

## ECO-EFFICIENCY OF THE RESIDENTIAL SECTOR

### HOUSE 5

Comparing the evolution of the number of households with the evolution of the environmental impacts generated by the residential sector (energy and water consumption, land use for housing, emission of air pollutants and generation of waste, etc.) makes it possible to evaluate the eco-efficiency of this sector. The analysis here is limited to housing.

#### Lower energy requirements

In 2014, the energy consumption of the residential sector in Wallonia amounted to 28 TWh, 17.8% less than in 2000. This decline can be explained in particular by the evolution of the housing stock (type, size, age, energy performance of buildings, etc.)<sup>1</sup> and by a particularly mild climate in 2014. The analysis by energy source between 2000 and 2014 highlights the significant growth of renewable energies<sup>2</sup> in the energy mix of Walloon homes, rising from 3.6% in 2000 to almost 11% in 2014. Conversely, the use of oil-based fuels (fuel oil) decreased significantly from 47% to 39%. The share of natural gas in the energy mix remained fairly stable over the period.

#### Mixed results for eco-efficiency

Energy consumption is responsible in particular for emissions of air pollutants. In the case of housing, emissions of acidifying substances per unit of energy consumed decreased by 39.7% between 2000 and 2014. This increase is due in particular to lower use of oil-based fuels for heating and a significant improvement in boiler performance. Conversely, particulate matter emissions<sup>3</sup> increased sharply over the period 2000-2014 (+58.8% per unit of energy consumed) due to the increasing use of firewood by households. Greenhouse gas emissions<sup>4</sup> per unit of energy consumed decreased by only 4.4%. This result conceals two phenomena with opposite effects: on the one hand, the significant improvement in the performance of boilers fuelled by fuel oil or natural gas has

made it possible to generate more heat per unit of energy consumed; on the other hand, the consumption of wood, whose energy efficiency varies greatly according to the type of heating and the quality of the wood used, has increased sharply.

Public drinking water consumption<sup>5</sup> remained fairly stable over the period, while the number of households increased by 12%, indicating an efficiency gain. Finally, the increases of the amount in household and similar waste<sup>6</sup> followed the same trend as the number of households.

#### Envisaged measures

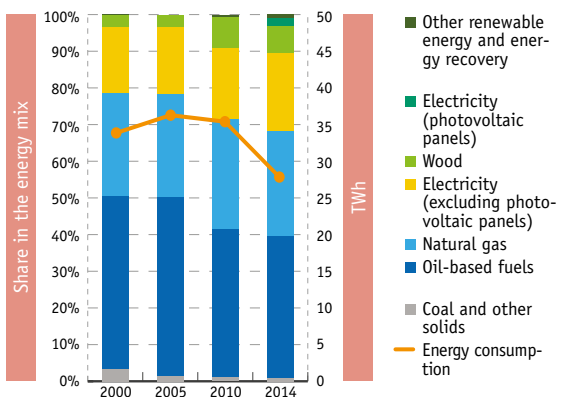
As part of the Air Climate Energy Plan 2016-2022 (*Plan air climat énergie 2016-2022*)<sup>7</sup>, the Walloon Government has established specific measures for households. It envisages in particular:

- the development of new awareness-raising activities;
- strengthening the energy performance of the housing stock<sup>8</sup>;
- accelerating the renewal of the stock of boilers fuelled with liquid and gaseous fuels.

As regards household waste, the Walloon Government wishes to focus its measures on waste flows where significant margins for reductions are still available<sup>9</sup>.

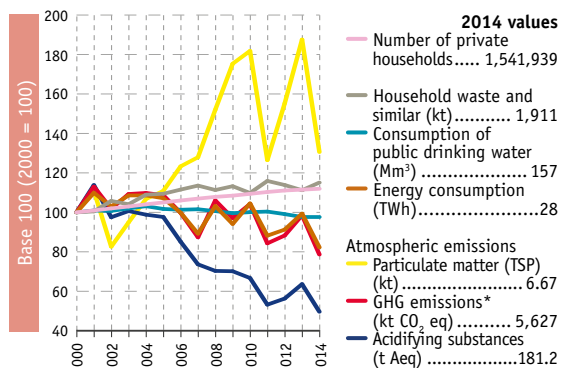
[1] → HOUSE 2 & HOUSE Focus 1 | [2] Wood included | [3] The residential sector was responsible for 33.7% of total emissions in 2014 (versus 12.1% in 2000) | [4] Including emissions of CO<sub>2</sub> from biomass combustion | [5] → HOUSE 3 | [6] → HOUSE 9 | [7] → AIR Focus 3 | [8] → HOUSE 2 | [9] → HOUSE 9

**Fig. HOUSE 5-1** Energy consumption of the residential sector in Wallonia, by vector



SOERW 2017 – Source: SPW - DGO4 - DEBD (energy balances)

**Fig. HOUSE 5-2** Eco-efficiency of the residential sector in Wallonia



\* Including CO<sub>2</sub> emissions from biomass combustion

SOERW 2017 – Sources: SPW - AWaC (Report 2016); SPW - DGO4 - DEBD (energy balances); SPW - DGO3 - DSD; FPS Economy - DG Statistics; AQUAWAL