



Non Technical Issues

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Lyon - 2006

■ OBJECTIVES

To study and analyse the non technical issues related to the application of certification and regulation of existing building processes in the Member States and mainly the financial, educational and administrative aspects.

In parallel, to propose specific actions to be undertaken in order to create a more positive environment for the application of certification processes

Task 1 : The Impact of certification processes
in the market

Task 2. The impact of the certification
schemes on the Human Capital

Task 3. The impact of the certification process
on the national administrations



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■ The Impact of Certification Process in the Market

The main objective of this task is to identify the principal economic impact of the applied certification processes in the market.

In particular, to calculate the direct and indirect cost of the certification processes, and to evaluate the possible impact on labour. In parallel, to investigate the possible economic schemes to be developed in order to finance the application of certification schemes.

The cost of the certification process may be classified as direct or indirect. Direct cost is that related to the delivery of the certification services, while indirect is the cost related to all prior and after the certification actions that aim to ensure and improve the certification process.



■ The Impact of Certification Process in the Market

The Various Components of the Certification Cost

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■ The Impact of Certification Process in the Market

Calculation of the Direct Cost

The calculation of the direct cost of the certification process involves knowledge of:

- a) The number of certifications to be carried out on an annual basis,
- b) The type of buildings to be certified and its complexity,
- c) The duration of the certification process,
- d) The cost to be paid for each type of certification.

Using questionnaires all the above information has been collected from all participant countries. The annual direct cost of the certification process has been calculated as:

$$\text{Direct Cost (Euros)} = \text{NCY} \times \text{CCB}$$

Where:

NYC is the Number of certifications per year, and
CCB is the cost of the certification per building



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■ The Impact of Certification Process in the Market

Calculation of the Direct Cost

Calculations have been performed for the residential and the tertiary sectors. Given that neither the number of certifications per year nor the cost can be estimated with sufficient accuracy, two scenarios have been prepared. The first scenario considers a high number of buildings to be certified per year, as well as a high cost per certification. The second scenario, considers a low number of certifications. As well as a low cost per certification.

Country	NL	DK	F	B /Br	B/WI	B/FI	GR	D	UK
No of Residential Buildings / year (High)	500000	90000	2100000	70223	113940	175000	235346	2200000	568000
No of Residential Buildings / year (Low)	290000	90000	2100000	70223	7617	175000	125000	750000	100000
Cost Per certificate (high)	160	530	200	285	285	285	150	400	400
Cost Per certificate (low)	115	320	100	170	170	170	100	200	200
Direct Cost for Residential Buildings (High)	80000000	47700000	4.2E+08	20013555	32472900	49875000	35301900	8.8E+08	2.27E+08
Direct Cost for Residential Buildings (Low)	33350000	28800000	2.1E+08	11937910	1294890	29750000	12500000	1.5E+08	20000000
Population	15786000	5293000	59080000	10161000	10161000	10161000	10645000	82220000	58830000
Direct cost per capita (high)	5.1	9.0	7.1	10.1	10.0	10.0	3.3	10.7	3.9
Direct cost per capita (low)	2.1	5.4	3.6	4.2	4.2	4.2	1.2	1.8	0.3
Certified buildings / capita / year (high)	0.03	0.02	0.04	0.04	0.04	0.04	0.02	0.03	0.01
Certified buildings / capita / year (low)	0.02	0.02	0.04	0.02	0.02	0.02	0.02	0.01	0.00



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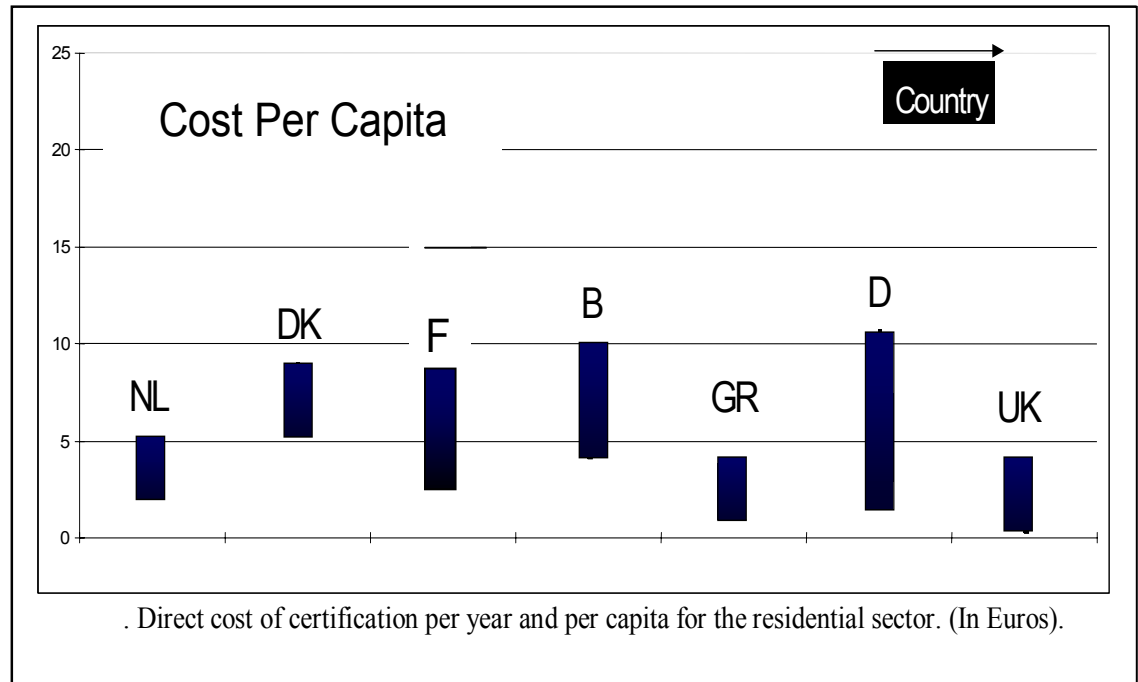
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■ The Impact of Certification Process in the Market

Calculation of the Direct Cost

Residential Sector

The cost of the certification process per capita and year varies between 3.5 to 10 Euros, For almost all countries the ration of the certified buildings per capita varies between 0,02 to 0,04.





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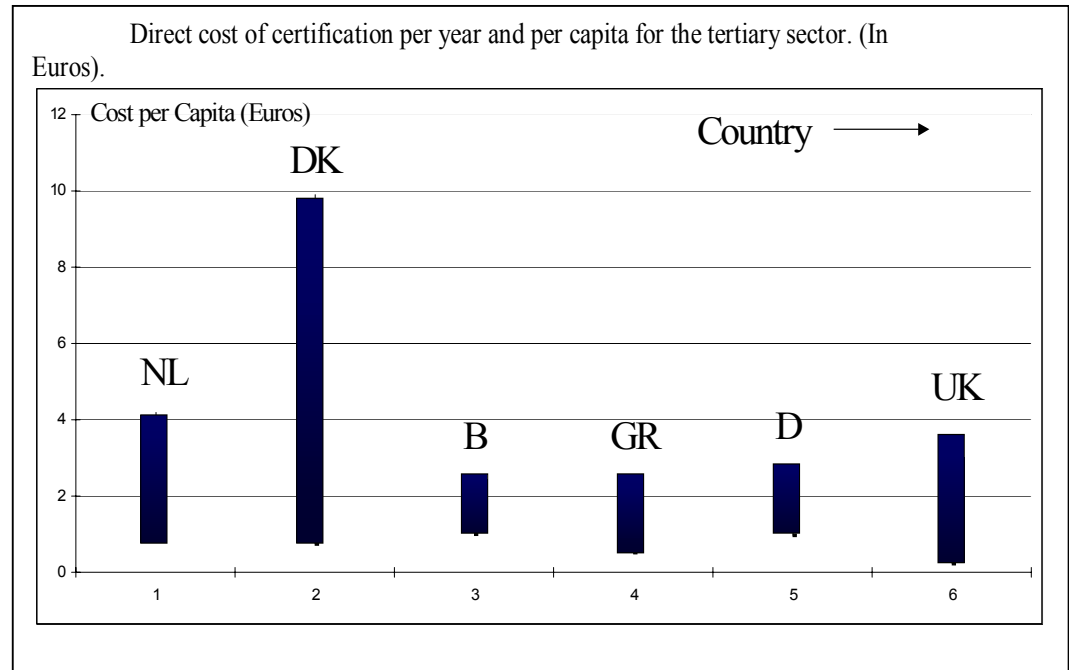
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■ The Impact of Certification Process in the Market

Calculation of the Direct Cost

Tertiary Sector

The direct cost of the certification process will be between 1 and 4 Euros per capita. Almost similar values have been calculated for all countries.





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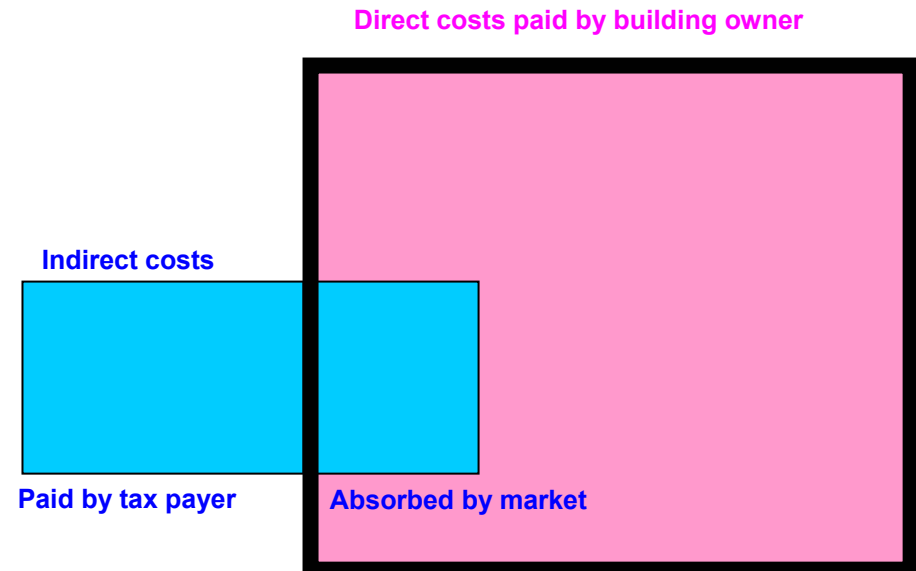
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■ The Impact of Certification Process in the Market

Calculation of the Indirect Cost

The indirect costs include the government funded activities required to regulate and oversee the scheme. Other indirect costs, such as the development of software tools, the training and accreditation of experts and Quality Assurance (QA), may be directly funded by government or may be left to the market to provide. Where the market delivers services which support the energy certification scheme, the resulting costs are built into the price paid by the building owner/occupier for an energy certificate.





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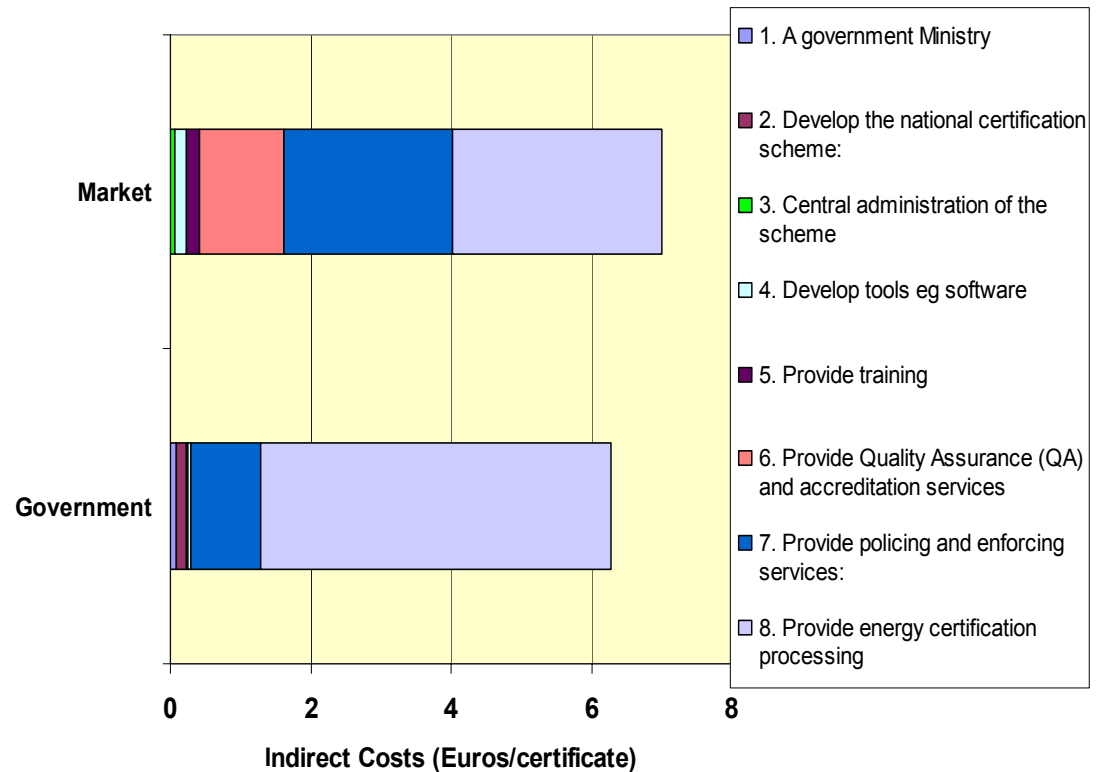
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■ The Impact of Certification Process in the Market

Calculation of the Indirect Cost

The Case of UK – Residential Buildings

Breakdown of Indirect Costs by task





■ The Impact of Certification Process in the Market

Calculation of the Indirect Cost

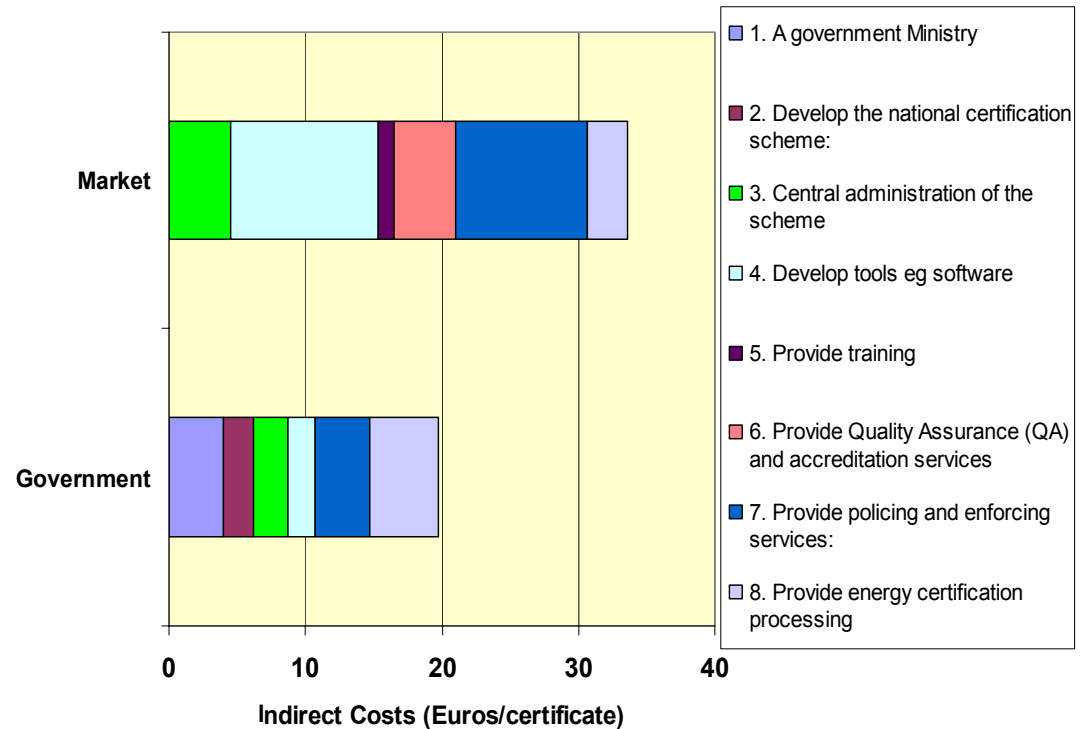
The Case of UK – Tertiary Buildings

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Breakdown of Indirect Costs by task





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■ The Impact of Certification Process in the Market

The Impact on Labor

The more important impact of the certification process on labour is related to the creation of the new certifiers. To evaluate the number of certificates and of certifiers, different data are necessary: In particular:

- Knowledge of the building stock and the amount of transactions for each category of considered buildings:
 - Number of new buildings,
 - Number of building sold on yearly basis,
 - Number of building rented out on yearly basis
 - Increase rate for the new constructions,
 - Increase rate for the number of sales,
 - The validity period of the certificate
- The necessary time to establish a certificate for an existing building,
- The way and the procedure certification will be applied in each country.

Country	NL	DK	F	B/Br	B/WI	B/FI	GR	D	UK
Number of Total Certifiers (High)	1350	1200	3000	125	400	1025	550	136000	20696
Number of total Certifiers (Low)	900	1200	1000	125	300	925	320	136000	2777
Number of Certifiers for residential buildings (high)	xxxxxxxx	xxxxxxxx	3000	xxxxxxxx	350	685	450	135000	19572
Number of Certifiers for residential buildings (low)	xxxxxxxx	xxxxxxxx	1000	xxxxxxxx	280	685	250	135000	1653
Population	15786000	5293000	59080000	10161000	10161000	10161000	10645000	82220000	58830000
ratio of Certifiers in the population/million citizens (high)	86	227	51	152	152	152	52	1654	352
Ratio of Certifiers in the population/ million citizens (low)	57	227	17	132	132	132	30	1654	47



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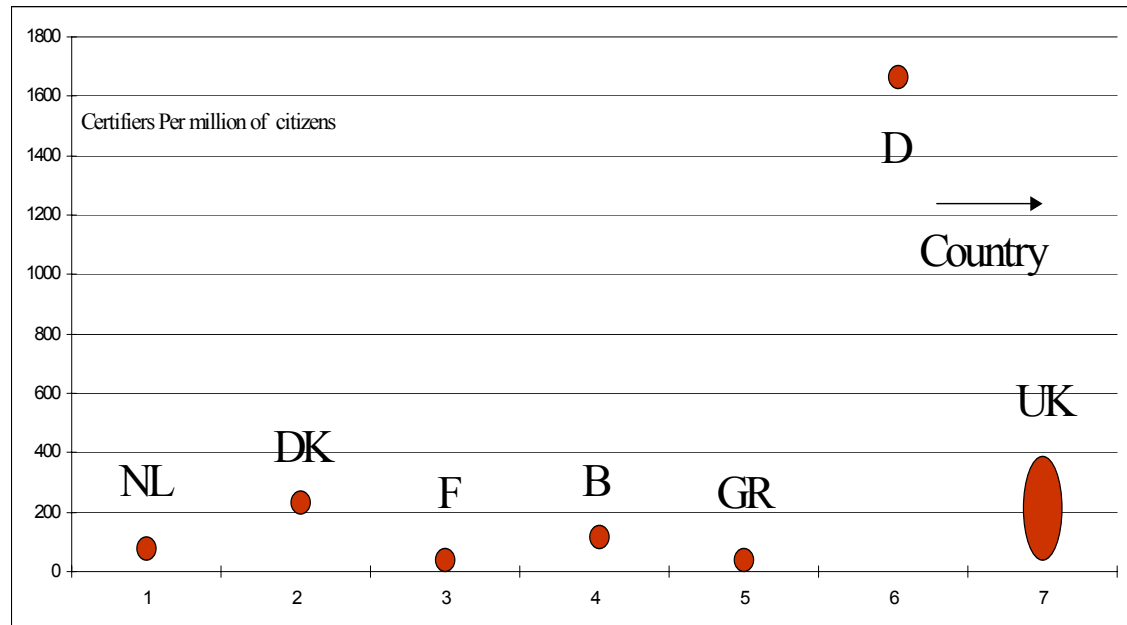
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■ The Impact of Certification Process in the Market

The Impact on Labor

In almost all countries, except Germany, the range of certifiers per million of inhabitants, is of the same order of magnitude. The mean range is around 85 to 250 certifiers per million. Germany, compared to the other countries, requires a very high percentage of certifiers. However, almost 99 percent of the total are certifiers to be used only in the residential sector, and apparently are engineers or technicians certifying in parallel systems and components of buildings, (boilers, A/C's, etc). This type of staff is not considered in the numbers given by the other countries. Thus, a direct comparison between Germany and the other participating countries is not possible





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■ The Impact of Certification Process in the Market

Possible Economic Schemes to Finance the Application of the Certification Process

Two types of initiatives could enhance the application of the energy certification of building which are financial incentive and complementary mechanisms. The financial incentive can be governmental initiative or can come from the private sector.

In general, some of the mentioned mechanisms would probably not only be linked to the deliverance of energy certificates but also to the realization of a minimum level of energy performance in the considered buildings.

Thus such a mechanism is no more focusing on all buildings but only on a specific category. Until now, few countries have an applied incentives to promote energy savings in buildings. Belgium has promoted tax reductions while the Netherlands until the end of 2003, the realization of voluntary energy audits in residential buildings, was combined with subsidies



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■ The Impact of Certification Process in the Market

Possible Economic Schemes to Finance the Application of
the Certification Process

Financial Incentives offered by Governments

- Direct subsidies to energy certificate paid to the end-user
 - Direct subsidy to energy certificate paid directly to the experts
 - Reduction of Taxes.
- Reduced VAT rate on energy certificate.
- Specific guarantee for loan in case of certification.



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■ The Impact of Certification Process in the Market

Possible Economic Schemes to Finance the Application of the Certification Process

Financial Incentives offered by non Governmental Bodies

■ Reduced loan rate for energy efficient buildings.

As the certificate offers an excellent tool to judge of the energy quality of buildings, it could be used by the bank sector to offer reduced loan rate to energy efficient buildings or for major renovations involving a substantial improvement in the energy efficiency. The main advantage is the realization of energy saving measures, while benefits will only be observed if renovations are done. This will occur only a few years after delivering the certificate.

■ Subsidy schemes by energy distributors.

The government may agree with the energy suppliers to promote certification and energy savings.



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■ The Impact of Certification Process on Human Capital

Objectives

The main objective is to identify :

the nature and qualifications of the Certifiers,

the necessary training effort, tasks, and responsibility
and differential needs for the various types of
buildings and finally

the registration, accreditation and supervision
schemes to be applied.

Data and information concerning the specific tasks
have been collected for all the participating
countries.



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■ The Impact of Certification Process on Human Capital

The Nature and Qualification of the Certifiers.

To define the nature and the qualifications of the certifiers three main issues have to be considered : a) The Profession the certifiers, b) The prior education of the certifiers, and c) The specific expertise of the certifiers

The results of the survey show that certifiers in the Member States may have a background of architecture, design , structural building services and HVAC engineers, energy auditors and specialised assessors as well as energy distribution companies and environmental health officers. Different requirements apply in the Member States.

France and the Netherlands prefer specialized assessors; like energy or HVAC consultants, building services engineers and energy distribution companies. In Denmark, the qualifications of the certifiers will be engineers and architects. In Belgium, the preference is for engineers or architects .In Germany, in the field of residential buildings there is a big number of differently qualified certifiers like handicrafts, chimney sweepers, architects and engineers. All of them have to provide a proof for further education on that kind of work. For the non residential buildings only qualified planners are accepted. In all other countries, the profession of the certifiers is not yet decided.



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■ The Impact of Certification Process on Human Capital

The Nature and Qualification of the Certifiers.

Regarding the prior education of the certifiers, Countries ask for a technical education and a certain experience. In particular in France, although is not yet decided, the requirement could be a combination of minimal general knowledge, minimal technical knowledge and minimal know-how. Concerning the specific expertise of the certifiers, some countries differentiate their demands according to the type of buildings. For housing, the requirements are more simple and experts with some experience on HVAC systems may fill the needs, while for large and more complex buildings, auditing skills may be necessary, while a very good knowledge of building physics is required. In particular in the Netherlands and in France both knowledge of building aspects and building installation aspects (hvac), are necessary. In Denmark, the energy consultant needs a minimum of 4-5 years documented, relevant experience in building technology and energy consultancy. Finally, in Belgium, it is proposed to differentiate the expertise and the specifications for the certifiers of residential and large buildings



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■ The Impact of Certification Process on Human Capital

The Necessary Training Effort, Tasks and Responsibility and differential needs for the various types of Buildings

Official and almost fully developed training programs have been developed in Denmark, Germany, the Flanders area of Belgium, in Denmark and the Netherlands.

As it concerns the preparation of the training material, it seems that the member states will allocate this task to energy agencies, universities, accreditation bodies, to various experts, to commercial software providers, to professional institutions, or to local authorities. For most of the countries the preparation of the training material will be under the control of the state.

Three main QA categories have been defined : a) Registration of assessors, b) Certification or accreditation of companies and c) Accreditation of companies OR certification of assessors. In The Netherlands, the accreditation of companies system is going to be used, while in France the third system is more probable one. In UK, only accredited assessors will be able to issue an energy certificate based on an Asset Rating, while accreditation will be achieved by having the necessary qualifications, including passing an approved training course and exam.



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- Necessary Structures and Transformations in the MS

Objectives

The main objective is to identify the necessary structure and transformations that should happen to the national administrations in order to better support the application of the certification schemes in the countries.

Two main issues have been considered :

- Identification of the new Structures to be created in the Member States
- Identification of Possible Actions to stress the certification process at a local level



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- Necessary Structures and Transformations in the MS

New Structures in the Member States

The introduction of the Directive in the Member States requires new structures in the national administration.

New main structures should belong to the central administration while sub sections may be decentralised at a local or regional level. New services may be classified in three main categories, and in particular in

- a) Preparatory Services,
- b) Accreditation and Certification Services and
- c) Post auditing services.



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- Necessary Structures and Transformations in the MS

New Structures in the Member States

Preparatory Services

Such a central service should have as main aim the validation of the whole procedure related to the introduction of the directive, (legislative issues, training, etc), as well as all tasks related to the Information and dissemination in the country.

Thus, it may include two main services that may operate at a local or regional level :

Service for the Supervision and Validation of the Certification Procedure

Service on Information and Dissemination.



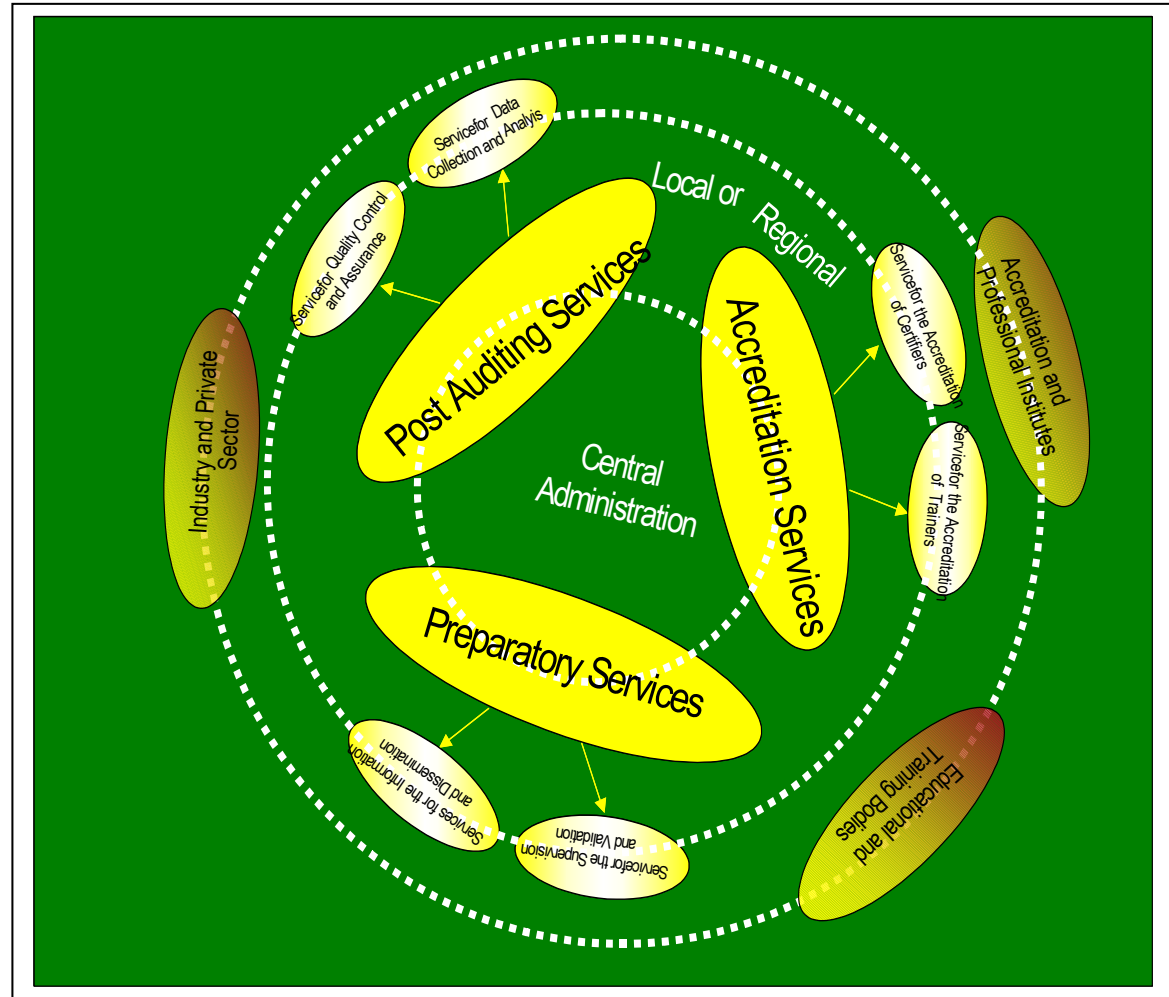
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New Structures in the Member States

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■ Necessary Structures and Transformations in the MS

New Structures in the Member States

Accreditation and Certification Services

Such a central service should aim to define, apply and supervise the accreditation procedure for both the certifiers and the trainers. Such a task may be undertaken in collaboration with accreditation bodies, professional institutions and other organisations in the country fully or partly responsible for accreditation. Thus, it may involve services for the accreditation of certifiers and possibly for the accreditation of the trainers, that may operate at a regional or local level :

Very important experience exist in France regarding the certification of persons or organisms and in the accreditation of companies. As it concerns the certification of persons or organisms, a three levels procedure as shown in Figure 6 is followed. In level 1 a certified person or organism delivers an 'energy performance certificate, while in level 2 a certification body delivers 'a certificate to a person or organism' for his 'Energy performance activity. Finally in level 3 an accreditation body delivers 'an accreditation' to an organism for his 'personnel certification activity'



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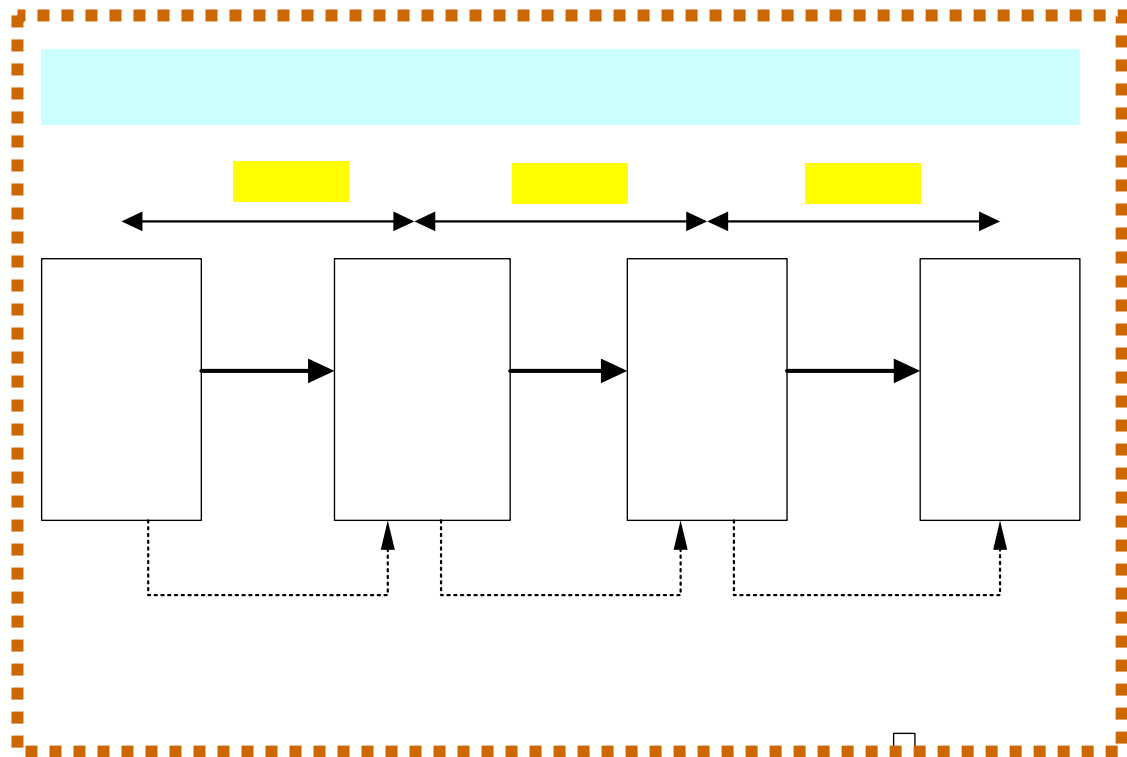
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- Necessary Structures and Transformations in the MS

New Structures in the Member States

Accreditation and Certification Services





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New Structures in the Member States

Accreditation and Certification Services

Such a central service should aim to control and ensure the good application of the defined and agreed procedure and also to collect the energy related data analyse them and extract conclusions on the application of the directive.

It may include two sub – services that may operate at a regional or local level .

In particular :

Service for Quality Control and Assurance

Service for Data Collection and Analysis



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- Necessary Structures and Transformations in the MS

New Structures in the Member States

Accreditation and Certification Services

Post Auditing Services have been applied in Denmark where there is a wide experience. The definition of "post-auditing services" includes collection of data from the labelling schemes and the quality control of these. In Denmark, ELO, the Energy Management Scheme for Large Buildings has been applied.

The energy management scheme consisted of two parts, an energy label and an energy plan, which both have to be produced by an appointed ELO consultant. The establishment of a coherent quality control has had a relatively high priority in the Danish Scheme.

Experience obtained through the early years of the scheme showed that it is evident that energy labels and plans have a high level of reliability and uniformity, if the scheme is to gain ground in the sector.



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■ Conclusions

Important work has been carried out to identify the :

- Impact of the Certification on the Market. In particular the direct and indirect cost of the certification have been calculated.
- The impact of Certification on the Human Capital. In particular, the Necessary Training Effort, Tasks and Responsibility and differential needs for the various types of Buildings.
- The Necessary Structures and Transformations in the Member States.

The results can be used by the Member States, the Commission and the European Citizens to have a better knowledge on the impact of the certifications and thus plan in a more efficient way the necessary policies.