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## **Replacement or reuse**?

The choice between demolition and life cycle extension from a sustainable viewpoint

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## **ABSTRACT** (revised)

What is better: renovation or new construction? Following the plenary debate on the ENHR 2007 conference in Rotterdam we continued our search for the answer to this question.

The choice between reuse and replacement of existing buildings is a vital but very difficult one, involving a wide range of aspects and affecting contradictory and often conflicting interests. In the past, building quality and public health played a decisive role in improvement of the housing stock, mainly by slum clearance. More recently functional and economic considerations tend to dominate. Though environmental aspects like energy consumption and building waste are of growing importance, sustainability does not seem to be a major aspect in decision making about demolition or life cycle extension up till now.

In the past years we studied the decision making about demolition in the Netherlands. Based on the available literature and statistical data we analysed the actual practice in the Netherlands to identify the 'demolishers' and their motives. In addition to this research we made an inventory of the literature about the environmental impact of reuse and replacement. Our paper gives a concise overview of the results. Overlooking the results so far we conclude that life cycle extension by renovation and reuse of existing stock is generally more sustainable. However replacement seems to increase in the Netherlands. Therefore we discuss ways to stimulate 'demolishers' to give more weight to sustainability and pay more attention to reuse.

Keywords: replacement of dwellings; extension of life cycle; decision making; sustainability.

# **Replacement or reuse?**

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# 1. Introduction

The question: replacement or reuse what is better, is a classic one in housing management. In the past, building quality and public health played an important role in decision making about the question, often resulting in slum clearance. More recently functional and economic considerations tend to dominate the appraisal of the alternatives. Because environmental aspects like energy consumption and building waste are of growing importance, sustainability should become a major aspect in decision making about demolition or life cycle extension. So the actual question is: which intervention is better from a sustainable perspective? There is evidence from the literature that reuse or transformation of existing dwellings is more sustainable than replacement. However, looking at the Dutch statistics demolition shows a steady increase. In this paper we will study this contradiction by answering four questions:

- what is the actual demolition rate in the Netherlands and in Europe?
- what is, according to the literature, preferable from a sustainable perspective: reuse or replacement?
- what determines the choice between reuse and replacement? to what extent is sustainability a motive in decision-making about this choice?
- how can owners be influenced to include sustainability in their decisions making about life cycle extension of their property and by what means?

Based on our previous research on demolition we start with a section about demolition in the Netherlands. In the second section we summarize the Dutch debate about the environmental impact of interventions in the housing stock. In the third section we identify the owners that decide to demolish their property and their motives. In the last section we discuss opportunities to stimulate owners to give more weight to sustainability in decision-making and pay more attention to reuse.

# 2. Demolition in NL and EU, volumes

Like most housing stock statistics, the Dutch CBS tables distinguish between the total decrease of the stock by withdrawal (loss of use, merging with other dwelling and demolition) and by demolition (destruction, fire etc.). As table 1 shows the main part of the decrease by withdrawal is due to demolition. Compared with the total stock the number of demolished dwellings in the Netherlands is modest. However, the demolition rate (the ratio of demolished dwellings and the total dwelling stock) is steadily growing. Before the year 2000 the rate fluctuated around 0.17 %; after 2000 it rose to 0.28% in 2007. That is an increase of 60% in 7 years.

1	2	3	4	5	6	7
	Housing stock	Total decrease	Decrease rented	Decrease owner	Demolition	Demolition as %
Vear	(X 1000)			occupied		(6):(2)x100
1 cui						(0).(2),100
1995	6,192	13,691	9,605	4,083	10,382	0,17
2000	6,590	13,529	9,759	3,769	10,258	0,16
2001	6.651	15,555	11,096	4,459	11,959	0,18
2002	6,710	16,410	11,952	4,458	12,738	0,19
2003	6,764	17,763	12,706	5,057	12,633	0,19
2004	6,810	19,313	14,201	5,112	15,910	0,23
2005	6,859	19,057	14,701	4,345	13,907	0,20
2006	6,912	21,656	15,992	5,664	16,765	0,24
2007	6,967	23,840	18,785	5,055	19,449	0,28
2008	7.030					
Source: (	BS Statline (2008a	2008b)				

Decrease of the housing stock due to withdrawals according to year and Table 1 tenure and decrease by demolition

The demolition rate in the Netherlands is much higher than in neighbouring countries. In the nineties and the first years of this century the rate in most countries was below 0.1 %. Only Germany tried to keep up with the Netherlands, but the demolition rate in that country is still below 0.15% (figure 1).



Demolition rate NL compared to neighbouring countries

Source: Van der Flier & Thomsen (2006)

It could be discussed to what extent the actual demolition rate is too low. Presuming that the annual demolition rate is equal to the replacement by new dwellings the minimal required time to replace the existing stock, i.c. the minimal required life span, is in the

Netherlands (ann.demol.rate 0,25%) 400 years, in Germany (ann.demol.rate 0,13%) 750 years, in France (ann.demol.rate 0,07%) 1400 years, and in the UK (ann.demol.rate 0,08%) 1300 years! (Thomsen, 2007). Though the housing stock of most western EU countries (except the UK) is rather young and these figures give only a random indication, they show that the average life span of the existing stock will be much longer than usually expected.

# **3.** Environmental impact of housing stock interventions: an ongoing debate

"The building stock and the activities related to it play a minor role in the conscience of the architectural profession. Their contemporary value system is still largely centred on the design of new buildings..." This gloomy view of Kohler & Hassler (2002) is probably outdated but points at an important reason for our limited knowledge about the existing housing stock. The same mechanism can be seen in the field of sustainable building. Since the early 1990s, the issue of sustainable building has been drawing attention from a variety of stakeholders. However, also in this field the "discussions tend to focus on new buildings, and stakeholders have not paid enough attention to the existing building sector." (Awano, 2005). Happily this view is also somewhat outdated, at least for the Netherlands. Since the beginning of this century there has been substantial research and debate about the environmental impact of interventions in the existing housing stock. De Jonge (2005 and 2006) used the model of the Eco-costs / Value Ratio developed by Voigtlander (2001) to compare the effects of various strategies to transform the housing stock such as transformation and new construction. He used the model in a case study concerning the whole life-cycle of four intervention strategies for an obsolete apartment block. He concludes that - under most conditions - renovation or transformation offers the best chances for a sustainable solution. Itard & Klunder (2007) also studied the environmental impacts of renovation compared with new construction. After a discussion of the pros and cons of various tools to assess the environmental impact of these interventions in the housing stock they selected the Dutch LCA tool EcoQuantum. Using this tool they calculated the environmental effects

of transformation and new construction in two cases. They conclude that transformation, if structurally possible, is a much more environmentally efficient way to achieve the same results than are demolition and new construction.

There are also other voices in the Dutch literature. Kortman & van Ewijk (2004) studied the impact of the life span of dwellings on their environmental performance. Using EcoQuantum, they compared the future ecological burden during the lifespan of renovation and new construction. They found that - after approximately 70 years - new construction performs better, mainly due to better energy reduction. They conclude that, to optimize the environmental burden of these measures, a substantial extension of the life span is thus needed. To achieve the required life cycle extension, a simple renovation is not sufficient and transformation of dwellings including measures such as enlargement by joining dwellings should be taken. They question if that is possible, given the changing and uncertain market demand for these dwellings, and conclude that if this type of measures needs to be taken, new construction is a better option.

The study of Kortman & van Ewijk shows the intractability of this kind of long term exante evaluation: the unknowability of the future. Due to the impossibility to estimate future innovation, maintenance and major repair is discounted by replacement of worn existing materials and machinery by the same items over time, ignoring the essential role of innovation and technological progress. In the same - but curiously opposite - way they value the also unknown role of the market value as being a drawback for renovation. Anink & Mak (2005) conducted a study of the environmental impact of restructuring in the Moerwijk South neighbourhood in The Hague South-West. They compared the impact of five renewal strategies using the tools EcoQuantum and GPR Building. In this way they studied the impact on energy, materials, waste and water and the impact on health and functional quality. They conclude that, compared on the minimum level (Dutch Building Decree) and only looking at material, energy and water, the environmental performance of renovation is better than new construction. But compared on a higher quality level, new construction performs better than renovation. It enables better anticipation on preferences and demands in the next fifty years and therefore prevents the need for a new intervention in this period. In the same way and for the same reason as Kortman & Van Ewijk, Anink & Mak

assume that this decisive 'higher level' is only feasible for new construction. This biases the outcomes of their study.

Overlooking the results, both latter studies show that, regarding materials and waste, the environmental impact of life cycle extension is definitely less than demolition and new construction. On the other hand the energy performance of new construction seems to be superior: better insulation and more comprehensive installations (solar energy, heath pumps etc.), resulting in an overall better ecological performance. Though the energy performance of renovation could be technically equal, the life span expectation and market position of renovation is expected to be insufficient to justify the same investment as for new construction, but proof for this opinion is absent. Moreover the argument that the market demand for renovation is uncertain and that new construction enables better anticipation on housing demand in the future is not convincing. This argument can also be raised against new construction of apartment blocs, which is an uncertain market too. There are even sources that contend that single family dwellings built in recent large development areas (VINEX) will be obsolete within 20 years. Given the uncertainty of future performance, one of the advantages of renovation is that it results in more differentiation in the housing stock, in terms of quality/costs relations. In that way the stock can meet the demand of a variety of groups better than a bipolar stock with on the one hand high quality new construction and on the other medium and low quality existing dwellings. Given the rapid change in preferences we do not know if the qualities of both renovation and new construction will be enough to meet the preferences for a long time. As we saw in section 2, we have to cope with a very long average necessary life span, much longer than currently expected. During this long life span, adaptations to changing needs and preferences will be inevitable anyhow. This applies to the building as a whole as well as to separate building parts and services.

A methodical problem of long term ex-ante evaluation lies in the limitation of empirical knowledge to assess future developments. As past performance is no guarantee for future

results, the estimation of determining variables like technological innovation and market dynamics is hazardous and can easily lead to biased outcomes. Moreover, future developments are not the result of autonomous processes but the aggregated outcome of human decisions and interventions. Our study is not in the least aimed to support intervention policies.

The conclusion of this section is that the debate about the environmental impact of interventions in the existing housing stock is not finished yet. The conclusions of the studies are not conclusive and often related to specific cases. Looking at the presented results we consider the environmental impact of life cycle extension in most cases less than demolition and new construction, though the better energy performance of new construction reduces the differences up to now.

As there is in principle little reason why the energy performance of renovation could not be equal to new construction, and the long necessary life span of the existing stock combined with rising energy prices and environmental measures will boost innovations and improvements, we conclude that the environmental impact of life cycle extension by renovation, transformation and reuse is in general less than replacement by new construction and deserves as such public support.

## 4. Reuse or replacement: choices and motives

The choice between reuse and replacement has a long tradition in Dutch literature. Through the years a range of decision support systems to assess the pro and cons of this choice were developed, mainly weighing performance and costs (Thomsen & Van der Flier, 1996). Studies of the actual decision-making process are however scarce and mostly casuistic; systematic analyses are absent. Our recent studies about demolition and demolition motives (Van der Flier & Thomsen, 2006/2007) give some insight in the motives of owners to replace their property and as such to some extent in the motives for not choosing for life cycle extension.

### 4.1. Motives for demolition in the Netherlands

When identifying the motives for demolition of Dutch owners, a distinction should be made between the rented sector (social and commercial) and the owner occupied sector. In 2006 the owner occupied sector comprised 56% of the housing stock, the social rented sector 35% and the private rented sector 10% (MVROM 2007). It should be noted that, like in all EU countries, the share of owner occupation is steadily growing.

### 4.2. Motives of housing associations

Table 1 displays that rented dwellings are overrepresented amongst the demolished dwellings. About 75% of the demolished dwellings are rented dwellings while they comprise only 45% of the housing stock. Although the figures of tables 2 and 1 are not fully comparable, they are from two different sources, they display that almost all demolished rented dwellings are social rented dwellings. Demolition in the private rented sector is almost non-existent. The demolition rate in the social rented sector is much higher than in the owner occupied sector. It also doubled since 2000: from 0.31% in 2000 to 0.69% in 2006.

1	2 Housing stock	3 Demolition	4 Demolition as % of stock
Year	(x 1000)	Demontion	(3):(2)x100
2000	2.438	7.540	0.31
2001	2.440	8.200	0.34
2002	2.432	9.700	0.40
2003	2.420	14.200	0.59
2004	2.412	13.500	0.56
2005	2.409	14.000	0.58
2006	2.404	16.600	0.69
2007			

Table 2Demolition and demolition rate in the social sector

Source: CFV (2006, 2007)

To gain insight in the motives of housing associations to demolish we conducted a survey in 2004. In this survey we asked housing associations about the number of demolished dwellings in the past ten year; the number of dwellings to be demolished in the next ten years and about their motives to make the decision to demolish. We found out that:

- demolition rates in the past ten years were relatively high in the urbanised Randstad and especially in the four largest cities with sometimes tight housing markets.
- housing associations plan an increase with a factor 2.9 in dwellings to be demolished in the next ten year period. Multi-family dwellings and dwellings built between 1945 and 1966 are overrepresented amongst the demolished dwellings and amongst the dwellings housing association plan to demolish in the next ten years.
- most important motives to demolish are: structural deficiencies (30%), insufficient market demand (23%), functional deficiencies (20%) and motives related to urban planning (16%). These four motives account for 80% of the motives. There is also a relation between motives and building year. Most important motive to demolish dwellings built before 1966 are structural deficiencies. For dwellings built after 1966 insufficient market demand was mentioned as most important reason (Thomsen & Andeweg van Battum, 2004).

The emphasis of 'demolishers' on structural/technical deficiencies is contrary to the relative high quality of the social rented sector compared with the owner-occupied stock; according to the national qualitative dwelling survey KWR substandard social dwellings do hardly exist and the share of low quality dwellings is very low (MVROM, 2003).

In another project we studied the actual demolition behaviour of housing associations. Given the available data we could study the relation between on the one hand demolition (rate) and on the other hand building year related with quality, tightness of the housing market and asset management approach of the housing association. We found that there is:

- a clear relation between the building year of the dwellings and demolition rate: the older the dwelling is the higher is the chance of demolition.
- no clear relation between the state of the housing market and demolition rate: we found high rates in both loose markets and tight markets.

- no relation between active asset management and demolition rate: in the same housing market we found both housing associations that are active with selling dwellings and new construction and showing high demolition rates, and housing associations with the same active performance but with low demolition rates.

We all together assumed that other motives related with management policies or corporate objectives and image must be prevailing in the decision making process (van der Flier & Thomsen 2006). We did not find any indication that sustainability is a motive in this process, neither for demolition nor for reuse.

### 4.3. Motives of owner occupiers

The overrepresentation of rental dwellings in the total decrease of the housing stock is mirrored in an underrepresentation of owner occupied dwellings (see table 1). About 21% of the decrease is owner occupied while they comprise 56% of the housing stock. In a previous paper we explored the demolition motives of private owners (Thomsen & van der Flier 2007). Following the literature about types of owners and their motives we made a matrix with on the one axis type of owner: residing owner occupier, new owner occupier and developer. On the other axis we distinguished into quality related and profit related motives. Although the quantitative information about demolition in the private sector is scarce we found two of the six possible cases to count for the bulk of the demolition in the owner occupied sector:

- demolition (after purchase) followed by new construction by new owner occupiers with housing quality related motives. This generally concerns households taking a next step in their housing career and wanting to construct a new dwelling that fits their preferences.
- demolition (after purchase) followed by new construction by (small) developers with profit related motives. This concerns developers that buy cheap dwellings on sought after locations, demolish them and construct new ones that can be sold profitable.

In both cases the decision for demolition comes from a new owner with quality resp. profit related motives that do not refer to the (characteristics of the) existing dwelling. As such sustainability is not within their scope as a motive.

We all together did not find signs of sustainability as motive in the decision-making about demolition. Though the sustainable viewpoint does not seem to play a role in decision-making about demolition as yet, this may change in the future. Due to rising energy prices and growing awareness of "the inconvenient truth", the importance of sustainability as aspect in decision-making about reuse or replacement is growing.

# 5. Sustainability as motive for life cycle extension; how to influence owners

In the actual behaviour of owners that are demolishing their property ('demolishers'), sustainability does not play a visible role. This raises the question how to influence the 'demolishers' to give (more) weight to sustainability in their choice between demolition and life cycle extension. As sufficient empirical sources are missing, we have to find answers in a more tentative way.

Two sub-questions are relevant:

- which 'demolishers' can be expected to give more weight to sustainability and pay more attention to reuse in decision-making about interventions in their stock?
- how and to what extent can these owners be stimulated to do so?

The sub-questions are closely related. The first question looks into the responsiveness of owners: the potential margin for the decision making with respect to their objectives. The second question looks at the influencing opportunities: the means that are appropriate, given the owner's objectives and margins.

We approach the first questions by hypothetically discussing four cases from a matrix of types of 'demolishers'. On the one axis we distinguish into type of ownership: rental or owner-occupied and on the other axis we distinguish into quality related motives and profit related motives to demolish (table 3).

Motives to demolish	Quality driven	Profit driven		
Tenure				
Rented	Case 1	Case 2		
Owner occupied	Case 3	Case 4		

Table 3Ownership and demolition motives: four cases

We approach the second question by distinguishing three often used types of means to stimulate owners (Bemelmans-Videc et.al. 2003):

- *force (the stick)*, e.g. legal prohibitions, proscriptions and penalties;
- seduction (the carrot), e.g. financial, fiscal or administrative incentives,
- *persuasion (the sermon),* e.g. informative and/or supportive communications, appealing for sense of responsibility and/or self-interest.

### 5.1. Sticks, carrots and sermons

*Force* is the hardest measure. Related to demolition decisions, force can be applied in several ways, like the ban on demolition of monuments and national heritage, the obligation of a permit for demolition or penalties for violation of law and regulations. The use of force is only applicable to enforce the law or protect public interest, common good, civil right or basic private concern. Property rights are very strong and owners cannot be forced easily to serve public interests or suit governmental policies. Under present law and common practice, force, e.g. a refusal to give permit to demolish, not to mention an imperative to improve or renovate, is only feasible in cases where it is obvious that demolition is contrary to the law, public regulations or evident violation of common good. As housing associations have to cope with sector-specific regulations, the Minister of Housing has more extended imperatives, but also only within public (housing) interest. In this respect, but also by law, tenant's rights are also to be considered.

As a milder less imperative force, penalties can be applied to enforce laws e.g. to protect the environment against pollution. But penalties related to the environmental impact of buildings and demolition decisions are not available. So usually a combination of seduction and persuasion will have to be used to get results (cf. Van Hal 2000).

*Seduction* is an important but often expensive measure. Related to demolition decisions, financial, fiscal or administrative incentives like subsidies can be applied to make reuse more attractive than new construction. In these cases subsidies can seduce owners that are not able or owners that are not willing to pay for a more sustainable solution. Subsidies are however expensive and the weighing of the environmental effect is difficult. The use of subsidies grew fast in the sixties and seventies of the last century but was cut back in the last decades because of rising costs and political changes. In the last years the use of fiscal incentives is gaining attention as being less expensive and more effective. Fiscal rewards for sustainable investments, combined with fiscal penalties for maintaining unsustainable situations, could be an essential instrument to influence dwelling owners (Sunikka 2006).

*Persuasion* is always an indispensable measure to influence civil behaviour, in particular regarding sustainability, i.e. by appealing for sense of responsibility and/or self-interest, like owners' responsibility for the environment and climate change, the sustainability of interventions and profits of energy saving, and information about alternative solutions. Related to demolition, proper information about the environmental impact of demolition versus life cycle extending interventions are in the same way indispensable, as well as easy accessible practical knowledge and best practice with technical and financial details.

### 5.2. 4 Cases

Using table 3 we discuss the four cases to assess to what extend the different owner types can be expected to reconsider their choice for demolition and opt for reuse. For each case we also discuss possible means to stimulate them to do so. As we want to concentrate on headlines we leave specific regulations for housing associations, as well as tenant and third party rights, out of the discussion.

### Case 1 Owners of rented dwellings with quality related motives

This case refers to housing associations since almost all demolished rented dwellings are social rented dwellings. In this case the housing associations are faced with structural or functional deficiencies of the dwellings. As stated in section 4 these motives are often mentioned by housing associations (50%). The associations assess that it is technically and/or economically not feasible to renovate the dwellings to remove the deficiencies. In this case we expect them to be willing to reconsider their decision to demolish if the deficiencies can be remedied in another way. In case the structural shortcomings can be solved technically and/or if there are only functional deficiencies a combination of persuasion (communication about the environmental impact of demolition and about the prospects of renovation) and seduction (same subsidies for renovation as for new construction) may lead to another decision. If the structural problems are severe the associations will probably not be willing to reconsider; as we have seen in section 3 the environmental advantages of renovation over new construction are doubtful if such is the case.

### Case 2 Owners of rented dwellings with profit related motives

For the same reason as mentioned above this case also refers to housing associations. In this case the housing associations are faced with insufficient market demand or the need or wish to earn money with new construction. Insufficient market demand is also often mentioned as motive for demolition (23%). Demolition to earn money has not been mentioned but might be included in the category economic motives (10%). The associations assess that is not possible to meet market demand in the future with renovated dwellings and/or expect to earn more money with new construction. Basically they will not be willing to reconsider their decision unless they can be persuaded that there will be lasting market demand for renovation or that renovation is more profitable. This will probably not be case. The only means left is force e.g. refusal of demolition permit because it is contrary to the interest of the local social housing situation/policy.

#### Case 3 Owner-occupiers with quality related motives

As owner-occupiers seldom demolish their present home, this case refers to owneroccupiers taking a next step in their housing career: they bought a new dwelling. They assess the actual performance insufficient to meet their demands and consider elimination of the deficiencies by transformation technically and/or economically not feasible or acceptable and choose for demolition and replacing new construction. There are two types of this case. The first type concerns households who initially had no demolition motives but find themselves confronted with a rising mismatch between desired quality and transformation costs. We do not expect these owners to be willing to reconsider their decision because it is the end of a rational weighing process. The only way to stimulate is force, e.g. refusal of permit to demolish. As shown above application in this case will be difficult.

The second type concerns households looking for plots for new construction to realize their 'dream dwelling'. In a shortage driven land market like in the Netherlands, but also in case of shrinking demand with low property prices, it can be more profitable to look for a plot with a poor but relative cheap existing house in an existing matured environment with an attractive infrastructure instead of an empty plot in a new development area. In this case owner occupiers will probably only be willing to reconsider their decision if they can be persuaded that their dream dwelling can also be realised by renovation. That is not very likely.

#### Case 4 Owner-occupiers with profit related motives

As for owner-occupiers profit making means selling, this case refers to private ownersdevelopers looking for profitable projects, e.g. cheap dwellings on attractive locations. This generally occurs in the older dwelling stock on sought after locations in a tight land market. In this respect this case is similar to the second type of case 3. Depending on the size and character of the plot, the profit is achieved by the development and selling of new dwellings in relative high density. We expect that owners in this case will not be willing to reconsider any other option unless the profitability or marketability is better. Only strong means e.g. force might stimulate them to decide otherwise. Seduction and persuasion are only effective as far as they result in higher profits. As a result, subsidies to compensate for lower profits will be (too) high.

The results of our reasoning are summarized in table 4:

<b>I</b>	Ű		
Motives to demolish	Quality driven	Profit driven	
Tenure			
Rented	Willing to reconsider demolition if problems can be equally solved	Not willing to reconsider demolition	
	Persuasion and seduction	Force	
Owner occupied	Not willing to reconsider demolition, unless equal renovation alternative	Not willing to reconsider demolition, unless better profit	
	Force and maybe seduction	Force; subsidies (too) high to be effective	

Table 4Ownership and demolition motives: willingness and means to reconsider

### 6. Conclusions

In previous sections we concluded that reuse is preferable from a sustainable perspective. We also showed that the actual practice is far away from this conclusion: the demolition rate in the Netherlands is high and growing, especially in the social rented sector. We identified the motives of various types of owners to demolish. In the last section we discussed two questions:

- which of the identified 'demolishers' can be expected to give more weight to sustainability and pay more attention to reuse in decision-making about interventions in their stock?

how and to what extent can these owners be stimulated to do so? We tried to find answers by reasoning about the motives of four types of owners in relation to possible intervention means. As a result, we expect only owners of rented dwellings, i.c. housing associations, with quality related motives to be willing to reconsider their decisions. If the structural problems they face can be solved technically and/or if there are only functional deficiencies, a combination of persuasion (communication about environmental impact of demolition and about the prospects of renovation) and seduction (subsidies) may lead to another decision. This is an important group. Housing associations count for 75% of the demolished dwellings and within this group structural and functional deficiencies count for 50% of the motives. In the other three cases, owners of rented dwellings with profit related motives and owner occupiers with quality and with profit related motives, only force, i.c. refusal of permit to demolish and/or penalties for environmental unfriendly decisions, may lead to other decisions. This will only be possible and feasible in case there is a clear contradiction with public interests. It is doubtful to what extent this applies to the environmental burden of demolition and replacing new construction, and even if applicable, to what extent force is the appropriate way to achieve sustainable results.

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