came out of the methodological approach is that the definition and verification of requirements are more closely related to each other that one could expect.
The way of defining a requirement closely related to the approach intended to verify this requirement in practice.
End-user expectations - covering the whole market chain, from component level to system design, up to commissioning, monitoring and maintenance of installations in operation – were found to be an important driver for innovation offering a good starting point and a comprehensive framework for quality requirements.
A common labelling or certification process of products (e.g. solar keymark) and installers as persons (e.g. EUCERT. HP) at EU level would offer a more accurate basis for end-users to compare respective quality levels than national and especially regional labels; although EU marks and certification schemes might look for minimal requirements at first stage.

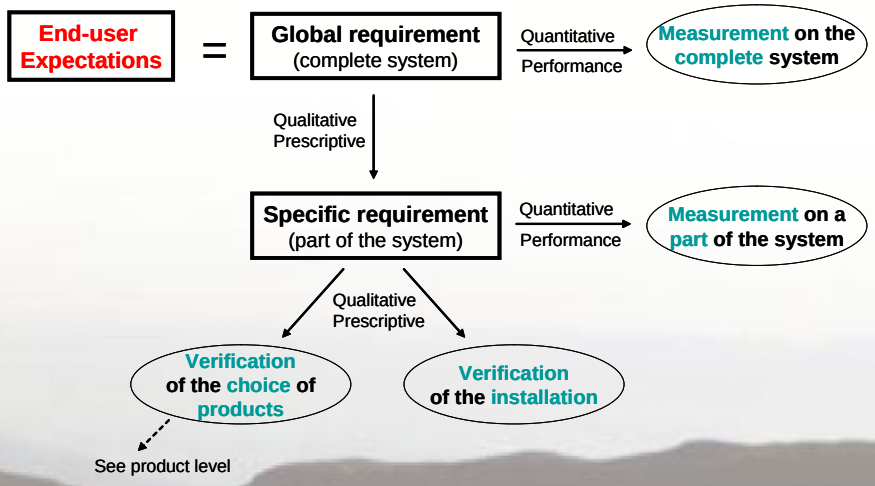

Figure 2: Framework of a bottom-up Quality approach based on end-user requirements

The approach envisaged for an Integrated Quality System would be based on voluntary product & systems (EU) requirements combined with installer certification (as a person, conform to EU RES DIR) and installer company labelling at national level (QUEST-like labeling process).
This would fit current structure & market organization of most of the reviewed technologies.

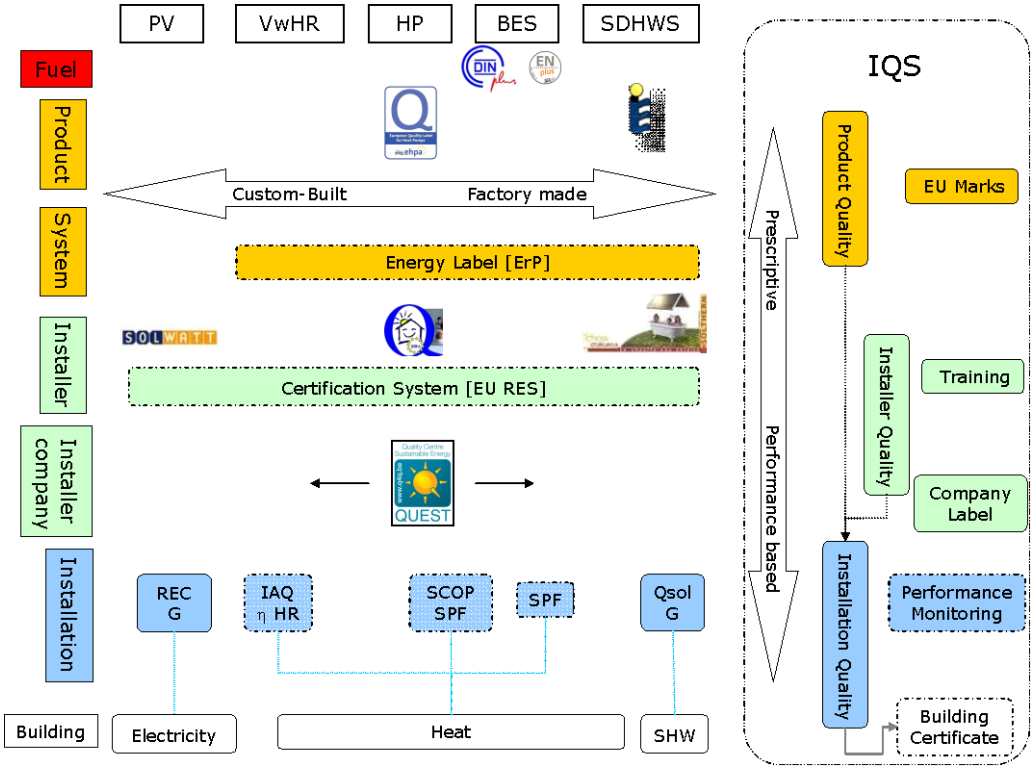

Figure 3: Overview of an integrated Quality System for the RETs in Belgium

- REC: Green Renewable Energy Certificate (based on green electricity production)
- G: Solar Irradiation
- IAQ: Indoor Air Quality
- η HR: Heath Recovery efficiency
- SPF : Seasonal Performance Factor
- Qsol : Solar inflow (solar energy contained in hot water container)
- SHw : Sanitary hot water

Quality Labelling must be related to quality assurance systems based on specific technical references.

Moreover, granting quality labels requires an independent verification of quality standards of the participating companies. This verification should contain regular evaluation and on site inspections of RET installations in operation.

One of the challenge of an IQS is to further harmonize references between the Regions at installer level in order to get a common base for installer certification (as persons) in a mutually recognized scheme from 2012 onwards.

The implementation of such scheme should lead to:

- higher quality standards of RET installations
- higher consumer confidence and choice among skilled professionals
- healthy competition within the EU RET installation market
- pan-European recognition of certified RET installers
- increased market share for RETs installed by certified professionals

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CONTRIBUTION OF THE PROJECT TO A SUSTAINABLE DEVELOPMENT POLICY

By involving representatives from the CONCERE group, the project contributed to identify ambition levels, quality requirements and verification means which are common to most of the reviewed technologies and can be implemented by both three Regions in the same way.
Since the very beginning of this project, both Regions made genuine efforts to collaborate among each other and with the federal government, especially through the ENOVER/CONCERE group, to harmonize and streamline quality requirements of distributed renewable energy technologies.
In the coming year (2011), the group is aiming to further elaborate a common certification system for RES installer (as persons), to comply with EU RES DIR and to improve professional skills in a coherent and harmonized way.

Results from the first phase showed that efficient (EU) marks ensuring minimal or higher quality level of RET components, products and systems were available on the belgian market. While at Installer level, existing tools (e.g. trainings, support schemes, labels) were not sufficient to ensure a minimum quality level to the end-users of RETs.

During the second phase of the research, partners attempted to identify the necessary steps to organize the implementation of an integrated quality scheme within the Belgian institutional context and in the broader panel of Energy Policy & Quality instruments.

Early 2009, project partners managed to implement and test quality requirements, evaluation guidelines & labeling scheme for residential PV systems in real life conditions, through the operational structure of the belgian quality centre for sustainable energy technologies (QUEST).

A voluntary quality label for PV system integrators - based on EN and IEC standards – was enforced in a complex and moving institutional framework.

Evaluation guidelines for Heat pumps, Solar thermal and Ventilation systems with heat recovery, followed, based on technological roadmaps. Those guidelines were designed to be operated by a single operator in Flanders, Walloon and Brussels, in first instance as a common voluntary labelling scheme for installer companies.

The research further showed that In Belgium, it would be largely more effective to have an Integrated Quality Scheme common to both three Regions, even if the building sector regulation is a regional competence.

The challenge is now to move from policy design to implementation at national level, with concrete action on the ground.

CONTACT INFORMATION

Coordinateur

Bernard Huberlant
3E nv
Rue du Canal 61
B-1000 Bruxelles
Tel: +32 (0)2 229 15 12
Fax: +32 (0)2 219 79 89
bernard.huberlant@3E.be

Partners

Jacques De Ruyck
Vrije Universiteit Brussel (VUB)
Faculteit Toegepaste Wetenschappen
Departement Mechanica
Pleinlaan 2
B-1000 Bruxelles
Tel: +32 (02) 629.23.93
Fax: +32 (0)2 629.28.65
jdruyck@vub.ac.be

Luk Vandaele
Centre Scientifique et Technique de la Construction (CSTC)
Lozenberg I 7
B-1932 Sint-Stevens-Woluwe
Tel:+32 (0)2 716 44 10
Fax:+32 (0)2 725 3212
luk.vandaele@bbri.be

Willy Van Passel
Hogeschool voor Wetenschap en Kunst – Campus De Nayer Instituut
De Nayerlaan 5,
B-2860 Sint Katelijne Waver
Tel: +32 (0)15 31 69 44
Fax:+32 (0)15 31 74 53
wvp@denayer.wenk.be

Johan Driesen
Katholieke Universiteit Leuven
Dept. Electrical Engineering
Kasteelpark Arenberg 10.
B-3001 Heverlee
Tel: +32 (0)16 32 10 20
Fax: +32 (0)16 32 19 85
johan.driesen@esat.kuleuven.be

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BELGIAN SCIENCE POLICY
Avenue Louise 231 Louizalaan • B-1050 Brussels
Tél. +32 (0)2 238 34 11 • Fax +32 (0)2 230 59 12 • www.belspo.be/ssd
Contact : Igor Struyf

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