

## 10. Policy measures in the tertiary sector

The tertiary sector has some characteristics of energy use in common with households, e.g. a large demand for space heating and much electricity use for lighting and appliances. However, decision making on energy savings is far more diverse in this sector due to the heterogeneity of the sector, e.g.:

- the differences in scale of energy consumption;
- differences in required pay-back times for public sector premises and commercial buildings
- sub-sectors with specific energy uses, such as agriculture/horticulture, hospitals and cooled warehouses.

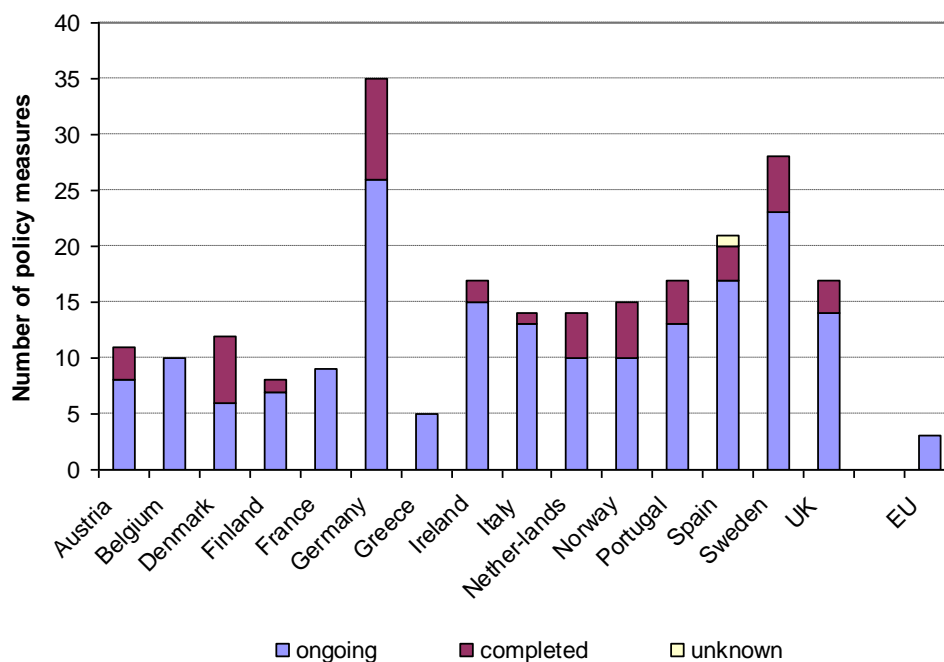
These factors make it hard to analyse policy measures and their effect for the tertiary sector as a whole. It also explains why policy measures that look comparable with that of households (e.g. standards for insulation or boilers) could have very different effects in both sectors.

### 10.1. Patterns and dynamics of energy efficiency measures

#### Large differences in number of policy measures between EU-countries

A In the MURE-database about 250 policy measures are present for the tertiary sector in Member States plus Norway, or on average almost 17 policy measures per country. However, the number varies considerably, from 8 for Finland to 35 for Germany (**Figure 10-1**). Contrary to households only a very small number of EU policy measures is aimed at tertiary energy use. About 70% of all policy measures are ongoing, reflecting the present policy efforts of countries. Again the number varies considerably, between 5 (Greece) and 25 (Germany).

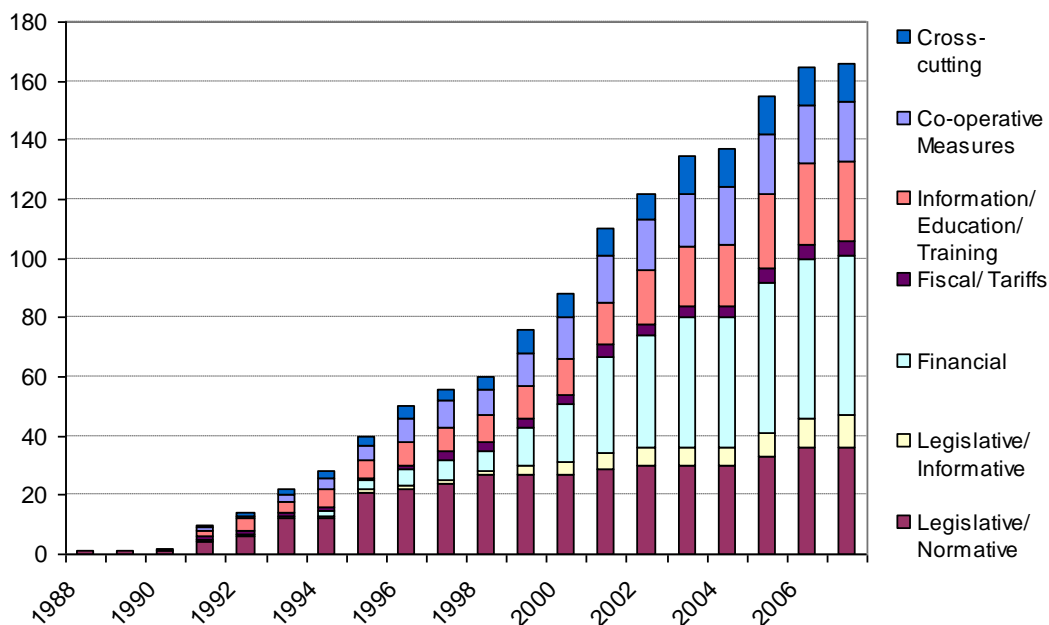
**Figure 10-1: Number and status of policy measures for each EU-country and the EU**



## Much more policy measures, especially financial

The total number of active policy measures has increased substantially over the years (**Figure 10-2**). From 1995 on the number has increased most for financial policy measures (e.g. subsidies). To a lesser extent this is also true for information/education. Standards (legislative/normative) were already introduced in the early nineties and the number has been quite stable from then on. The number of cross cutting measures, mainly regarding taxes (based on energy use or CO2 emission), seems small but one tax measure per county can have a significant effect, as it influences all energy use. Fiscal measures (e.g. tax deductions for investment in energy savings) and labels (legislative/informative) do not play an important role in tertiary energy savings policy. However, co-operative measures (voluntary agreements) are relatively popular in this sector.

**Figure 10-2: Development of active policy measures by type in all EU-countries**



## Short lifetimes for subsidies and information measures

The number of active policy measures is the result of additions of new measures and subtractions due to measures that are no longer applied. The total number of newly introduced measures from 1990 on is five to six times higher than the number of completed measures. For completed policy measures legislative measures take the largest share, followed by financial measures and information/education.

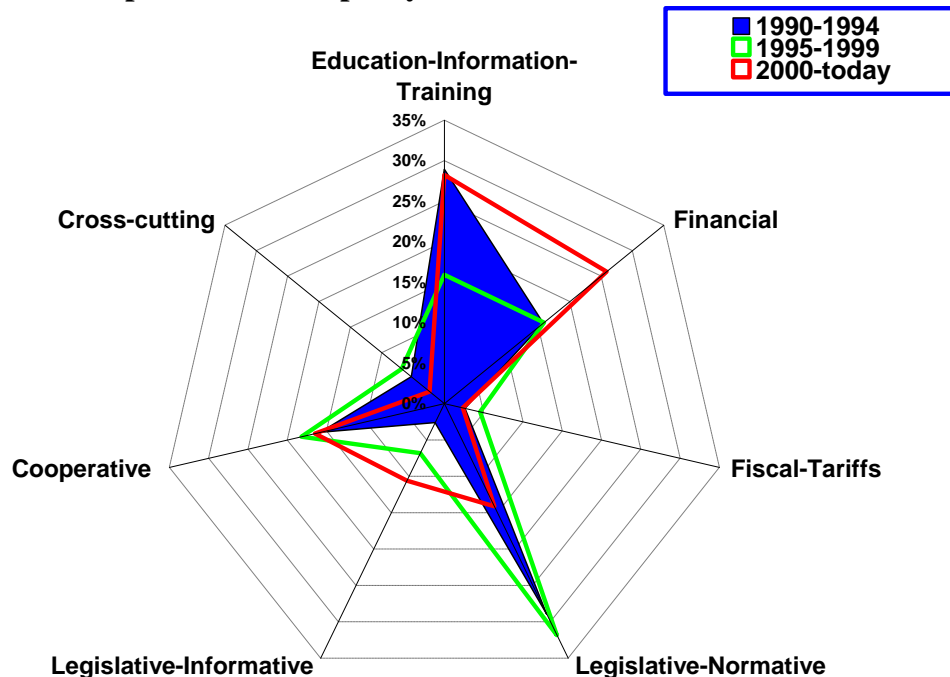
It can be concluded that taxes (cross-cutting) are introduced but not ended in the period observed. The same is valid for legislative/informative, including labels. Actually, the same holds for standards, as the completed measures generally are replaced by a new measure with stricter standards (peak in 1995). Financial and information/education measures are often introduced and often completed, suggesting a rather short lifetime of these measures.

## No robust trends for chosen types of policy measures

The spider-graph (**Figure 10-3**) shows the distribution of policy measures over seven main categories and for three periods. For the most important types it shows:

- a very stable contribution for cooperative measures (agreements)
- a temporarily decrease for education/information
- a recent decrease for standards (legislative/normative)
- a recent increase for financial measures (subsidies).
- a continuous increase for labels (legislative/informative).

**Figure 10-3: Composition of new policy measures for EU-countries since 1990**



## Countries make extreme choices as to type of policy measures

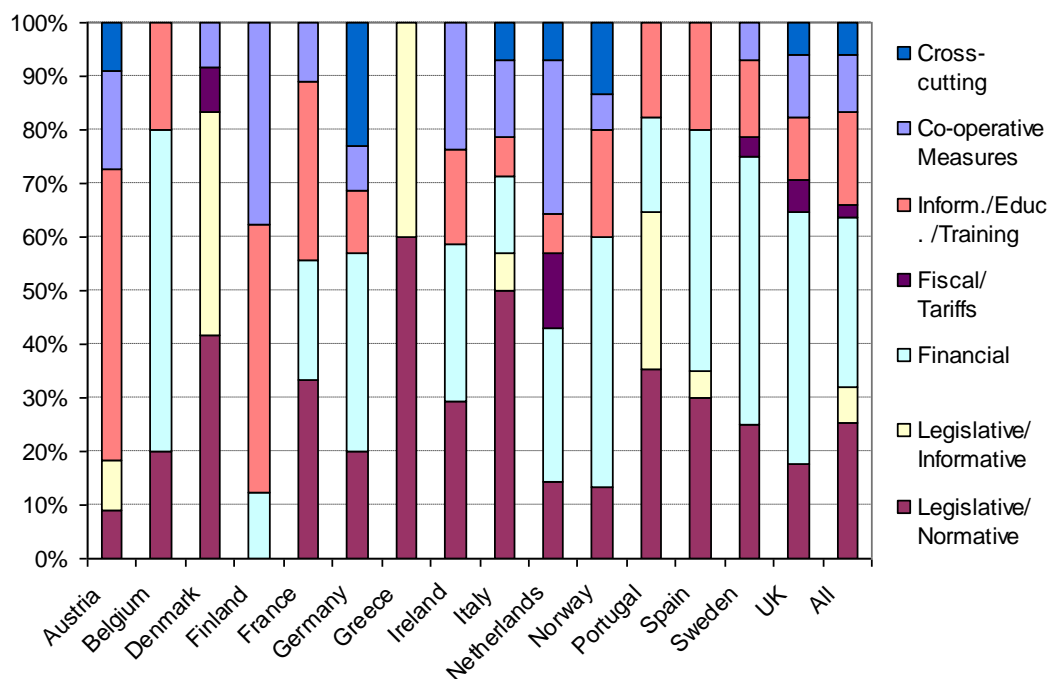
Countries make very different choices as to the type of policy measures (**Figure 10-4**). The most extreme choices per type of policy measure are:

- Legislative/normative: Greece (60%) versus Finland (0%)
- Legislative/informative: Denmark (42%) versus many without any
- Financial: Belgium (60%) versus Denmark and Greece with 0%
- Fiscal/tariffs: Netherlands (14%) versus many without any
- Information/education/training: Austria and Finland (50%) versus Denmark/Greece (0%)
- Co-operative measures: Netherlands (29%) versus many without any
- Cross-cutting: Germany (23%) versus many without any.

These choices resemble in most cases the choices for the household sector.

If all measure types are taken into account the Greece set of policy measures is focused the most on only few types. The most evenly distributed set of policy measures is applied in the Netherlands.

**Figure 10-4: Policy measures per type for EU-countries (fraction of total number)**



### Limited focus of policy on public sector

Policy measures that are related to the public sector are:

- regulation on public lighting
- mandatory action plan or energy report for municipalities
- governing by example.

Half of the EU-countries has no such policy measures; the other half has up to two measures. On average about one measure out of fifteen is focused on the public sector.

### Policy measures unevenly distributed over targeted energy uses

Policy measures on energy savings often regard a specific part of tertiary energy consumption. The coverage is shown (Table 10-1) for the following targets of policy measures:

- New buildings
- Boilers and CHP
- Existing buildings
- Appliances and lighting

In all countries the set of policy measures covers energy use in new buildings but this is not the case for other parts of energy use. The distribution of policy measures over all energy use targets is often uneven. This is highlighted by the value for divergence, the difference from an even distribution where each targeted energy use is covered by 25% of all policy measures. The divergence is by far the highest for Norway and is low for six other countries. Generally

countries with a larger number of policy measures tend to have a more even distribution over different energy use targets.

The divergence found is much larger than for (see **Table 10-1**). An important factor is the coverage of electricity use in the Tertiary sector, where almost no policy measure is targeted at the large amount of electricity use in existing buildings.

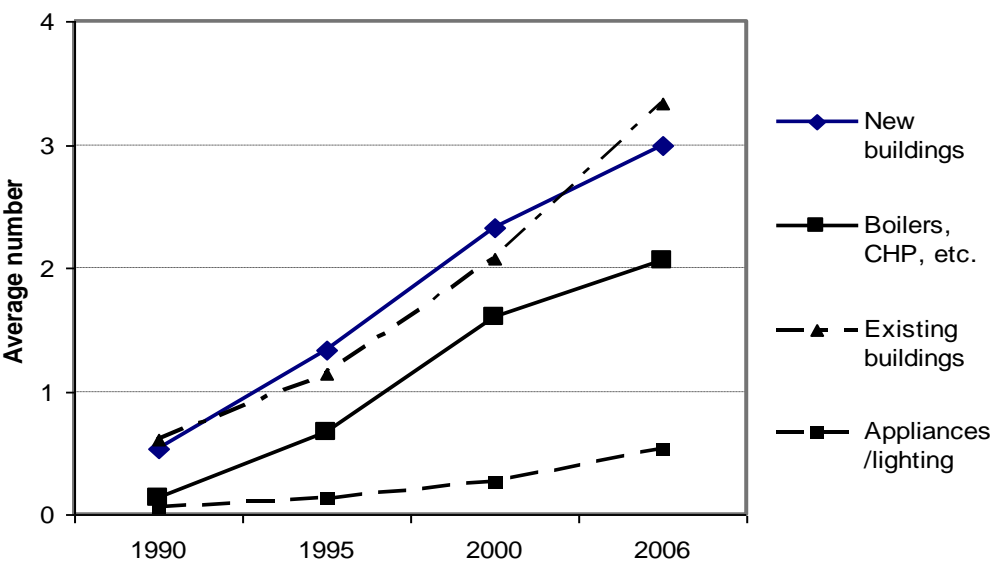
**Table 10-1: Policy measures per targeted energy use and divergence for EU-countries**

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Norway	Portugal	Spain	Sweden	UK
New buildings	2	1	3	1	2	4	1	7	3	4	3	2	4	5	3
Boilers/CHP	0	2	3	0	0	4	2	1	5	1	0	5	0	6	2
Existing buildings	1	0	1	1	1	12	0	1	2	4	0	0	1	2	3
Appliances / lighting	0	1	0	1	1	1	0	1	0	0	0	0	2	1	0
Divergence	25%	13%	18%	13%	13%	16%	25%	23%	15%	19%	38%	25%	18%	14%	13%

**Policy coverage of appliances/lighting lags behind**

Each part of energy use is covered by an increasing number of policy measures. However, the number for appliances/lighting lags much behind (**Figure 10-5**). Note that the average number per EU-country can be far less than unity (see appliances) when many countries do not target (yet) some parts of energy use.

**Figure 10-5: Average number of policy measures per EU-country, targeted at different energy uses in the period 1990-2006**



## Broad policy measures sparsely applied

Broad policy measures, such as taxes and information campaigns, aim by nature at all energy uses. General information and awareness campaigns are present in most countries. However, only 40% of EU-countries applies taxes (energy or CO<sub>2</sub>-based).

Audits are a special case of general policy measures. On the one hand they stimulate, like taxes, energy savings in a broad way by providing information on all kind of saving measures. On the other hand they often are applied in specific end-use sectors only. The effective combination of audits, for information on saving measures, and taxes, for an incentive to invest, is present in four countries only.

Therefore most countries do not have an alternative to stimulate energy saving investments, in case specific policy measures, such as subsidy schemes, are lacking.

## EPBD only partially transposed in national policy

The Energy Performance of Buildings directive (EPBD, see box in section 4.1) of the EU must be transposed into national legislation and policy measures. All Member States already implemented either insulation or performance standards for new buildings (**Table 10-2**). So, the demand for standards in the EPBD more or less follows already existing practice. However, as to the demanded certificates not all countries have a policy measure in place. About 40% of the countries already did implement national policy measures on inspection, but these have to be adapted in line with the EPBD.

**Table 10-2: Number of policy measure per country related to EU policy**

	Austria	Belgium	Denmark	Finland	France	Germany	Greece	Ireland	Italy	Netherlands	Norway	Portugal	Spain	Sweden	United Kingdom
<b>EPBD:</b>															
- standards	1	1	2	0	2	4	1	5	2	2	2	2	4	2	2
- certificates	0	0	2	0	0	1	0	0	2	0	0	2	1	0	0
- inspection	0	0	3	0	0	1	1	0	1	0	0	2	0	2	0
<b>Labels appliances</b>	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0
<b>ECO design</b>	0	0	0	0	1	0	0	0	0	0	0	0	2	1	0
<b>Information</b>	0	0	0	1	0	1	0	2	0	0	2	2	1	2	0

## Few national measures to be expected from Label and Eco-design directives

There are almost no national policy measures related to the labelling or eco-design directive (**Table 10-2**). For labels the reason is that this directive hardly regards appliances in tertiary sectors. The focus of the eco-design directive is more broadly; therefore it will cover efficient tertiary systems as well. However, because the directive is in its take-off stage almost no country measures can be expected. The few country measures present regard procurement activities that resemble the eco-design approach.

## General and focused information campaigns

Half of the EU-countries already have information campaigns. The campaign being part of the Energy Efficiency Action Plan (EEAP) 2006 of the European Commission supports MS in this field. The recently adopted Energy Service directive (ESD) asks MS to disseminate information on possible energy efficiency measures. Many countries still have to meet these new ESD-demands.

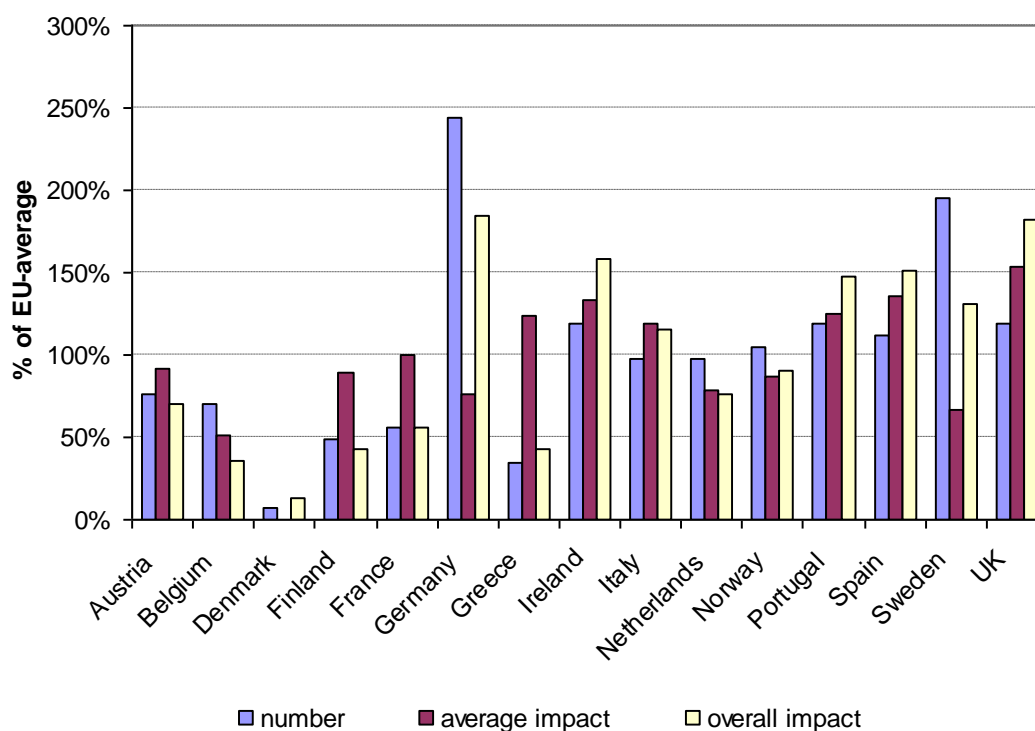
## 10.2. Impact of policy measures

About 80% of the policy measures in the MURE data base have been evaluated as to their effect on energy use. The impact of these measures has been qualitatively rated as low, medium or high. The total impact of groups of measures has been calculated with weighting factors of 1, 3 and 5 for low, medium and high.

### Total impact per country dependent on quantity and quality of policy measures

The overall impact of all measures for each EU-country shows large differences (**Figure 10-6**). Because this could be due to differences in the number of measures, these are shown as well. From the overall impact and total number an average impact has been calculated. Germany has the largest number of policy measures but a modest average impact. The UK has the largest average impact per measure but an average number of measures. As a result both show the same and highest overall impact of all countries.

**Figure 10-6: Rated policy measures and average/total impact for EU-countries (% of EU-average)**

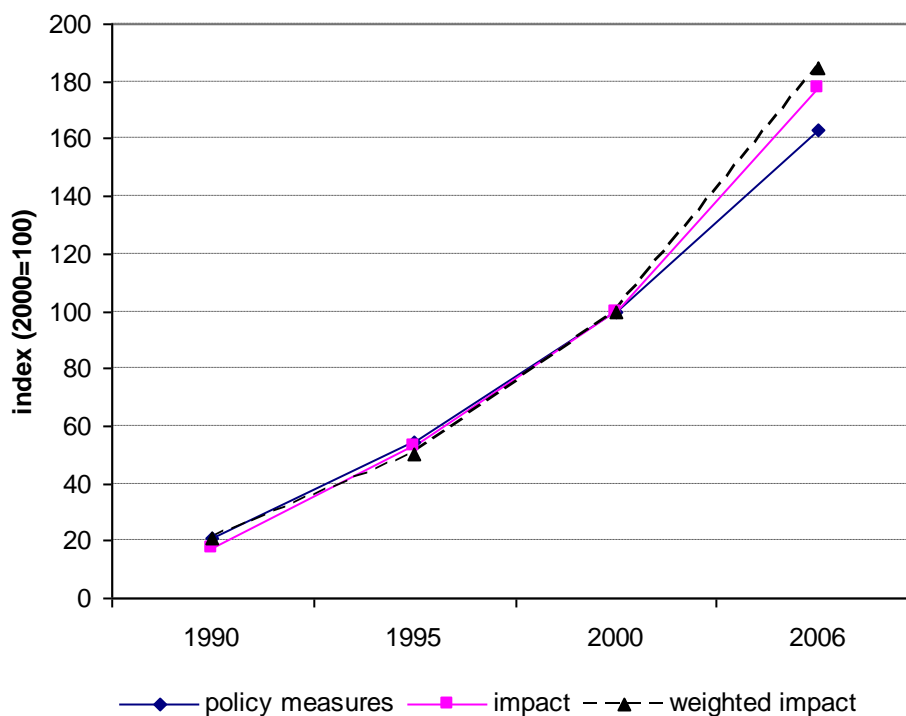


### Average impact per policy measure increases slightly

The total impact of policy measures for EU-countries in the period 1990-2006 has been rising sharply (**Figure 10-7**). As the impact increases slightly faster than the number from 2000 on, it may be concluded that the average impact of policy measures has increased recently.

If the total impact is calculated with weighting factors representing the final energy use of countries in 2000, a further increase in the average impact per policy measure is visible. This is due to a higher average impact for the large countries.

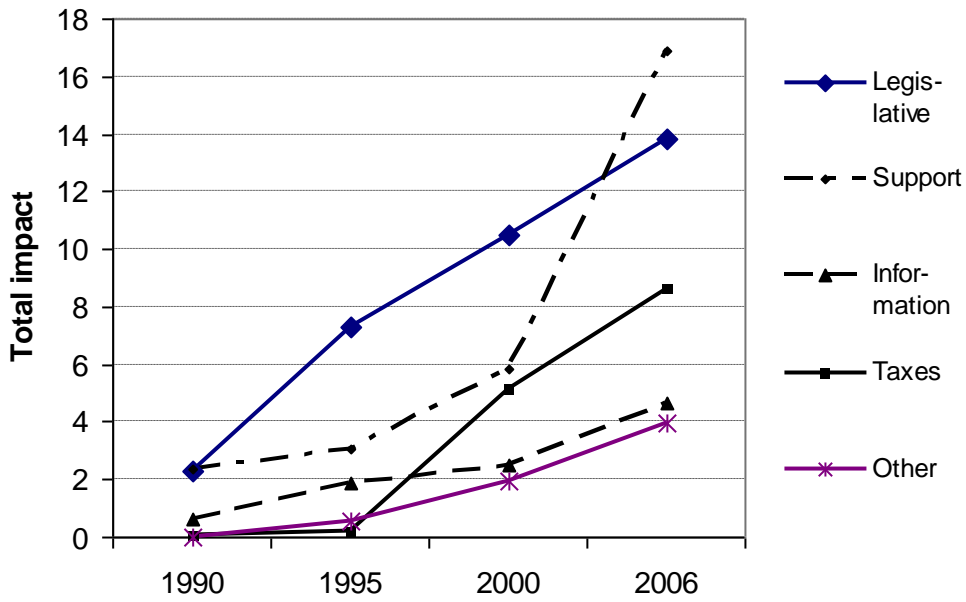
**Figure 10-7: Development of the number and the (weighted) total impact of policy measures for all EU-countries (2000=100)**



### Increasing impact of financial support measures

The total impact of standards (legislative/normative) had the highest impact in the nineties. However, recently financial measures have become more important (**Figure 10-8**). Other policy measures (e.g. voluntary agreements) and information show a modest contribution over the whole period. The impact of taxes did increase relatively the most from 1995 on.

**Figure 10-8: Development of total impact per policy measure type, for all EU-countries**



### 10.3. Innovative energy efficiency measures

#### Criteria used

For tertiary sectors the heterogeneity of energy use and energy users makes it very difficult to attain extra energy savings with policy. Therefore the main criterion for selecting innovative policy measures is effectiveness. Acidification and security of supply are less important given the rather clean way of energy use in this sector. Competitiveness is hardly relevant as total energy costs are a minor fraction of production costs only. The relationship with R&D policy and influencing energy use itself could be relevant as criteria.

Innovative measures do not necessarily have the highest impact, nor does innovative necessarily imply that the measure is completely novel.

#### List of innovative measures

The following policy measures have been selected from the MURE-database, based on the specified criteria (**Table 10-3**).

In Austria the “**Special energy commissioners** of the Federal Government” can be seen as an integrated approach that provides both information and incentives. The commissioner connects administration, that can provide support, and energy users, that have saving opportunities, and supplies the technological know-how.

The Danish policy measure “**Heating planning**” has substantially decreased oil use, partly by direct substitution with natural gas, partly by applying heat distribution and CHP (on gas or coal). Remarkable is the combination of national policy formulation and local decision-

making. The program runs already for a considerable time. However, it is not clear if the change to gas (security of supply) or coal (CO<sub>2</sub> and acidification) has contributed to other policy goals.

**Table 10-3: Innovative policy measures for tertiary sectors**

Country	MURE code	Energy use type	Description
Austria	AU6	All use	Special energy commissioners
Denmark	DK7	Heating	Heating system planning
France	FRA1	All end use	White certificate scheme
Germany	GER2	All use	Ecological tax reform
Ireland	IRL7	All end use	Public sector design studies
Italy	ITA6	All end use	White certificate scheme
Netherlands	NLD10	All use	Regulatory energy tax
Portugal	POR6	Heating	Solar hot water in saving regulation
Sweden	SWE6	Appliances	Technology procurement
UK	UK5	All use	Climate change levy (business)

The **White Certificate schemes** of both France and Italy (see description for households) are thought to create a real market for all kind of savings initiatives. Presently energy efficiency in tertiary sectors is difficult to realize due to many different restrictions for implementation and the small scale in energy use. This problem can probably be lifted by the broad and dynamic approach with this system.

The German “**Ecological tax reform**”, the UK “**Climate change levy**” and the Dutch “**Regulatory energy tax**” all provide for a greening of the tax system. For business this results in lower taxes on labor and profit. Because of the labor-intensive production this could be important for the competitiveness of the tertiary sector. However, due to the limited fraction of energy in total costs this effect might not be large. However, the tax could help to mitigate trends for increasing energy use, such as air conditioning in all offices.

In Ireland the “**Public sector design studies**” offer a manner to influence energy use at an early stage, namely during the design of buildings, etc. This is often far more effective than during the permit phase or actual building process.

The new thing about the Portugese policy on heating of buildings is the incorporation of solar hot water. In the present “**Solar hot water program**” financial support is not only given to owners of dwellings of buildings that invest themselves, but also in case of leasing the solar water heaters. This circumvents a number of possible problems, like lack of room for investment. Also, the new building code (RCCTE) imposes solar thermal collectors at a rate of up to 1 m<sup>2</sup> per person occupying the building.

The Swedish “**Technology procurement**” programme can be seen as a way to overcome the information gap between producers and users of energy saving equipment. Producers attain a better insight in the market for successful new systems, while energy users can express their

needs with respect to more efficient systems. As in the Irish case the timing of this policy measure is better than for most common policy measures.

### **Overall contributions**

From the motivation for the selected innovative policy measures it can be concluded that most measures enhance **effectiveness** in realizing savings. Procurement contributes to **competitiveness** and to incorporation of **R&D policy**. The Danish “Heating planning” that regards substitution of oil by coal-CHP contributes to **security of supply**. Finally, the various taxation measures contribute to **influencing energy use** itself.

Finally it must be remarked that all innovative and regular policy measures contribute more or less to reduction of CO<sub>2</sub>-emissions, enhancing security of supply and preventing acidification.

## **10.4. Conclusions**

The following conclusions can be drawn from the analysis:

- There exists a seven-fold difference between the highest and lowest number of policy measures per country, for which no obvious explanation can be found.
- The total number of policy measures in EU-countries has increased more than eight-fold since 1990. Newly introduced measures exceeded removed measures by far.
- Policy measures on subsidies and information have a short lifetime; standards, taxes and labels have a much longer lifetime.
- Some shifts in measure types have occurred, among which more financial stimulation. The fraction of measures regarding standards has been quite stable.
- Overall few policy measures focus deliberately on the public sector.
- EU-countries make rather extreme choices as to measure types; the highest fraction for each of the main types runs from 15 to 60%. These maximum fractions are found in different countries. The lowest fraction is 0% as measure types are often missing in one or more countries.
- The coverage of targeted energy uses by policy measures is good for new and existing buildings, sufficient for boilers, but not good for appliances/lighting.
- Compliance of national policy measures with EU-directives, such as EPBD, Labels and Eco-design, is generally limited. However, in some cases this is due to the long time for transposing EU-policy in national policy.
- The total impact of saving policy in EU-countries increased substantially. However, this was mainly due to extra policy measures and for a small part only due to a higher impact per new policy measure.

- Innovative measures have been chosen on the basis of effectiveness, as this is the main problem in the sector tertiary which is very diverse in energy use characteristics.
- Innovative measures are found in various countries and often regard an integrated approach that deals with all factors that play a role in implementation of saving measures.