

Overview of electrical safety in 11 countries

A micro-picture for electrical safety emerges, when questioning the occupant about his experience regarding electrical safety in the home. This survey covered 16,000 dwellings, and ran in 11 countries: Bulgaria, Czech Republic, France, Hungary, Italy, Poland, Romania, Russia, Spain, Turkey, Ukraine.

The survey covered 13 potential safety issues in the home, such as:

- the experience of electrical shock
- over-use of extension cords
- replacement of circuit breakers by higher-rated ones
- observations of black-burn marks (related to micro-fires)
- hot sockets (related to overloading)
- ...



Figure 1 Typical safety hazards in residential installations: bare & live conductors, or overloaded sockets

The results are given in the graph below. The safety score varies widely from country to country, but there's hardly a country that is free of concern. Overall, one might conclude that well over 50% of dwellings are unsafe.

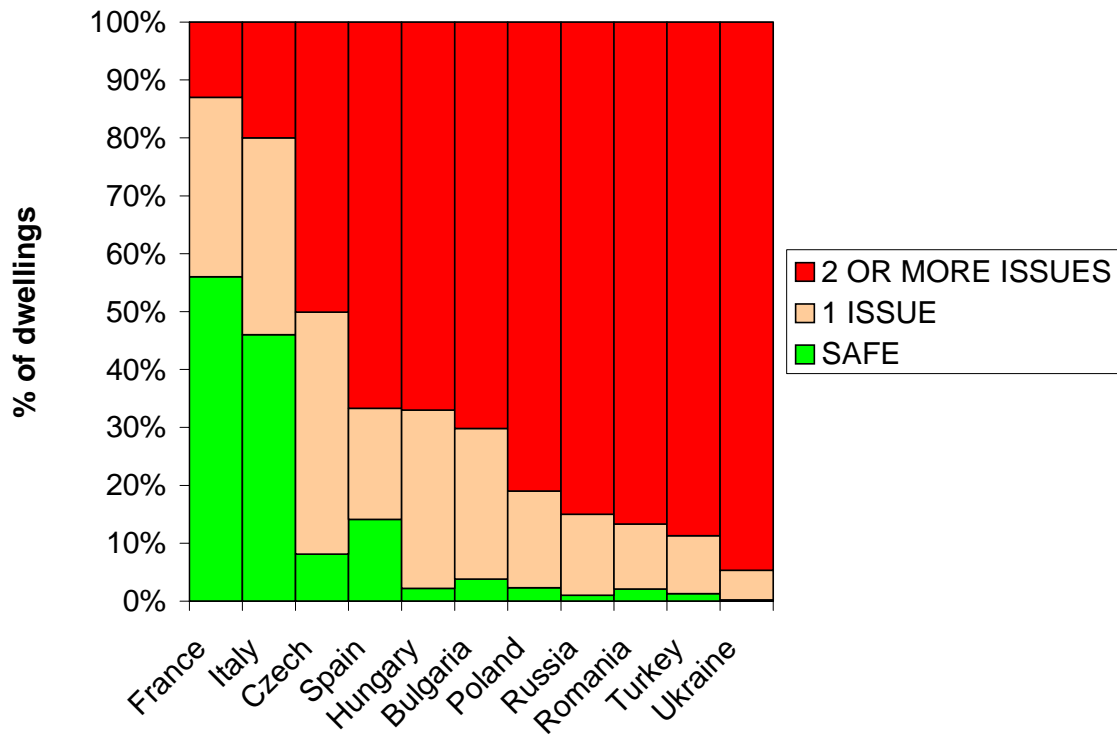
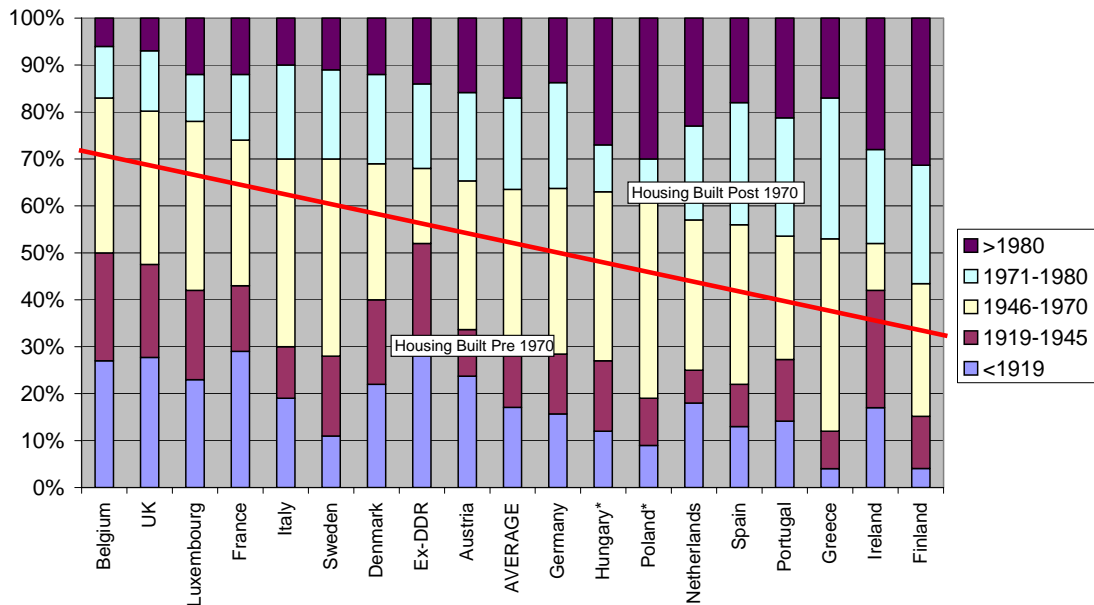


Figure 2 Classification of dwellings into ‘safe’ (no safety issues), ‘1 safety issue’ or ‘2 or more safety issues’

Why electrical safety standards indispensable in domestic installations?

Modern lifestyles result in intensive use of electricity. The market penetration of major power consuming appliances, such as washing machines, dishwashers, microwave ovens, and so on continues to grow.

Europe's ageing building stock, though, has not been designed for this intensive use of electricity. Over 2/3's of dwellings in the EU are over 30 years old (source Eurostat), and were hence designed at a time when there were average 2 appliances per home. Since these early 70's, the average number of appliances has tripled.



*G&P estimates

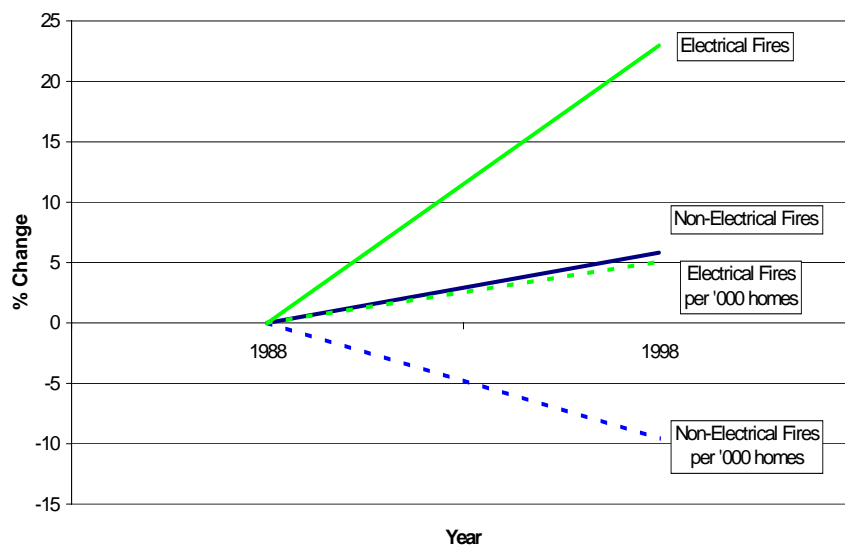
At European level, there is only one document describing periodic inspection in residential installations. CENELEC document ES59009, published in 2000, prescribes inspection at intervals not exceeding 10 years. However, the standard is voluntary, and as an ES-document, it is not required for member states to adopt it as national standard.

Current regulatory regimes for periodic inspection are inadequate:

- Poland and Russia require inspection at regular intervals, but without enforcement.
- Belgium, Czech Republic and UK require inspection at a time of transaction (sale, renovation requiring licence, change of tenant). These countries have reasonable levels of safety.
- Italy has passed a law in 1990 requiring to bring all existing installations to modern standards before 1999. Currently, Italy is developing regulation for periodic inspection.
- France and Spain have recently started to move towards more transaction oriented regulation.
- There no regulation whatsoever regarding this issue in Denmark, Finland, Ireland, Netherlands and Turkey.

The risks related to electricity use are real, and quite frightening. Excessive heat in undersized conductors, or short-circuits can cause fire. Exposure to electrical shock over 50V for a fraction of a second can be lethal. Despite this, we use 230V electricity dozens of times per day.

For any given European country, where fire statistics are available, 15-20% of fires are of electrical origin. Circumstantial evidence indicates that, while the number of fires per 1,000 homes is decreasing, electrical fires are on the increase.



If no steps are taken to improve the levels of electrical safety, the current rate of increase in electrical fires will continue. From the data generated by this project, there will be ca. 5,500 fatalities due to electrical fires over the next 10 years.



Just halting this increase in the number of fires will save ca. 600 lives in 8 countries investigated over the next 10 years.

Country	Injuries	Fatalities
France	1855	64
Germany	3935	135
Hungary	771	27
Italy	1773	61
Netherlands	161	6
Poland	1544	53
Spain	2725	94
UK	1511	52
Total	14276	491

Source: Gorham & Partners' Calculations

Action plan and future perspective

The project established a widening safety gap:

- non-electrical fires are decreasing, while the number of electrical fires increased 25% over the last decade.
- intense use of electricity makes old installations unsuitable for modern lifestyles.

Relating safety to demographics demonstrates a need for a regulatory approach:

- safety is lower in tenant-occupied buildings, where the electrical installation is less under the control of the occupant
- lower income families experience lower levels of safety than middle & high income families
- old dwellings are clearly less safe than modern ones.

Several countries have regimes of periodic inspection at fixed time intervals, but this clearly does not work (e.g. Poland, Russia). It is virtually impossible to keep track of periodic inspection reports for Europe's 140 million dwelling stock.

Political courage is needed to address the issue at national and regional level. Regulation needs a consumer / user – oriented trigger. For example:

- when changing tenants, the owner must be able to produce a recent inspection report.
- when buying a house, the seller should produce a recent certificate of inspection; failure to do so should be reflected in the negotiated selling price, as it is expensive to re-wire.

For countries where the safety level is at a critical condition, a special effort is needed to bring the building stock to modern standards:

- government must require to bring the installation to a modern installation standard with a reasonable grace period (5-10 years, depending on wiring status)
- after this renovation wave, the same approach as in other countries can be followed: transaction-oriented regulation to maintain the national building patrimonial.

Barcelona, 22-Feb-02
Need for action