

Table 17.3 Electricity consumption (kWh/year) of household appliances

Appliance	Wasteful	Average	Energy saving
Refrigerator (upright, No freezer, 100 liter)	270 (100%)	230 (85%)	87 (32%)
Freezer (upright, 200 liter)	800 (100%)	426 (53%)	168 (21%)
Refrigerator/freezer combination (upright, 200 liter)	625 (100%)	343 (55%)	267 (54%)
Washing machine (without a hot water connection) ^a	522 (100%)	366 (70%)	280 (54%)
Washing machine (with a hot water connection, 60°C) ^b	– –	– –	202 (38%)
Dishwasher (without a hot water connection) ^c	614 (100%)	481 (68%)	296 (48%)
Lighting (5 × 60 W) ^d	438 (100%)	–	87 (20%)

^aUse: 3 full loads per week, each with 5 kg of washing

^bRelative to a machine with 522 kWh/year

^cUse: 5 loads per week with 10 settings per load

^dUse: 4 h per day

Table 17.3 demonstrates how large the potential is for saving energy with household appliances. The absolute electricity consumption is given for a wasteful, an average and an energy-saving appliance in kilowatt hour per year. The table shows that the electricity consumption for some appliances can be reduced by up to 80%, without a loss in convenience, simply by using modern, energy-saving models. It is also evident that connecting the washing machine and the dishwasher to a non-electric hot water supply can reduce the electricity consumption still further.

Refrigerators and freezers, washing machines and dishwashers are purchases that are expected to last for many years. Thus, it is certainly worthwhile investing in energy-saving appliances that have a particularly low electricity and water consumption.

If energy saving is taken seriously, a four-person household can achieve an annual consumption of about 700 kWh, not including electricity for building services (electric doorbell, outside light, heating pump etc.). Even when not completely energy-optimised, a four-person household can manage with an annual consumption of 1500 kWh, including building services.

17.4 FUTURE DEVELOPMENTS IN PHOTOVOLTAIC SYSTEM TECHNOLOGY

17.4.1 Future Developments in Off-grid Power Supply with Photovoltaics

Rural electrification with photovoltaics has become a rapidly emerging market in the last few years. While grid extension is getting more and more difficult because of the high costs of connection in remote households with their relatively low-energy consumption