Green Products in Germany 2014

Status Quo and Trends

For our Environment

Umwelt Bundesamt

Contents

Preface

Maria Krautzberger,
President of the Federal
Environment Agency

Many environmental problems are directly or indirectly related to the consumption of goods and services. Without sustainable consumption, it is impossible to fully conserve the climate or the environment. Sustainable consumption in this sense refers to both buying environmentally friendly products (and using them in an environmentally friendly way), and – just as importantly – to not buying products that damage the environment.

There are already many "green" products which do less damage to the environment than their conventional counterparts. In Germany, these green products are becoming increasingly popular, and not just because they are becoming more available. There is plenty of evidence of this at your local supermarket, where organic products are a common sight on the shelves.

But what about the development of energy-efficient vehicles? Carsharing schemes? Or energy-saving renovation of buildings, or green energy? What about paper recycling? Successful environmental policy must encompass the entire consumer market and the associated impacts on the environment.

This report collates market data on environmentally friendly products in Germany from a variety of consumer sectors for the first time. These figures focus on the case of Germany and relate to 2012. The

report moves beyond the most common question about whether green product sales are rising. It also looks into the important issue of whether environmentally friendly products are catching up with conventional products, i.e. gaining a greater share of the overall market, as this is crucial to reducing the environmental impact of consumption. The report therefore goes on to also examine the environmental impact caused by individual consumer sectors, as well as the market dynamics within these sectors.

This report delivers important findings for the systematic monitoring of the market for ecological products and services, and creates a vital basis for consumer-oriented environmental policy. It enables environmental policy-makers to evaluate shifts in the market more objectively, and better assess the effectiveness of measures to encourage sustainable consumption.

If the trend points towards environmentally friendly products, then credit is shared between many parties, the most important being environmentally-conscious consumers, innovative producers and open-minded retailers.

As Germany's Federal Environment Agency, we also want our work to continue driving and accelerating growth in the market for environmentally friendly products and services. This report will help us to do just that.

Introduction

Are “green” products gaining ground in the mass market?

A “green economy”[1] needs more “green” and fewer environmentally harmful products. Where does Germany currently stand? Where is the sustainable consumption trend leading? Where do we need to do more? This report offers some initial answers.

Sustainable consumption has become a trend, reflected in environment-related advertising, in celebrities endorsing green consumption, and in the growing number of online communities, web portals and blogs related to the issue.

However, it is not clear how this positive trend is manifesting itself in actual market behaviours. Are we looking at spectacular growth rates only in niche markets? Or is the mass market becoming greener overall? Are green products being substituted for conventional products, or are they simply being used in parallel? Is the same trend being seen across all product segments? Does it apply to the big points[2] of sustainable consumption?

This report takes these questions as a point of departure from which to explore market developments in sustainable consumption overall in Germany, away from any isolated reports of growth in specific segments. In this context, “green” – or sustainable – consumption refers to the consumption of

1 A “green economy” is one that operates according to environmentally compatible principles. It promotes environmentally sound growth by recognising its ecological limits and anticipating economic shortages and costs.
2 Personal decisions of special relevance to per-capita figures on the environment.

goods and services in a way that meets the needs of those living in the present without compromising the ability of future generations to meet their own needs.

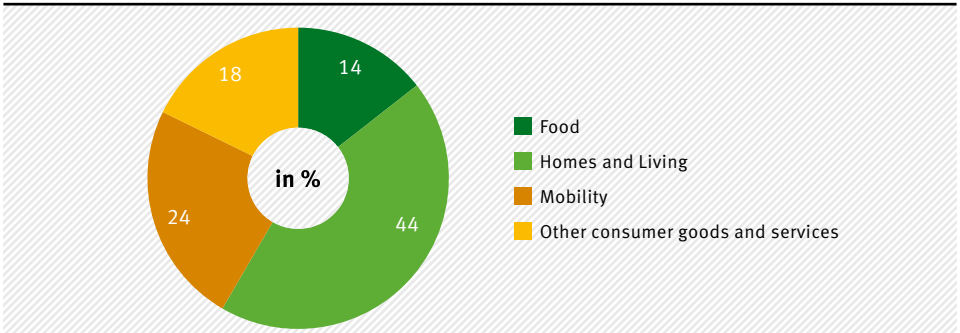
An organic boom?

Organic food is often given as a prime example of the development of green consumer markets in Germany. This is referred to as the "organic boom". It is hardly surprising, given generally double-digit growth rates over the past 15 years, as well as the high social status of organic products. However, at 3.9 % in 2012, the organic share of the overall food market is relatively low, as is the 6.3 % share of total agricultural land cultivated in an organic way. Green products have progressed much further in other sectors. For example, energy-efficient refrigerators now account for 50 % of sales. These examples highlight two points: firstly, to analyse growth in the market for green products overall in sufficient depth, we should look not only at sales growth, but also at market share. Secondly, the trend towards green products is not a self-sustaining one.

This report focuses on consumer sectors which are particularly relevant from the environmental perspective, and which offer consumers a genuine opportunity to reduce their environmental footprint. These sectors are homes and living, mobility, and food. For reasons of data availability, the report also concentrates primarily on CO_2 emissions (Fig. 1), although other environmental aspects are also examined where feasible.

Figure 1

CO_2 impact of private consumption in Germany, by consumer sector 2010



Source: German Federal Statistical Office 2014

The report is structured according to the consumer sectors of homes and living, mobility, food, and other consumption. The finance sector is covered additionally, because consumers' investment decisions are also highly relevant from the environmental perspective. Market trends in sustainable goods and services are examined in greater detail using selected categories of products. Market data on sales and market share, etc. are placed in the context of the population's willingness to buy green products, and also set against the growth of consumption-related environmental impact at the macro level (e.g. CO_2 emissions and energy use).

Methodological limits

- The statements made in this report are confined to German market trends in products whose environmental quality differs significantly from functionally equivalent products. It examines questions such as whether sales and market shares of hybrid vehicles are rising. It does not, however, look in detail at whether new cars are becoming more efficient overall. To answer such questions this report makes use of macro data, such as CO_2 emissions from mobility generally.
- The quality of the data used in this research differs widely, and in some cases permits only rough estimates to be made. The figures given here should therefore be regarded and interpreted more as trend indicators than precise measures.

Trend ratings

Modelled along the lines of the German National Sustainability Strategy, trends on the individual markets and in consumer sector-related environmental impacts are each summarised with trend icons, as follows:


clear positive trend


modest positive trend


unclear or slightly negative trend


negative trend

Slow but steady efficiency gains

Buildings and household appliances are becoming more energy-efficient, and "green" energy is becoming more and more popular. However, since buildings' energy needs are falling only slowly, and expectations with regard to living space, finish and household technology are rising, CO_2 emissions in the homes and living sector are only slightly decreasing.

Environmental context

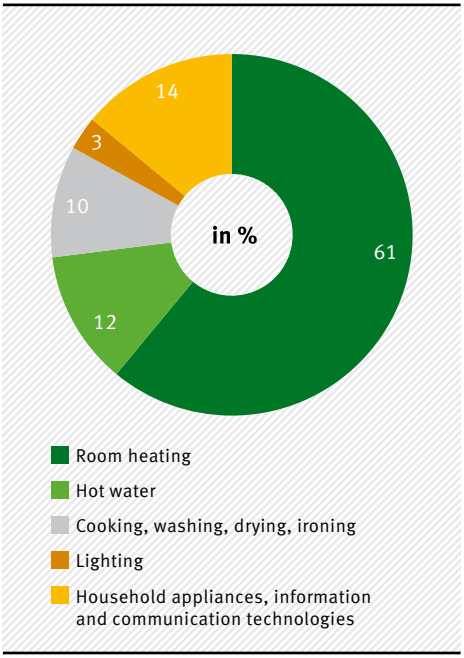
The sector "homes and living" accounts for a large proportion of resource consumption, and the impact of individual households on the climate. 44 % of CO_2 emissions from private consumption are caused by household energy use (Federal Statistical Office 2014).

The homes-and-living-related energy consumed by households is still being generated primarily from non-renewable sources. Heating and hot water systems are run mainly on gas and heating oil. Germany's energy mix is dominated by non-renewable sources of power such as coal, nuclear energy, lignite (brown coal) and natural gas. In 2012, renewable energies accounted for 23.5 % of gross energy consumption (Federal Environment Ministry 2013).

Figure 2 shows how CO_2 emissions in Germany are distributed across the various household energy uses. Room heating accounts for well over half, while lighting is responsible for just 3 %.

Figure 2

Homes and living CO_2 impact in Germany 2011



Source: Federal Statistical Office 2013c

Approaches

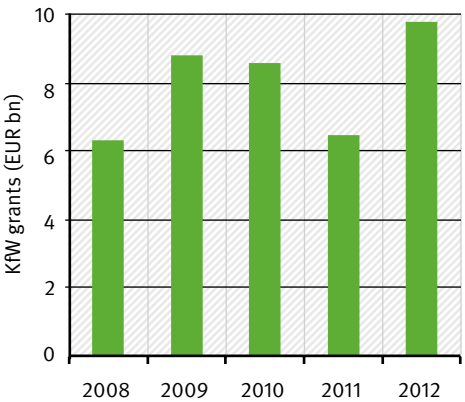
The homes and living sector offers the greatest potential for reducing greenhouse gas emissions, both where energy savings are concerned and in the use of renewable energies. The crucial approaches here involve investment (in heat insulation, the installation of solar panels, efficient heating systems etc.) on the one hand, and individual consumer decisions on the other (like living space, ambient temperature, ventilation patterns, purchase of energy-efficient household appliances, choice of electricity provider etc.). By using the best heat insulation and ventilation, low-energy buildings such as those constructed "passively" to maximise natural light and warmth can avoid up to 70 % of homes and living-related greenhouse gases (Jungbluth et al. 2012).

Market trends (residential buildings)

The lack of data on some aspects of the homes and living sector in Germany means that trends can only be described for certain areas. While good-quality market data is available for energy-efficient household appliances, this is not the case where **buildings** are concerned. This is particularly true with regard to energy-saving renovations. For example, the figures on grants provided by the KfW (a state-owned promotional bank in Germany) for such renovations, which are used here as an indicator, reflect only a portion of the money spent on energy-saving updates of buildings, and thus the minimum level of investment. The grant funding that is available is also more a product of political decision-making than of actual demand.

Figure 3

KfW grants for energy-efficient construction and renovation in Germany 2008-2012



Note: The figures are new grants and loans awarded by the private customer arm of the KfW group of banks for energy-efficient construction and renovation ("KfW Efficiency Houses" and individual measures).

Source: KfW Bank Group 2009/2010/2011/2012

These KfW grants and loans still offer an indication of how the German market for energy-efficient construction and renovation is developing. After declining in 2011, financial support for new builds and renovations rose in 2012 to EUR 9.8 billion. This represents 5.7 % or only a small proportion of total investment in construction and renovation in that year (German Institute for Economic Research DIW, 2013). This might mean that Germany still has some way to go before the target increase in energy-saving renovation is achieved. Another possibility is that other forms of financing, outside of the KfW grant/loan framework, have become more important

for this type of renovation. Studies to date tend to support the former theory, i.e. that the share of the market accounted for buildings that have undergone energy-saving renovations is rising only slowly. The German Energy Saving Ordinance of 2009 which governs energy requirements for new builds and the modernisation of old buildings, should ensure that this proportion continues to grow (see text box below).

EU directive stimulates construction of more energy-efficient buildings

The European Energy Performance of Buildings Directive (EPBD), 2010/31/EU, has paved the way for improving the energy efficiency of buildings in the EU. An aim is to have "nearly zero energy buildings" by around the year 2020. The Directive sets out the framework for specific regulations in the individual EU member states. The standards are valid for new buildings, rather than applicable to renovations of existing buildings. Even more important for climate protection than new buidings is the large building stock bearing huge potentials to save energy and CO_2. EU member states have to specifiy energy efficiency requirements for buildings undergoing major renovations. Both for new buildings and for major renovations, EU member states shall develop cost optimal levels of the specific requirements.

Another major component of the Buildings Directive is the introduction of an energy-efficiency label, known as the "Energy Performance Certificate". This labelling system became mandatory in January 2006. All buildings or parts of buildings that are newly built, bought or newly rented must be labelled. In large public buildings, this certificate must be displayed in a way clearly visible to visitors. In addition to energy usage, the certificates also contain recommendations for cost-optimised or cost-efficient energy efficiency improvements.

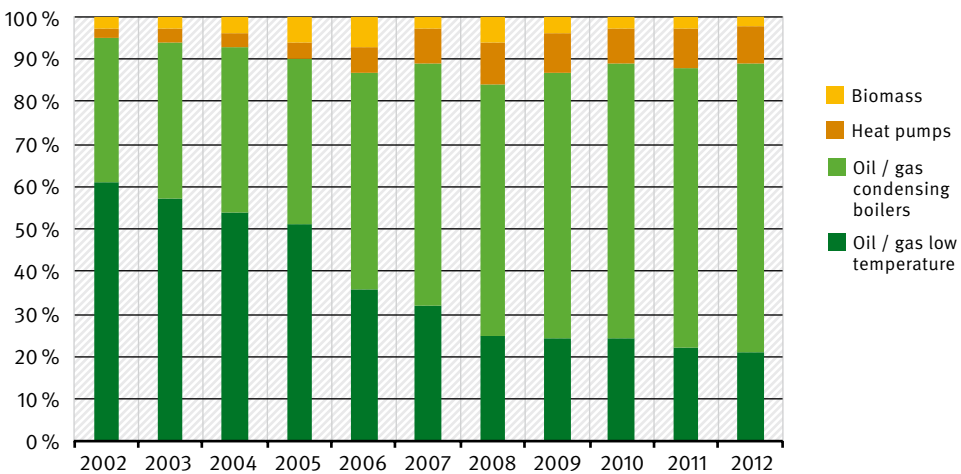
In Germany, for example, the EU Buildings Directives became law in the form of the Energy Savings Act *(Energieeinsparungsgesetz)* and the Energy Saving Ordinance *(Energieeinsparverordnung, EnEV)*. These regulations define minimum energy-efficiency requirements, which become tougher over time. The requirements set by the 2009 Energy Saving Ordinance for a building's maximum primary energy consumption, for example, were an average of 30 % lower than those of the 2007 regulations. Another improvement of about 25 % will enter into force from 2016 for new buildings (EnEV 2014). The Ordinance means that homeowners must invest in better building envelopes and/or in heating equipment being energy efficient or using renewable energies if they build or renovate a building.

The Energy Saving Ordinance also defines the German standards for Energy Performance Certificates. There are shortcomings in the current labelling system, however. The labels lack transparency and are, at least for ordinary consumers, quite difficult to interpret. Additionally, it is almost impossible to work out future energy costs from the ratings. The way in which a building's specific energy efficiency is to be calculated has to date limited the labels' reliability (BMVBS 2011). Nevertheless, the labels are an important step towards more energy-efficient buildings. They allow investors, purchasers and renters of buildings or apartments who want to integrate energy efficiency into their choices to make more informed decisions.

Progress must still be made on **heat generation**. According to the Federal Industrial Association of Germany – House, Energy and Environmental Technology (BDH), around 75 % of Germany's heating systems use old technology and are consuming too much energy (BDH 2013b). In 2012, condensing boilers, which are able to use fossil fuels efficiently, had a market share of around 68 %, while less-efficient low-temperature boilers still accounted for around 21 % of the market (Fig. 4).

Figure 4

Market trend in heating systems in Germany 2002-2012



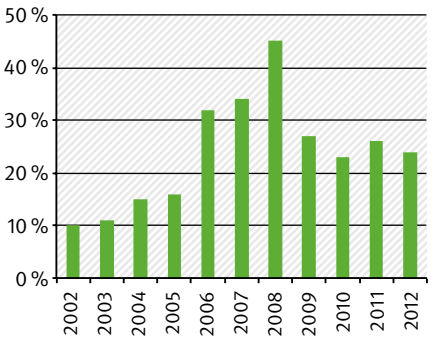
Source: BDH 2013a

In 2012, just under a quarter of spending on newly-installed heating systems involved – either exclusively or additionally – biomass or solar heating, or heat pumps (Fig. 5).

Solar panels can be used to heat water and to supplement room heating. In 2012, new solar panels measuring some 1.2 million square meters were installed – a drop of almost 10 % compared with the previous year. Sales to end consumers remained steady, at EUR 1 billion, having peaked at EUR 1.7 billion in 2008 (German Solar Industry Association 2013).

Figure 5

Share of investments in Germany involving the installation of alternative heating systems 2002-2012



Note: Figures cover biomass and solar heating systems, and heat pumps.

Source: BDH 2012

Figure 6

Newly installed solar panels in Germany 2002-2012

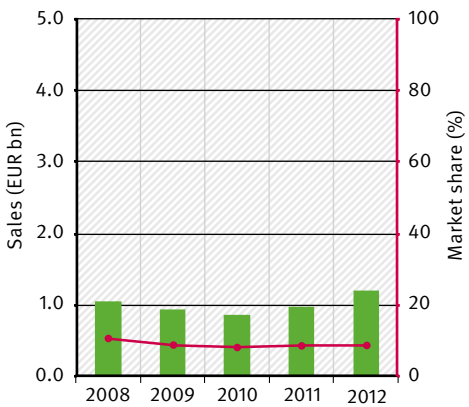
Year	Annual new installations (m²)	Cumulated solar panel area (million m²)	Number of solar heating systems (cumulated)
2002	540,000	4.4	540,000
2003	720,000	5.1	623,000
2004	750,000	5.8	700,000
2005	950,000	6.8	800,000
2006	1,500,000	8.3	940,000
2007	940,000	9.2	1,034,000
2008	2,100,000	11.3	1,244,000
2009	1,550,000	12.9	1,394,000
2010	1,150,000	14.0	1,509,000
2011	1,270,000	15.3	1,658,000
2012	1,150,000	16.5	1,803,000

Source: German Solar Industry Association 2013

Heat pumps are an efficient means of providing heat, providing they are highly effective and are operated using green electricity. Heat pumps had a market share of 8–10 % between 2008 and 2012, and sales reached approximately EUR 1 billion annually (German Heat Pump Association BWP 2012). Revenue and sales figures have begun to rise again slightly in recent years (Fig. 7).

Figure 7

Heat pumps – sales and market share in Germany 2008-2012

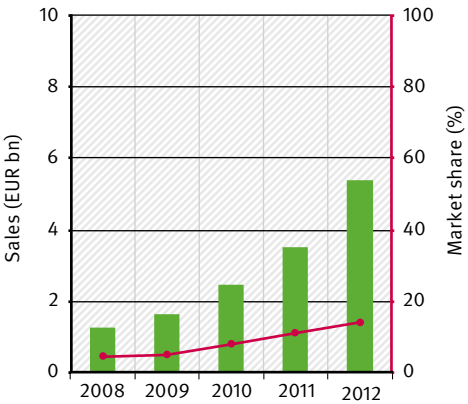


Sources: German Heat Pump Association BWP 2013; International Geothermal Center GZB 2010.

There has been very lively growth in the demand for **green electricity tariffs**. Their market share more than doubled between 2008 and 2012, and now stands at over 14 % (Federal Network Agency 2009/2010/2011/2012/2013).

Figure 8

Green electricity – sales and market share in Germany 2008-2012



Source: Federal Network Agency 2009/2010/2011/2012/2013

The growth potential of green electricity tariffs does not yet seem exhausted. Price differences are often minimal, and consumers are willing to buy. For example, in 2010 16 % of all consumers who were then purchasing conventional electricity planned to switch to green power in the future (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2010). Indeed, the reactor disaster at Fukushima in March 2011 was reflected in a sharp rise in customer numbers for providers of green electricity. Two years later, in 2012, a full 20 % of all respondents said that they were actually buying green power (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2013).

Certifications and labels for green electricity

The importance of labels or some other sort of quality certificate for green electricity products is evident. There is no single, trademarked standard for environmentally friendly electricity generation. In Germany, for example, there are currently 810 suppliers of green electricity products, with around 3,800 green energy tariffs on the market with very diverse standards and environmental qualities (Reichmuth et al. 2014). This makes it hard for consumers to get their bearings.

"Green power" is defined as electricity that has been produced either completely or predominantly by environmentally friendly means. The European system of "Guarantees of Origin" (GO) which is a requirement of the European Renewable Energy Sources Directive (2009/28/EC) is implemented in Germany and in many other European states. This mandatory GO system for renewable energy requires electricity companies in Germany to cancel GOs for the disclosure of their green power at the Register of Guarantees of Origin (HKNR), maintained by the German Federal Environment Agency (UBA). This ensures that green power really comes from renewable resources and that the quality "renewable energy" is not marketed more than once (Federal Environment Agency (UBA) 2013).

GÜNER STROM LABEL

ok POWER

GOs create reliability and confidence for customers purchasing green power by providing information about the quantity and origin of the electricity they are buying. They do not evaluate the ecological quality of the energy generation process, however. This is why eco-power labels such as the "Grüner Strom Label" and "OK Power" remain useful as they offer a guarantee of certain further qualities. Depending on the label in question, eco-labelled power guarantees "additionality", i.e. certain investments in new renewable power plants by the power producer, investments in storage, or support for better integration of renewable energy into the grid. Ecolabelled power can also refer to further ecological criteria, such as nature conservation (e.g. protecting fish) (Reichmuth et al. 2014, Oekotest/Robin Wood 2013).

Market trends (household appliances and lighting)

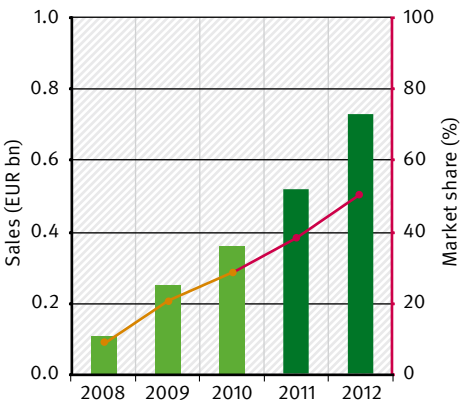
Energy-efficient **household appliances** are well on the way to becoming the norm. Particularly energy-efficient appliances are rated with an A+++ or A++ energy efficiency class (see page 18). In Germany, market shares in 2012 stood at 50 % (refrigerators and dishwashers), 51 % (tumble dryers), 47 % (lighting) and 67 % (freezers). The market growth of refrigerators and freezers is a prime example of how strong efficient household appliances have become in the market as a whole. In just four years, their market shares rose from just 9 % and 26 % respectively in 2008, to over 50 % and 67 % in 2012 (GfK 2012/2013).

A similar trend has been observed in other appliances. Efficient electric hobs and ovens achieved a market share of just below 38 % in 2012, while efficient flat-screen televisions (efficiency classes A, A+ and A++) now account for almost 55 % of the market – a year-on-year increase of more than 200 % (GfK 2013a).

The trend in **lighting** has been somewhat less dynamic. Although sales and market shares for efficient LED and fluorescent lighting and low-energy light bulbs rose between 2011 and 2012, the change over the past five years overall has been minor. In 2012, these forms of lighting accounted for 47 % of the market (GfK 2012/2013a).

Figure 9

Efficient refrigerators – sales and market share in Germany 2008-2012

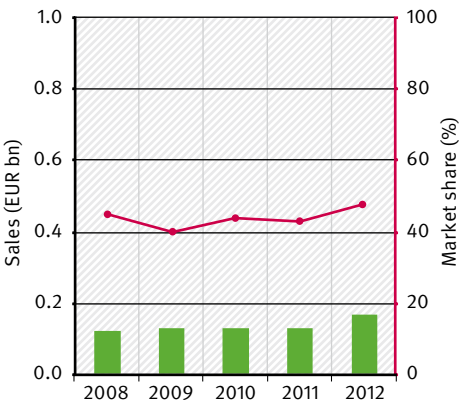


Notes: "Efficient" refers to appliances in efficiency classes A++ and A+++. The label was adapted in line with technical progress from 2011 onwards (new energy label).

Source: GfK 2012/2013a

Figure 10

Efficient light bulbs – sales and market share in Germany 2008-2012



Notes: The following are counted as "efficient" light bulbs: LED lamps, low-energy bulbs, fluorescent lighting

Source: GfK 2012/2013a

This is all the more surprising because the sale of inefficient light bulbs has gradually been phased out by law in the EU since 2009. Halogen lamps, which are less efficient than low-energy bulbs, have evidently benefited most from this move so far. Their market share rose from 2.8 % in 2008 to 18 % in 2012 (GfK 2012/2013a).

The "Top Ten" most energy-efficient household appliances

Consumers who care about energy-efficiency in households can consult internet portals such as "www.TopTen.eu" for an instant overview of the most efficient household appliances. TopTen is an online search tool for consumers, and displays the best appliance choices, sorted by product category. The criteria determining the "best" are energy-efficiency, environmental impact, health and quality.

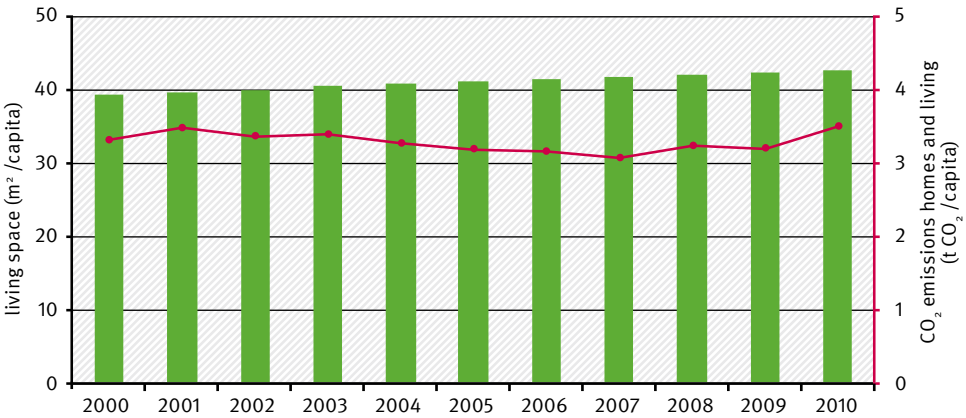
The internet portal encompasses a wide range of household appliances, from washing machines and tumble dryers to refrigerators, freezers, coffee machines and dishwashers, as well as vacuum cleaners and TVs. Online portals such as TopTen, and other similar portals or brochures (e.g. those issued by the Verbraucherzentrale German consumer centres in 2013, www.spargeraete.de or www.hausgeraete-plus.de) prove very valuable in further "greening" consumption. They reduce the effort the consumer has to make to choose green products. Additionally, by increasing awareness and transparency, they stimulate competition between producers towards more energy-efficient products.

Environmental impact trend

The largely positive trends of individual indicators in the homes and living sector are not reflected in a reduction in its overall environmental impact (heating, hot water and electricity). Although buildings and appliances in general are becoming ever more energy-efficient, there is no aggregate fall in CO_2 emissions since 2000. After declining between the years 2000 and 2007, CO_2 emissions have increased again in the last years (Federal Statistical Office 2014).

Figure 11

Per capita living space and homes and living CO_2 emissions (from heating, hot water and electricity) in Germany 2000-2010



Source: Federal Statistical Office 2014 and Federal Statistical Office 2013b

One of the main reasons for this is likely to be the parallel rise in expectations in terms of living space, the standard of furnishing, and household technology. Per-capita living space has been rising steadily for some years, and stands at 43 m² in 2010 (Federal Statistical Office 2013b). The increase in single-person households is an important driver of this trend. In 2012, single households already accounted for 40 % of the total in Germany (Federal Statistical Office 2013b).

Consumers now also expect more in terms of the standard of furnishing and technology in their homes. The German consumer electronics market (entertainment systems, telecommunications and IT) expanded further in 2012. With sales 3.9 % higher than in 2011, this segment was worth just under EUR 29 billion (gfu/GfK 2013). The sharp rise in sales of household appliances such as tumble dryers (GfK 2013a) also indicates that households are using more electrical equipment.

These opposing effects mean that the positive effect on the environment of growth in the market for sustainable household products is not being fully realised in practice.

Outlook

Market data in the homes and living sector generally show a positive to very positive trend. The success of energy-efficient appliances illustrates the great importance of having the right policy framework. Transparent information on energy consumption, as well as the definition of minimum standards of energy efficiency in the EU Ecodesign Directive, has helped efficient appliances to penetrate the market more quickly. Additional progress can be achieved by making further, incremental adjustments to these minimum requirements. The examples of solar panels, heat pumps and energy-saving renovations show, however, that without effective state incentives it can be difficult to generate dynamic growth.

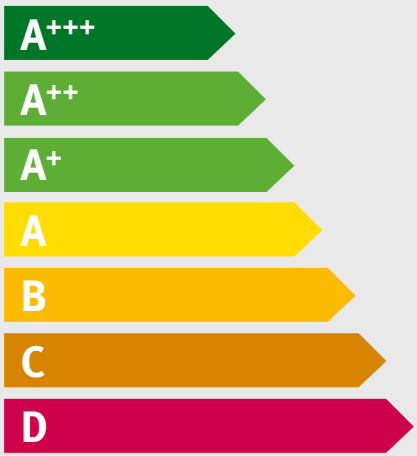
Further action with a broader reach is required to achieve a substantial reduction in homes and living-related environmental impact. First and foremost among these measures is extensive investment in building insulation and in the continued expansion of renewable energies. This makes sense not only from the environmental but also from the financial perspective: In the building sector, each euro of grant money triggers around 12 euros of private investment (Federal Ministry for Transport, Building and Urban Development BMVBS 2012).

Table 1

Trends in the homes and living sector

Market trend	Environmental impact trend
Building envelopes	
Solar systems	
Heat pumps	
Green electricity	
Household appliances	
Lighting	

Energy-efficient household appliances thanks to government action



Energy-efficient household appliances have become widespread. In 2012, between one in three and one in two was energy-saving. There are four main reasons for this:

- The evolution of energy-efficient technologies means that household appliances now use less energy to generate the same or better performance.
- Government regulation has outlawed the sale of inefficient appliances. The EU Ecodesign Directive (Directive 2009/125/EC) creates the legal framework for minimum requirements for electrical products. For example, since July 2010 all new refrigerators and freezers (with

the exception of specialist appliances) have had to comply with the requirements of energy efficiency class A, and of class A+ from July 2012 onwards. From December 2011, all new washing machines and dishwashers have had to satisfy efficiency class A, and class A+ became the new minimum standard in December 2013 (German Energy Agency dena 2011).

- The EU Energy Labelling Directive sets out a standard product information scheme for indicating product energy consumption. The label displays an appliance's electricity use, and allocates it to a specific energy efficiency class, each of which is distinguished by a different colour. The top efficiency class shown on the label (A or higher) designates the most energy-saving appliances in that particular product group. The EU energy label, with its standard classifications, as well as information on annual energy consumption, makes it relatively easy for customers to determine which appliances are particularly energy-efficient. In the interests of clarity, however, all EU labels should show class A as the best, and class G as the worst, and adapt the corresponding requirements continually in line with technological progress.

- In Germany, consumer acceptance of energy-efficient appliances is very high. In a survey conducted in 2010, 71 % said that they were willing to pay a higher initial purchase price if it meant that they could reduce their electricity bills in the long term (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010). Rising energy prices are further boosting consumers' willingness to go energy-efficient. In 2012, 58 % said that they look for low energy consumption when buying household appliances (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2012).

These four mutually supportive factors have contributed significantly to the growth of the green market.

Consumers cling to their cars; alternative mobility in a niche

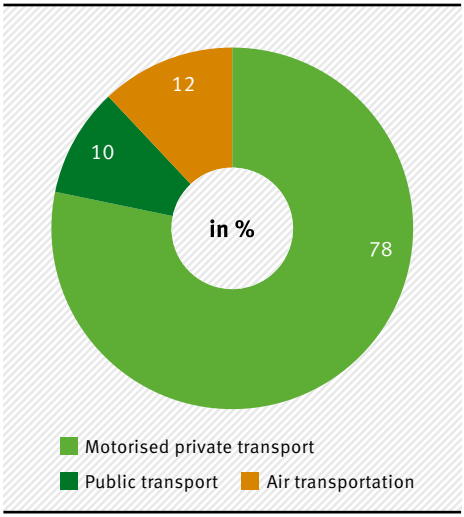
The car remains by far the most commonly used means of transport in Germany. Public transport still accounts for less than 10 % of the market, and carsharing for less than 1 %. Multi-modal transport services are experiencing dynamic growth, however.

Environmental context

Some 23 % of private CO_2 emissions originate from transport, with by far the greatest share (78 %) caused by cars (Federal Statistical Office 2014). This makes mobility the consumer sector with the highest CO_2 emissions after homes and living.

Figure 12

CO_2 impact of mobility 2010



Source: Federal Statistical Office 2014

However, the climate is not the only thing that transport affects. We must also consider the victims of traffic accidents, the high resource consumption associated with vehicles and the road network, and high levels of air and noise pollution. Furthermore, increasingly dense transport networks are fragmenting living and recreation areas.

Approaches

From the environmental perspective, public transport rates much higher than road or air transport. In the mobility sector, environmental impact can be reduced on a number of fronts. Experts estimate, for example, that up to 30 % of car trips in built-up areas could be made by bicycle. Energy-efficient engines, or alternative drive systems such as hybrid engines and electric motors, could significantly reduce the environmental impact of mobility. Finally, new usage concepts such as carsharing are important door-openers that lead to more environmentally friendly and more multi-modal means of transport.


K3b

Market trends

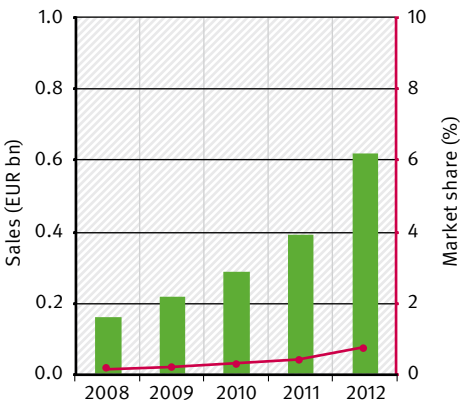
Mobility has many facets, and the choice of means of transport, and mobility habits, varies correspondingly. Fixation on the car as the sole means of transport is gradually giving way to a more multi-modal approach. In other words, people are increasingly using different means of transport in the course of a single journey. Examples include car and train (Park + Ride schemes), or bicycle and urban rail services (Karlsruhe Institute of Technology Institute for Transport Studies 2012). This is also being reflected in a growing number of multi-modal services, such as the combination of public transport and carsharing.

Public transport shows little change in mobility habits. German per-household spending on public transport has stagnated at around 27 euros per month. Based on household spending on transport overall, public transport thus has a market share of less than 9 % (Federal Statistical Office 2013a). Public transport also accounts for only a modest share of all journeys made. In 2012, just under 12 % of all journeys were taken by bus, tram, underground, or urban or long-distance rail (Karlsruhe Institute of Technology Institute for Transport Studies 2013). Despite these figures, the modal split over the past decade has shifted slightly towards more ecological forms of transport (public transport, cycling and walking) (Infras/DLR 2010).

In the **private transport** segment, sales of more environmentally friendly hybrid and electric vehicles have been rising for years. They continue to occupy a niche, however. There was a sharp rise in the number of newly registered hybrid and electric vehicles in Germany between 2011 and 2012, but their market share remains less than 1 % (Fig. 13):

Figure 13

Hybrid and electric vehicles – sales and market share* in Germany 2008-2012



* Market shares refer to the number of vehicles sold.

Sources: Federal Motor Transport Authority 2013 and Going Electric 2013

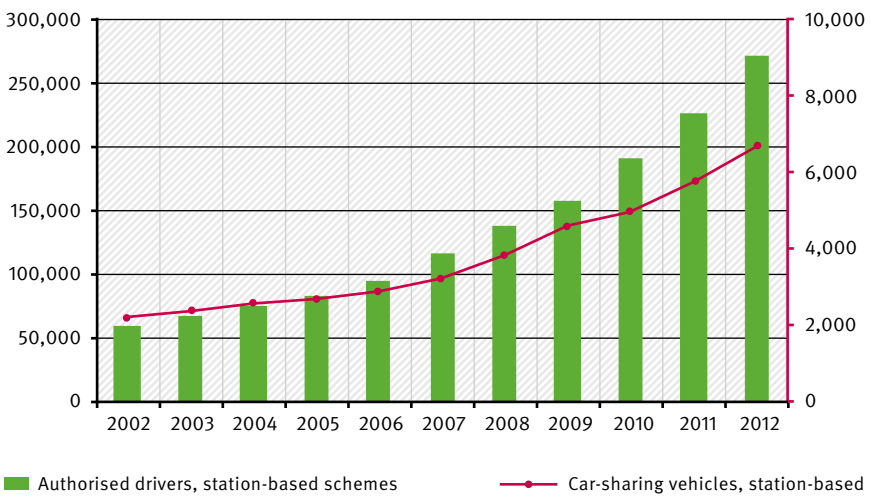
The high cost of buying a new electric vehicle, an infrastructure that is still not particularly well developed, and the fact that the technology is still not fully mature remain obstacles to the spread of electro-mobility. At 3,000 vehicles sold in 2012, the figures for electric vehicles are still well below the federal government's target, according to which there should be one million electric vehicles on Germany's roads by 2020 (Federal Government 2009).

Carsharing schemes are growing in appeal. The members of carsharing organisations share the use of a number of cars which are owned by the organisation and are also maintained and insured by it. The number of carsharing users of station-based schemes has been growing continuously since 2008, to reach 270,000 by the end of 2012. This figure is 22.7 % higher than in 2011 (Bundesverband CarSharing 2013). (Fig. 14) Dynamics of free-floating schemes are even higher but limited to a few German cities. They counted about 180,000 customers in 2012.

Carsharing nonetheless remains a niche phenomenon. Only 0.5 % of those holding a driving license are carsharing customers (Bundesverband CarSharing 2013 / Federal Motor Transport Authority 2013b / Federal Highway Research Institute 2007). Growth has been limited by the fact that, to date, carsharing has been concentrated primarily in larger towns and cities, and that carsharing customers must be willing to change their mobility habits.

Figure 14

Growth of carsharing in Germany 2002-2012



Source: Bundesverband CarSharing 2013

The German population appears rather unwilling to change its mobility patterns. This may have something to do with the popular view that the individual cannot do much towards environmental conservation. A study found that 84 % of people believe that the car industry can make a large or very large contribution to conservation by developing environmentally friendly vehicles. By contrast, only 58 % believes that drivers can help the environment by driving more slowly or less often (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2010). A willingness to switch to ecological mobility does exist, however. This is illustrated by a marked affinity for carsharing, even at this early stage. In 2010, 26 % of the population found the idea of carsharing attractive or very attractive (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010). Just two years later, this portion had risen to 36 % (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2013).

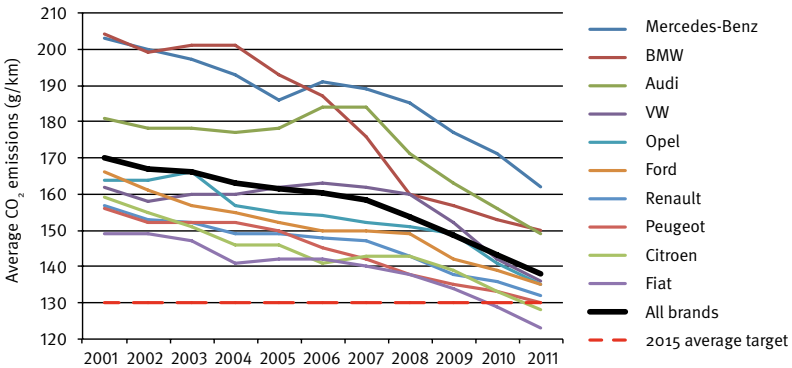
European label for the energy-efficiency of cars and EU efficiency regulation

The European energy efficiency label described above in the homes and living section is also mandatory for cars, and indicates the CO_2 emissions per kilometre travelled. Cars are classified from A+ to G within a certain vehicle weight category. Cars marked A+ emit a maximum of 45 % of the CO_2 of an average reference car model, whereas cars in the G class emit 19 % more CO_2 per kilometre than the reference model. Thus, the label allows reliable comparisons only within the same weight category. It does not indicate that a compact car emits less CO_2 than an SUV (Breitinger 2013).

All in all, the EU label marks a great step towards enabling customers to reduce their CO_2 emissions when driving. However, the fact that comparisons of efficiency classes are only valid within a certain vehicle weight category conveys a misleading impression, i.e. that an SUV bearing a green label may be more efficient than a compact car in the red area of the scale. Customers can avoid this pitfall by comparing the specific emission figures that are also displayed on the labels, instead of merely looking at the car's energy class.

Although a label system allows customers to make informed decisions, it is not sufficient in itself to reduce vehicle CO_2 emissions. EU regulations setting binding CO_2 limits for new cars also play a crucial role here.

Figure: Average CO_2 emissions of new cars sold in the EU, per car marque from 2001 to 2011



The figure above shows that the CO_2 emissions per kilometre travelled in new cars in the EU decreased rather slowly up to 2007, and the automobile industry did not manage to fulfil its reduction agreements. However, the debate on binding CO_2 limits in the EU which began in 2007, and their final imposition in 2009, effectively spurred on technical progress (ICCT 2012). Current EU regulations set an average CO_2 limit for new cars of 130 grammes of CO_2 per kilometre up to 2015. The limit for each car producer is calculated on the basis of the company's vehicle weight categories. For example, BMW and Daimler must meet an average limit of 138 grammes, whereas Fiat must aim for an average of 119 grammes. Fiat is one of several car producers which have already achieved their targets, and other will follow soon (Puls 2013).

Just recently, the European Parliament reached an informal agreement on a binding CO_2 limit of 95 grammes on average by 2021 for all new cars sold in the EU (Green Car Congress 2013). This marks another important step, and will lead to further technological progress towards more efficient cars. However, environmental NGOs state that the CO_2 limit is not ambitious enough, for two main reasons. First, they claim that recent technical progress has shown that lower limits could be reached. Second, in the light of the +2°C global warming target, they contend that the limits are insufficient. A study by Roland Berger (Valentine-Urbschat/Bernhart 2009), for example, translated the +2°C global warming limit into necessary CO_2 limits for new vehicles. It came to the conclusion that an average limit of 74 grammes per kilometre would be needed by 2020, and 56 grammes by 2025.

Environmental impact trend

The somewhat marginal market growth for sustainable products and services in the mobility sector is reflected in barely any reduction in the environmental impact of private mobility. It is true that engines are becoming much more efficient, not least because of statutory requirements in respect of specific CO_2 emissions. However, there has been a slight increase in kilometres travelled per person, and there is no significant aggregate fall in CO_2 emissions per capita since 2000. Although it has been possible to reduce the fuel consumed by passenger traffic, it remains at the high level of an average of 7.4 litres per 100 kilometres (German Institute for Economic Research DIW 2012b).

Figure 15

Kilometres travelled by car and CO_2 emissions per capita from mobility in Germany 2000-2010

Sources: German Institute for Economic Research, 2012b / Federal Statistical Office 2014

Outlook

At present, the market for sustainable products and services in the mobility sector is growing too slowly for them to achieve any significant market share in the foreseeable future. Stronger incentives and standards are clearly needed here if they are to increase their market penetration.

Green alternatives are only one factor here, however. It is at least as important to reduce energy consumption – or CO_2 emissions – across the entire German car fleet. The introduction by 2015 of an EU-wide CO_2 limit of 130g/km for newly registered cars is an important start. Combined with better car fuel consumption labelling, if developed further and used consistently, we would then have a tool which could be used to generate green momentum in the car market in the same way as in the market for energy-efficient household appliances (see the text box above).

In addition, a framework must be established to allow alternative forms of mobility to grow. Examples include short-distance urban planning, good public transport services and a well-developed cycling infrastructure.

Table 2

Mobility trend

Market trend

- Public transport
- Efficient vehicles
- Carsharing

Environmental impact trend

Organic segment continues to grow

Some trends in the food segment are moving faster than others. While there has been little change in meat consumption, the MSC label denoting sustainable fisheries has crossed over into the mass market. Following a year of rapid growth in 2011, organic food continues to take an ever-greater share of the market, although the rate of expansion has slowed. Organic food thus continues to occupy a niche.

Environmental context

Food and drink are responsible for a considerable share of the environmental impact of private consumption. The cultivation, processing and transportation of, and waste from, our food causes around 14 % of total CO_2 emissions from consumption (Federal Statistical Office 2014). If we also count other environmental impacts such as other greenhouse gases like methane or nitrous oxide, the impact on soil and water from agriculture, the loss of biodiversity because of the use of pesticides, and deforestation to make way for agricultural land, then the share of total environmental impact rises to over 25 % (Jungbluth et al., 2012). Figure 16 shows an overview of the environmental relevance of individual foodstuffs.

Furthermore, large volumes of water are required in agriculture and in processing to manufacture vegetable and animal products. For example, indirect water consumption through the consumption of food and drink in Germany stands at 2,700 litres per capita per day, compared with around 100 litres of direct water consumption for washing clothes and dishes, for example (Federal Statistical Office, 2014).

Figure 16

Greenhouse gas emissions from food in Germany

Foodstuff	Greenhouse gas emissions from average per-capita consumption (annualised figures)
Beef	90 kg CO_{2e}
Pork	224 kg CO_{2e}
Butter	164 kg CO_{2e}
Cheese	170 kg CO_{2e}
Milk	48 kg CO_{2e}
Potatoes	13 kg CO_{2e}
Bread	52 kg CO_{2e}
Strawberries	0.7 kg CO_{2e}

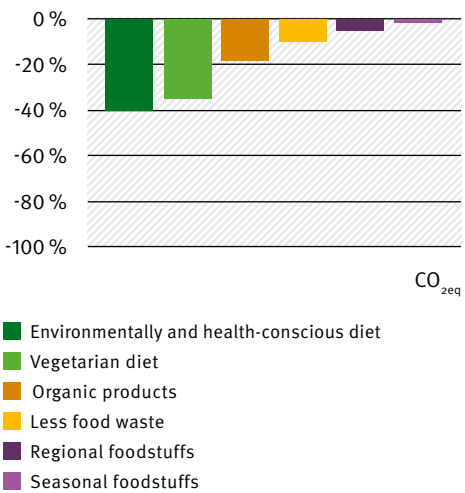
Source: Öko-Institut 2011

Approaches

Consumers have a wide range of opportunities to reduce this environmental impact. They can change their diets, for example, and consume less meat, or minimise food waste. They can buy more environmentally friendly foods such as organic, regionally grown or seasonal produce. Studies show that an environmentally and health-conscious diet could reduce the environmental impact of the food consumer sector by up to 40 % (Figure 17).

Figure 17

Potential for reducing the impact of food on the climate



Notes: Swiss data, largely comparable with that for Germany. An environmentally and health-conscious diet encompasses all of the options given above, plus lower consumption of alcohol and tobacco, as well as the loss of excess weight.

Source: Jungbluth et al. 2012

The EU organic label required by law, and the voluntary German organic label

A vegetarian diet with organically produced foodstuffs offers the greatest potential for reducing environmental impact.

Figure 18

Greenhouse gas emissions from food in Germany

Foodstuff	Conventional (in kg CO_{2e}/kg)	Organic (in kg CO_{2e}/kg)
Beef	13.3	11.4
Pork	3.3	3.0
Butter	23.8	22.1
Cheese	8.5	8.0
Milk	0.9	0.8
Potatoes (fresh)	0.2	0.1
Bread	0.8	0.6
Vegetables (fresh)	0.2	0.1

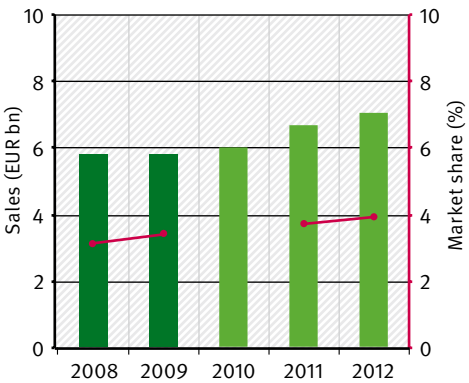
Quelle: Öko-Institut 2011

Market trends

In Germany, sales of organic food rose by 6 % to EUR 7 billion in 2012. Some of this increase is explained by higher prices. The strongest growth in sales was recorded by organic meat and poultry (17 %), as well as meat substitute products, at over 25 % (Bund Ökologische Lebensmittelwirtschaft 2013).

Figure 19

Organic food – sales and market share in Germany 2008-2012



Notes: Different calculation methods mean that the figures for 2008 and 2009 are not comparable.

Source: Bund Ökologische Lebensmittelwirtschaft 2010/2011/2012/2013

That being said, organic food remains in a niche. Although the share of the total food and beverage market accounted for by organic produce has increased, it stood at just 3.9 % in 2012 (Bund Ökologische Lebensmittelwirtschaft 2013).
Only a small number of sustainable alternatives, such as MSC fish, have expanded beyond this niche and entered the mass market (see text box below).

German consumers are becoming increasingly aware of the environmental significance of their food choices. They are buying more organic products and, especially, much more fish from sustainable sources, than in previous years. In 2010, 43 % of consumers said that an organic label influenced their purchasing decisions, and 34 % said that organic foodstuffs played a large or very large role in their diets (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010). The organic label is well recognised (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010). The reasons that organic food still accounts for only a small share of the market, are mainly higher prices at the point of sale, as well as doubts about the environmental benefits, and the correct declaration of organic products. In 2012, two-thirds of the German population nonetheless said that they buy organic: 11 % regularly, and 28 % occasionally (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2013).

The current EU agricultural policy reform is a certain turning point towards greening agriculture in Europe

The natural food movement, the precursor of organic farming, started at the beginning of the 20th century. It experienced a revival in the 1960s and 1970s, when organic farming methods became more popular. The growth in organic farming had, to a large extent, been driven by private actors, i.e. consumers paying extra for organic-quality produce, and farmers voluntarily changing their cultivation methods.

Governments, and the EU in particular, have also influenced organic farming in various ways. Initially, public funding for organic farming was intended to reduce excess production and to achieve market equilibrium via lower yields (EEC 1987). The legal basis on which to identify organic products was regulated by the EU for plant products in 1991 and for animal products in 1999, and is now laid down in EU Regulation EC 834/2007. A further adjustment is currently underway, however. For a long time in Germany, organic products were labelled by individual associations within the organic movement, such as Demeter, Naturland and others. An important supporting measure was the establishment of an overarching national organic label in 2001 (OELG, 2008, OekoKennzV, 2002). This increased market transparency and the credibility of organic food – an important condition for a thriving organic market in Europe.

Another important influence from the political sphere has been the EU's supporting system of the Common Agricultural Policy (CAP), which has had a considerable impact on the amount of organic food produced. The "McSharry Reform" of the CAP that became effective in 1993 brought the first changes. It lowered price support for farming products and linked premiums paid to farmers (then renamed "direct payments") to cultivated land area instead of the amount of food produced (Patterson, 1993). This was the first signal that the CAP was moving away from merely supporting mass production ("decoupling") and thus gave farmers more flexibility to adjust to market changes in the sense of greater entrepreneurship.

From 2005 to 2013, several new policy measures brought further improvements, above all the introduction of "cross-compliance", i.e. binding environmental and animal welfare standards for all farmers applying for EU direct payments (EC 2011). For farmers applying ecological methods, both the conversion to and maintenance of organic farming has been support-

ed by additional eco-premiums to compensate for additional costs, lower yields and income foregone compared with conventional farming. This is intended to encourage farmers to participate in such schemes in response to society's increasing demand for the use of environmentally friendly farming practices and for high standards of animal welfare. These schemes gradually increased the land area farmed organically in Germany to about 6 % of the total, or about one million hectares in 2012 (BOELW 2013). With higher prices for organic food, and the funding outlined above, the economic performance of organic farms now competes with that of conventional farms under comparable site conditions.

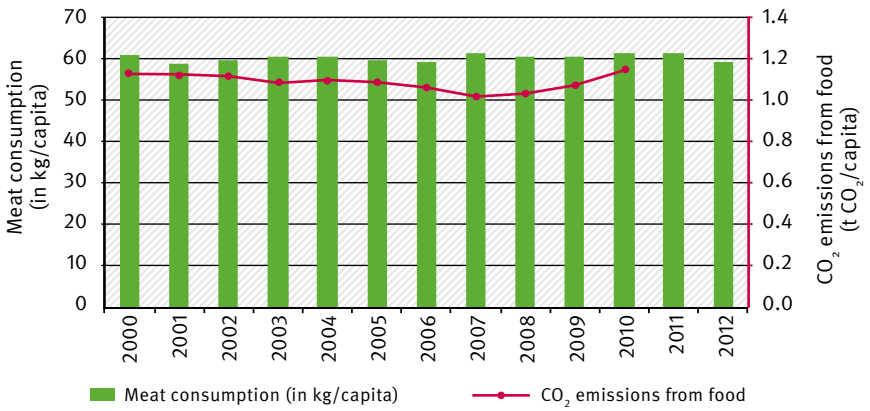
In 2013, the EU agreed on another reform of the CAP (EC 2013), which is meant to mark a remarkable turning point. The reform aims to green European farming practices by linking direct payments more strictly to practices beneficial to the climate and the environment. From 2014 onwards, 30 % of the EU's direct payments to farmers will be made as "greening payments" that are linked to crop diversification, the maintenance of permanent pastures, and "ecological focus areas" on 5 % (later 7 %) of arable land. Within this framework, organic farmers will be regarded as green by definition, which means they will receive the direct payments – including the 30 % green share – automatically, without having to fulfil additional requirements. This acknowledges the "green" nature of organic farming for the first time within the first pillar of the CAP. It symbolises that organic farming is no longer a niche, but has now arrived in the mainstream of society and agricultural policy.

Environmental impact trend

After the environmental impact of food and drink declined between the years 2000 and 2007, it has increased again. Diet-related per-capita CO_2 emissions increased by around 5.5 % between 2009 and 2010, and in 2010 were roughly at the level of the year 2000 (Federal Statistical Office, 2014).

Figure 20

Per capita meat consumption and CO_2 emissions from food in Germany 2000-2010



Sources: Bundesverband der deutschen Fleischindustrie BVDF 2013 and Federal Statistical Office 2014

The consumption of meat in Germany has remained high, at around 60kg per head and year over the past ten years (Bundesverband der deutschen Fleischindustrie BVDF, 2013).

Outlook

The trend in market demand for food points in the right direction: more organic. Pleasing growth in sales nonetheless masks the truth of how important organic food actually is to consumers. Even after years of organic boom, organic products still take far too small a share of the market to ensure sustainable development. Furthermore, there is no sustainable trend to be seen where the consumption of meat is concerned. Without a stronger effort on the part of producers and the state, the market for sustainable products will not pick up appreciably.

Table 3

Food trend

Market trend

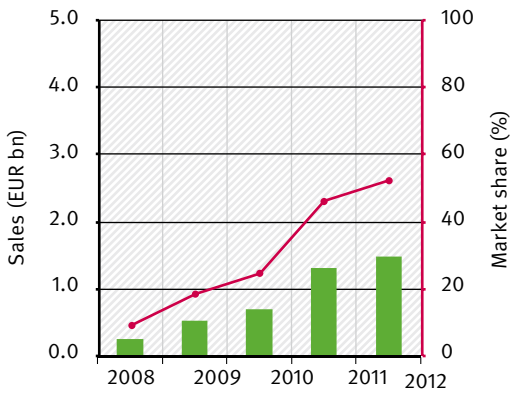
- Organic products
- MSC products

Environmental impact trend

MSC-certified fish from sustainable fisheries is a great success. The label has succeeded in moving out of a niche and into the mass market.

Figure 21

MSC products – sales and market share in Germany 2008-2012



Source: MSC 2013

Fish are a renewable, but limited resource. According to the EU Commission, currently only 22 % of the regulated stocks in European waters are not overfished (European Commission 2013). Reasons are excessively large fishing fleets, excessively high fishing quotas, large amounts of by catch, and illegal fishing (German Advisory Council on the Environment 2011). To date, government-level regulation has proven insufficient to prevent overfishing. The new Regulation of December 2013 on the Common Fisheries Policy has to prove whether it fulfils the requirements of sustainable environmentally friendly fisheries (European Union 2013).

This prompted companies and non-governmental organisations (NGOs) to set up the Marine Stewardship Council (MSC), an independent, charitable organisation. The MSC supports sustainable fishing from the retail and demand side. When the MSC label for sustainably wild-caught fish was launched in 1999, there was a lack of certified fisheries, and the label first had to become established. Critical mass was achieved just under a decade later, and the label made the breakthrough into the mass market (Geltinger, 2012). In 2012, MSC-labelled products accounted for 52 % of all wild-caught fish sold in Germany (MSC, 2013).

In addition to the work of the MSC, and extensive media coverage of overfishing, a number of parties and circumstances played a part in this success. NGOs such as BUND, Greenpeace and WWF are very active in this area and put pressure on retailers to source their fish from sustainably-run fisheries, and generally to include more sustainable products in their ranges. Retailers then pass this pressure on to fishery operators. Retailers have also been pro-active in their communications to consumers in recent years, and have been advertising the MSC label. Finally, the global supply of MSC fish has leapt during the same period. In 2008, there were 2,000 MSC products on the market. That figure now stands at over 15,000 (MSC 2012).

Consumer demand has also been a major factor in the success of the MSC label in Germany. German consumers are particularly ecolabel-conscious, i.e. they are receptive to them as an aid to decision-making when food shopping. Furthermore, half of all German consumers believe that over-fishing is a problem that must be tackled. The MSC label is the best option for consumers looking for straightforward information when buying fish. In 2008, only around one in ten consumers recognised the MSC logo, but in 2012, it was familiar to one in two (Geltinger 2012). The label enjoys a relatively high level of credibility among consumers (AMR 2012). In addition, consumers generally have to pay only a little more – if any premium at all – for MSC products. As a result, demand remained robust even when economic growth slumped in 2009.

Flavour preferences are another reason for the success of the MSC label in Germany. Germans like to eat mild, white fish, such as Alaska pollack and herring. Some 80 % of fish consumption is distributed across only a few types of fish, and because of favourable conditions, there is a sufficient quantity of these MSC-certified fish available. The fact that German consumers prefer these very types of fish, making them MSC pioneers world-wide, is therefore due not only to their consciousness of environmental and fishing issues, but also to chance – simply having “good” taste (Geltinger 2012).

Other consumer goods

Labels show the way

Whether textiles, furniture, paper or cleaning agents – households use many products which have an overall impact on the environment. Reliable environmental labels such as Germany's Blue Angel help consumers to navigate the market in search of greener alternatives, although these labels' significance varies widely between product segments.

Environmental context

A household uses an extremely varied range of products. Particularly significant from the ecological perspective are textiles, products from wood and wooden composites, paper, paints and varnishes, as well as cleaning agents and personal care products. Together, these products are responsible for around 15 % of household CO_2 emissions (Federal Statistical Office, 2014). Within the "other consumer goods" segment, the manufacture of textiles and clothing accounts for 18 % of CO_2 emissions, and furniture for 10 %.

Figure 22

CO_2 impact of various consumer goods in Germany 2010

Source: Federal Statistical Office 2014

The main environmental impact is caused by procuring the raw materials for these products and by manufacturing them. This applies, for example, to the timber industry and textile production as well as to paper manufacturing, which is included under "other goods and services". In addition to greenhouse gases and depending

on the product, these processes are responsible for other environmental impacts such as water consumption and water pollution. Textile production, for example, uses an enormous volume of water as well as fertilizer and pesticides. The paper manufacturing process is also associated with high resource consumption (wood, energy), as well as pollutant emissions into water, the air and the soil. Many paints and varnishes contain toxic ingredients which are harmful to health and the environment. Meanwhile, it is the chemical content that determines the environmental impact of cleaning agents and personal care products.

Approaches

Sustainable products help to reduce environmental impact. In many cases, these products can be identified by the corresponding labels. Recycled paper protects forests and requires less water and energy than paper from virgin fibre. In Germany, recycled paper is marked amongst others with the Blue Angel ecolabel. The Blue Angel is only awarded to products and services which - from a holistic point of view - are of considerable benefit to the environment and, at the same time, meet high standards of serviceability, health, and occupational protection.

Sustainable forestry increases biodiversity in woodland. Here, the Forest Stewardship Council (FSC) and the PEFC labels are important markers for consumers (view text box below). Other labels such as the EU Ecolabel concentrate on the ingredients of cleaning agents and personal care products to ensure that they are compatible with the environment and do not damage health. The Global Organic Textile Standard (GOTS) represents organic cotton cultivation, in addition to other environmental aspects of textile production.

Although labels are no guarantee of environmentally friendly usage, they are an important way of guiding consumers towards sustainable products. The focus in the following market description is on products bearing the Blue Angel or EU Ecolabel marks. Unfortunately, no figures exist for FSC or PEFC (wood) products.

Diverse range of ecolabels for paper products

The range of ecolabels for paper products is quite diverse. Certain paper-specific labels such as the FSC (Forest Stewardship Council) and PEFC (Programme for the Endorsement of Forest Certification Schemes) were set up by private organisations. Other labels such as the “Blue Angel” (Blauer Engel) and the “EU Ecolabel” are government initiatives – the Blue Angel by the German state, the EU Ecolabel by the EU – and mark paper in addition to a range of other consumer products. Each of these voluntary label systems has its own specific focus.

The PEFC and FSC labels both concentrate on the source of paper pulp, and their objective is sustainable forestry. The FSC issues the "FSC 100 %" (paper from 100 % FSC-certified sustainably-managed forests) and "FSC Recycled" (100 % recycled paper) labels (Urgewald and UBA/Initiative pro Recycling). The PEFC also awards two labels: "PEFC Certified" (paper from at least 70 % PEFC-certified forests) and "PEFC Recycled" (containing at least 70 % recycled paper).

In Germany, the Blue Angel is yet another label attesting to the green credentials of paper and other products. The label was introduced in the late 1970s and focuses on both ecological (climate, water and resource conservation) and health impacts, while also taking the broad view by considering entire product life cycles (UBA/Initiative pro Recycling). Compared to the product-specific labels, the Blue Angel has the advantage of providing consumer orientation for various consumer products, and thus reduces the number of different labels that consumers face. The Blue Angel is also relatively well-known, and has been rather successful for paper products in Germany (Blue Angel 2008-2012).

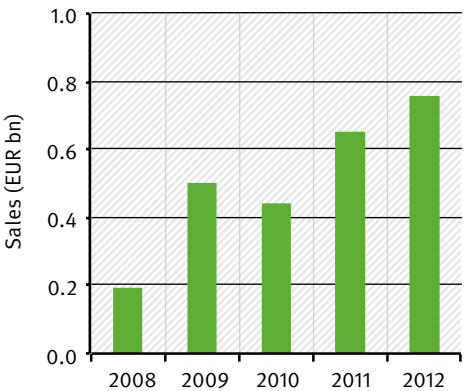
In 1992, the EU introduced the "EU Ecolabel", consisting of a stylised flower featuring the EU's star flag. The aim of this initiative was to harmonise different ecological product standards at an international level, and thereby to further increase transparency and efficiency with regard to sustainable consumption. The methodology applied to the EU Ecolabel is similar to that for the Blue Angel in that it looks at the entire product life-cycle, and is used for a diverse range of products (www.eu-ecolabel.de, www.ecolabel.eu). However, unlike the Blue Angel, the EU Ecolabel is not very widespread in Germany. This may be due to a number of factors. The requirements of the Blue Angel are more stringent, and thus considered more trustworthy. For paper products, for example, the Blue Angel requires mostly 100 % recycled paper, whereas the EU Ecolabel does not require the use of recycled paper. This is why the Blue Angel has not been abandoned in favour of the EU Ecolabel. Furthermore, the Blue Angel covers many more consumer products than the EU Ecolabel and was introduced more than a decade earlier, so German consumers have been used to it for a longer time (BMUB 2012 and 2013).

Market trends

Germany uses some 20 million metric tonnes of paper every year. The Blue Angel ecolabel enjoys a high level of recognition among German consumers (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010), and is well trusted. After a fall in sales of paper products bearing the Blue Angel in 2010, the label experienced a strong resurgence in 2011 and 2012 (view text box above).

Figure 23

Paper bearing the Blue Angel ecolabel - sales in Germany 2008-2012



Note: It is not possible to show market shares.

Source: RAL 2013a; Federal Statistical Office 2013a

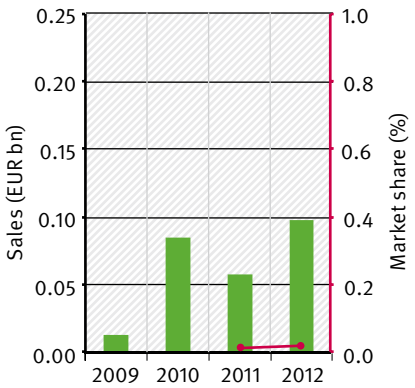
In some sectors, such as the packaging industry, almost all of the paper on the market is recycled. There is still considerable potential for improvement on the consumer side, however. Recycled paper still accounts for only 13 % of office paper (Bundesverband des Deutschen Papiergroßhandels 2012).

The market share of low-emission paints and varnishes cannot be quantified exactly. However, in the do-it-yourself segment, industry sources put the share of water-based varnishes – which with few exceptions all bear the Blue Angel label – at around 50 %. Sales figures for **cleaning agents and personal care products** bearing the EU Ecolabel are low in comparison.

Ecologically-produced **textiles** remain a niche segment. At 0.02 %, the market share of textiles and clothing bearing the GOTS (Global Organic Textile Standard) is minute (GfK 2013b).

Figure 24

Textiles bearing the GOTS label - sales and market share in Germany 2009-2012



Source: GfK 2013b

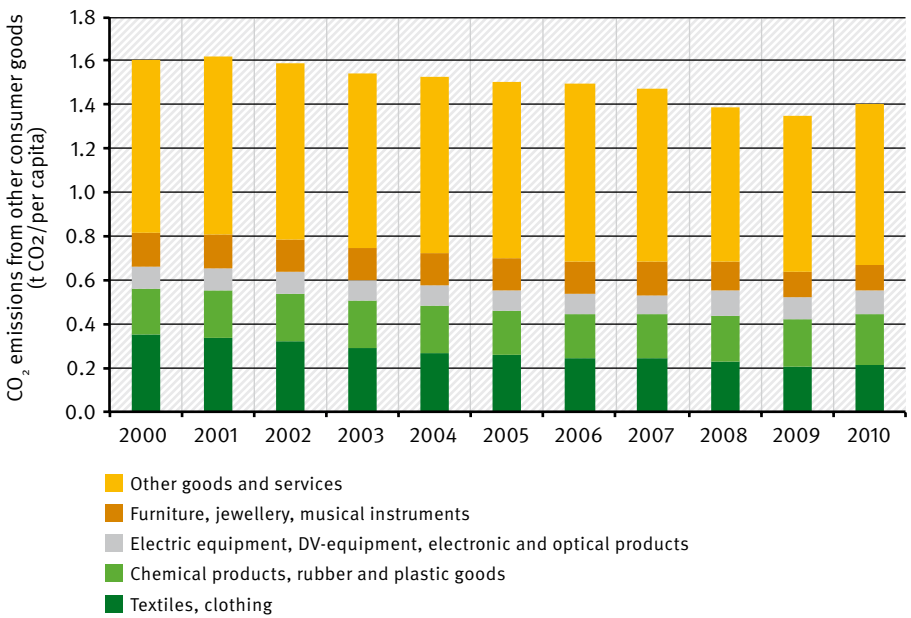
The likely reasons for this are the limited choice of ecolabelled clothing, as well as the variety of competing labels in the textile industry. The label Textiles Vertrauen (Confidence in Textiles) with its categories Öko-Tex standards 100, 100+ and 1000 is widely used alongside the Global Organic Textile Standard (GOTS) label, but their ecological requirements differ widely in some areas. Another factor is that textiles from major retail chains often bear the company's own ecolabel.

Environmental impact trend

The climate impact of other household consumables and consumer goods in Germany show an ambivalent trend. While the impact of some categories such as "textiles and clothing" is declining, others e.g. "other goods and services", including health care services or paper, are increasing. Total per-capita CO_2 emissions from other consumer goods fell by 14 % from 2000 to 2010 (Federal Statistical Office 2014).The trend for the different segments is shown in Figure 25.

Figure 25

CO_2 emissions per capita from other consumer goods in Germany 2000-2010



Source: Federal Statistical Office, 2014. The category "Other goods and services" includes among others glass and pottery products, health care services, financial services and a variety of unspecified goods and services.

If we look only at the example of paper, which is included under "other goods and services", CO_2 emissions have hardly fallen at all in recent years. Per-capita paper consumption in Germany has continued to rise, from 230 kg in 2009 to 244 kg in 2012 (Verband deutscher Papierfabriken vdp 2014). This puts Germany at the top of the EU rankings. The entirely positive development in recycled paper is therefore offset to some extent by higher consumption.

Outlook

The market potential of ecolabelled products in the "other consumer goods" sector is far from exhausted. That being said, this is another area in which successful market growth cannot be taken for granted. Losses of market share of green alternatives for established products such as paper (in 2010) illustrate the need for continuous marketing. Equally, the markets for green products which so far have occupied a niche face typical obstacles to successful market penetration. Too many competing labels for textiles, and an international but largely unrecognised EU Ecolabel (see below) for cleaning agents and personal care products are confusing to consumers, and thus hamper these products penetrating the mass market more successfully.

Table 4

Trend in other consumer goods

Market trend	
Paper	
Textiles	
Environmental impact trend	

Finance

Green investment for a green economy

Wide-scale investment is needed to make the structural change towards a green economy. Consumers can play an important part in this by using their money to finance specific projects or companies. Openness to green investment is growing.

Environmental context

The development of society in a sustainable direction also necessitates a great deal of investment. In Germany, investment totalling an estimated EUR 335 billion is required up to 2030 to expand renewable energies and reconfigure power grids (HWWI 2012). Significant funding is also needed to ensure a more energy-efficient building stock, more environmentally friendly mobility systems and more environmentally sound agriculture.

Approaches

In addition to the public sector and institutional investors, private households can also play an important part here. By putting their money into green savings accounts, bonds or investment funds, they push business to take better care of the environment, and support conservation projects (vz Bremen 2012, FNG 2012b).

Alongside green investment, it is also possible to make green donations, for example by giving money to environmental associations. Furthermore, there are now voluntary offsetting schemes to compensate for CO_2 emissions by financing climate conservation projects.

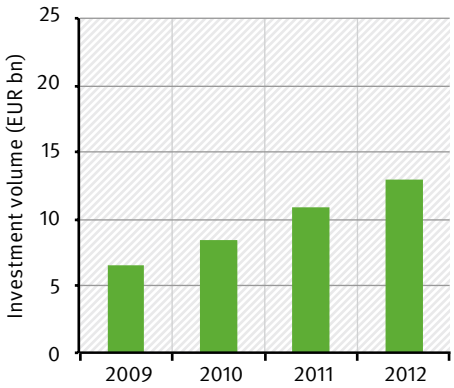
Investments and donations have an important leverage effect. They finance the structural change required to move towards a more sustainable society. In doing so, they make a major contribution to more environmentally-sound production and consumption. Non-sustainable investment, on the other hand, often cements environmentally damaging behaviours for decades to come. Examples include the energy and building sectors.

Market trends

Green, or sustainable, investment has grown considerably in recent years. Investment volume in Germany reached EUR 26 billion in 2012, for example, after posting annual growth rates of roughly 20 to 30 % between 2009 and 2012 (Eurosif 2010, FNG 2013 and 2011). This figure does not include savings, investments by homeowners in energy-saving renovations, or privately-installed solar systems.

Figure 26

Sustainable investments - volume and market share in Germany 2009-2012



Sources: Eurosif 2010, FNG 2013 and 2011. The figures include retail funds and portfolio management mandates.

Sustainable investment, i.e. retail investment funds and portfolio management mandates, remains a niche segment, however. It was not until 2011 that its share of the overall market passed the one percent mark. The figure for 2012 stood at 1.3 % (FNG 2013). A number of factors are likely responsible for the still-minor importance of sustainable investment products. These products often lack transparency, and especially small investors therefore do not know how sustainable they really are, or what returns and risks are to be expected. Investor interest in such investment vehicles is rising, however. In 2010, 4 % of the German population said that they had invested their money in renewable energies, by buying shares in technological ventures or units of investment funds, for example (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010). In only two years up to 2012, this figure had risen to 12 % of respondents (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2013).

Donations to environmental or nature conservation groups have become a fixture of German budgets. One in five respondents states that they have given financial support to environmental non-governmental organisations (NGOs) in the past twelve months. A steady decline has been observed in recent years, however. This is probably due to the global financial crisis (2006: 25 %, 2008: 21 %, 2010: 18 %) (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2010). It is also reflected in the actual volume of donations for environmental purposes, which fell from EUR 163 million in 2010 to EUR 158 million in 2011 (Deutscher Spendenrat/GfK 2012).

The volume of voluntary **offset payments** for greenhouse gas emissions is rising. In Germany it stood at about 4.9 million t CO_{2e} in 2012 and about 5.8 million t CO_{2e} in 2013, according to an ongoing study on behalf of the German Emissions Trading Authority (Tänzler 2014). The volume in terms of money depends on the carbon prize for voluntary offsets, which is very volatile and not analysed in this study. Consumer awareness is growing nonetheless. In 2010, just 3 % of all consumers said that they offset the greenhouse gas emissions for which they themselves are responsible, from transport, for example (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2010). Just two years later, this figure was 8.6 % (Federal Environment Ministry BMU/ Federal Environment Agency UBA, 2013).

Sustainable investment strategies in Europe – their impact and market growth

In the financial market, “Socially Responsible Investment” (SRI) products cover a variety of sustainable investment strategies. Of these, the following are currently the most widespread.

“Best-in-class” investments choose those investments that perform best in terms of a set of ecological, social and governance (ESG) criteria within a certain class resp. group of companies or organisations. High-quality best-in-class investments should secure financing for the shift towards a more sustainable economy. “Screening” or “exclusion” strategies systematically exclude companies, sectors, or countries from investments if they do not comply with certain norms or ethical criteria (such as weapons producers) (Eurosif 2013). Here, a rather small number of ESG criteria are applied to ensure that certain unsustainable products or activities are not financed.

In Europe, SRI based on screening or exclusion strategies are the fastest-growing segments, followed by best-in-class. Looking at market shares, however, it becomes evident that investments based on screening and exclusion actually account for around 95 % of all SRI products in Europe. Best-in-class investments, which are the most effective from a sustainability point of view, make up only 5 %. Another interesting development is that impact investments (investing in activities that generate a direct positive social and/or environmental impact) have just begun to gain attention. Their market share remains negligible, however (Eurosif 2013).

What is also striking is the fact that a fairly small group of large institutional investors is the main driver of the considerable growth in SRI in the financial sector (Eurosif 2013). One reason for this is that, compared to small investors (retail clients), institutional investors do not need to rely on “pure” SRI products, but can also integrate ESG criteria into their investment decisions and their voting behaviour in general meetings. Other reasons are that institutional investors are better able to assess the investment return assumptions and risks of SRI, and they are generally better informed about the sustainability strategy of individual SRI products. An official label for SRI would do much to increase both the transparency and the credibility of the SRI market for retail clients and their customer service representatives.

Environmental impact trend

The many different interrelationships involved make it virtually impossible to comment on the connection between sustainable investment and environmental impact as a whole. It is clear, however, that financial backers are absolutely essential to a more sustainable infrastructure. This applies equally to renewable energies, efficient technologies, new forms of mobility and heat-insulated homes. The precise extent to which specific sustainable investments are needed for this is difficult to say. It is true, however, that investments in sustainability are easier to make the more willing people are to pool their money into sustainable financial products. Furthermore, there is a growing need for all companies to operate increasingly according to environmental criteria.

The picture with sustainable donations is much the same. The higher voluntary support for sustainable initiatives and projects, the more probable a reduction in environmental impact becomes.

Outlook

Sustainable financial investment is an important means of exerting indirect leverage to strengthen the position of sustainable products and services (Wendler et al., 2010). High growth rates show that, in common with other green issues, public acceptance of and demand for this aspect of sustainability is rising. This important lever is largely unused at the moment, owing to low market shares. For this market to maintain its powerful growth momentum there needs to be greater transparency about the sustainability of the products on offer. Common standards, e.g. a product label, and more independent consumer advice are two suitable means of achieving this. NGO communications should also return to highlighting more strongly the importance of donations to conservation.

Table 5

The trend in finance

Market trend
Sustainable investment products
Donations for conservation purposes
Private offset payments

Outsiders gaining ground

Green products have become established in many consumer segments. Sales are rising almost across the board in Germany, with very rapid growth in some areas. Although green products are still largely niche items, there is a willingness among consumers to create a stronger demand.

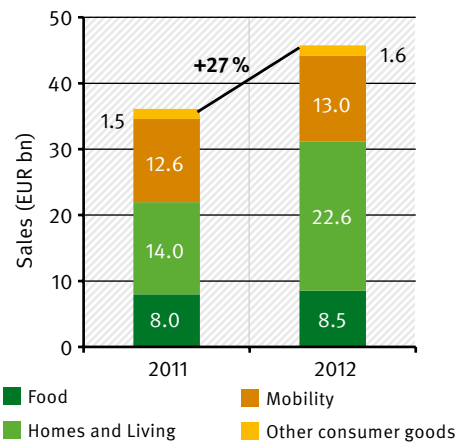
46 Billion euros for sustainable products

Sustainable consumer goods have become a firm fixture of the product ranges offered by many companies. Consumers in Germany spent a total of almost EUR 46 billion in 2012 on the green products examined in this report. In terms of sales this represents a year-on-year increase of almost 27 percent. The homes and living sector, which has the biggest impact on the environment, also accounted for the largest proportion – EUR 22.6 billion – of consumer spending on green products (energy-saving renovation, energy-efficient homes). Spending on sustainable mobility (public transport, carsharing and hybrid vehicles) stood at EUR 13 billion, while EUR 8.5 billion was spent on organic food and products from sustainable fisheries. Sustainable alternatives in the textile, paper and wood segments, as well as to personal care and cleaning products, take a smaller share, at EUR 1.6 billion (own calculations on the basis of 2012 market data). In addition, consumers put EUR 26 billion into investment products that offered additional environmental and social benefits (Eurosif 2010, FNG 2013a and 2011).

By comparison, aggregate private consumer spending stood at around EUR 1,500 billion (in 2012; Federal Statistical Office 2013d), and private households made investments totalling around EUR 4,950 billion (in 2012; Statista 2013).

Figure 27

Sales in Germany of selected green products, 2011-2012



Source: Own calculations on the basis of 2011 and 2012 market data

Market shares: 0 to almost 70 %

Broad differentiation in the data means that only a rough estimate can be made of the overall share of spending on environmental products. Energy-efficient alternatives take a high share (between 37 and 68 %) of the white goods market. In the mobility sector, public transport accounts for almost 10 %, while carsharing and hybrid vehicles remain at fractions of one percent. In the food and beverage sector, organic products are also in single digits, at a market share of 3.9 %, although this figure varies widely depending on the product concerned. Organic food nonetheless accounts for over 15 % of the EUR 46 billion in "eco-spending" studied here.

Strong momentum – with exceptions

Independent of their current market shares, sustainable products are growing at different rates (Fig. 28).

Many sustainable products still occupy niches, but are characterised by a strong momentum, with sales growth of over 10 %. If this momentum is maintained, then green power for example – which posted a 54 % increase in sales from 2011 until 2012 – has the potential to cross over into the mass market, i.e. achieve a market share of over 15 %, in just a few years' time. Although organic food and sustainable investments also show lively growth, they still have a very long way to go. The "market mindshare", i.e. the actual importance of hybrid and electric vehicles, as well as carsharing schemes, on the market remains marginal despite their recent strong expansion.

A small number of sustainable products have succeeded in entering the mass market and continue to grow rapidly. For example, sales of efficient household appliances and products from sustainable fisheries expanded markedly between 2010 and 2012, and may become even more important in the future.

The same cannot be said of spending on efficient light bulbs which are more or less stagnating at a relatively high level. Legislative developments in national climate conservation policy may nonetheless lend new growth impetus to this segment.

Disappointing from the environmental perspective are product sectors such as public transport, which remain stuck in slow-growing niches. However, poor data means that only a rough estimate can be given of the trend in certain areas, such as textiles.

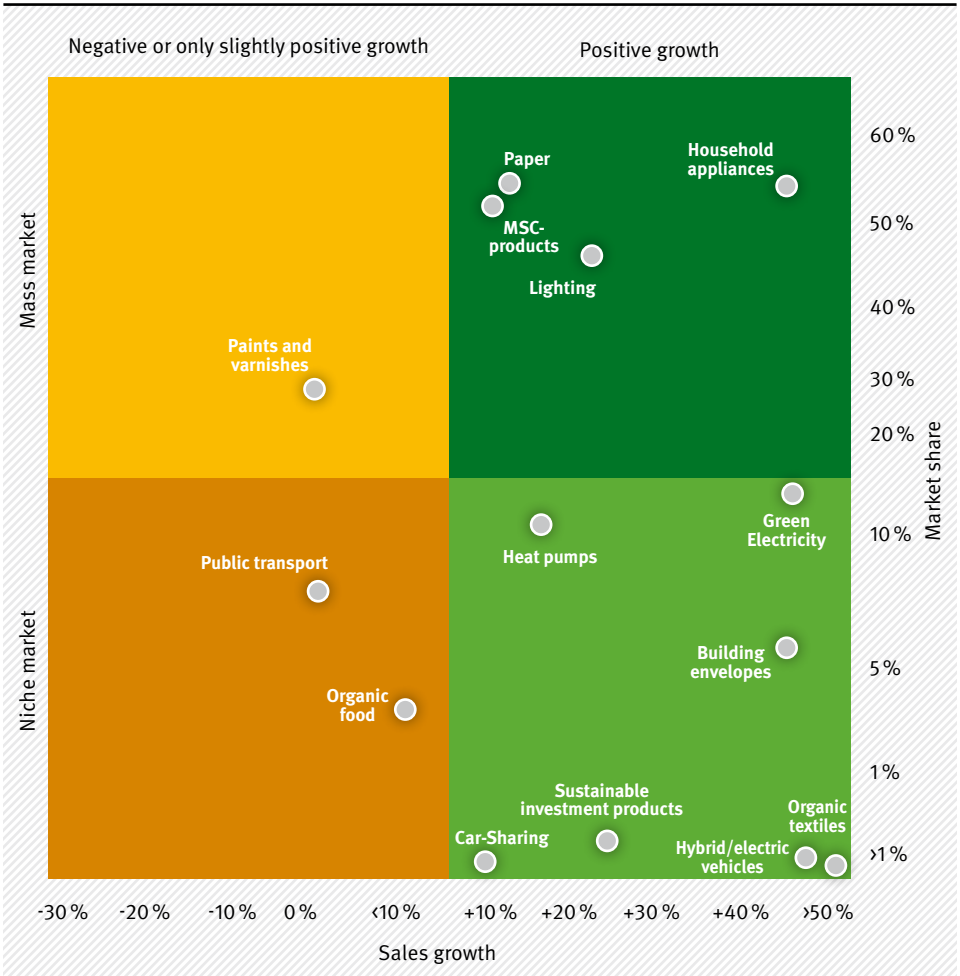
General willingness to buy

From the point of view of consumer acceptance, the conditions are favourable for further growth in the market for sustainable products. Now, more than ever, consumers are aware of the impact that their purchasing decisions have on the environment and society. Two out of three consumers said in 2010 that they consciously buy products whose manufacture and usage have only a minor environmental impact. Meanwhile, 41 % of consumers expressed their willingness to accept a certain price premium for environmentally friendly products (Federal Environment Ministry BMU/Federal Environment Agency UBA, 2010).

The details reveal significant differences, however (Federal Environment Ministry BMU/Federal Environment Agency UBA 2013/2010). For example, in 2012, 58 % of consumers said that they looked for low

Figure 28

Market penetration and momentum of selected green products in Germany in 2012



Explanation of quadrants:

- Niche market and negative or only slightly positive growth (orange): market share 2012 below 15 %, sales growth between 2011 and 2012 below 10 %
- Mass market and negative or only slightly positive growth (yellow): market share 2012 above 15 %, sales growth between 2011 and 2012 below 10 %
- Niche market and positive growth (light green): market share 2012 below 15 %, sales growth between 2011 and 2012 above 10 %
- Mass market and positive growth (green): market share 2012 above 15 %, sales growth between 2011 and 2012 above 10 %

Source: Own calculations on the basis of 2012 market data

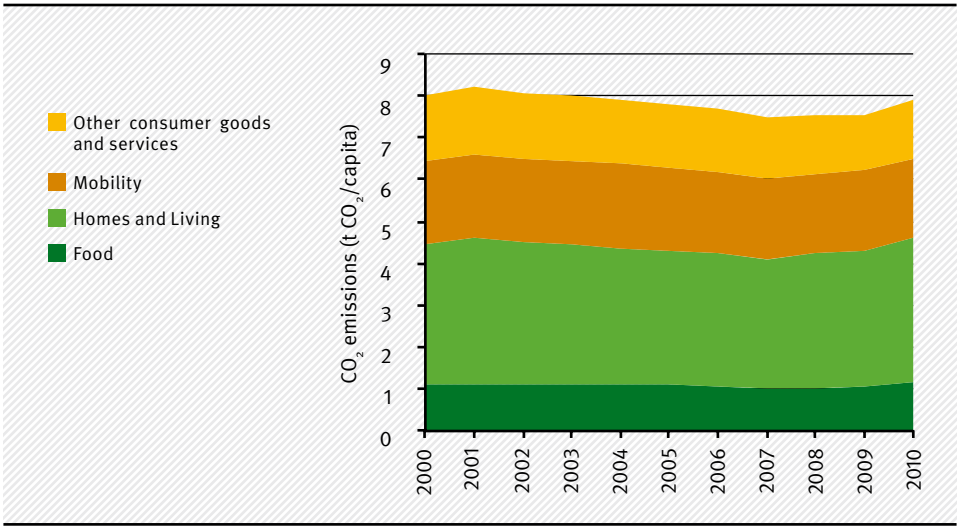
energy consumption when buying a new household appliance. In the 2010 survey, 71 % said that they were willing to pay a higher price for such a product. Where food is concerned, 34 % of consumers said that whether a product is organic played a significant or very significant part in their decision to buy it. Some 26 % of consumers found carsharing an appealing idea, and 24 % of all respondents stated that they were buying green electricity, or wanted to buy it in the future. At the end of the scale in 2012 was the willingness to invest money in renewable energies now or in the future, or to make payments to offset greenhouse gas emissions (12 %). Despite differences in the detail, the market potential of sustainable products remains relatively high provided the obstacles that lie between willingness to buy and the actual decision to buy can be cleared (see next section).

Ambivalent trends in CO_2 emissions

The direct and indirect per-capita CO_2 emissions declined between the years 2000 and 2007 and then increased again until 2010. A detailed look at the various consumer sectors reveals differing trends, however. Per-capita CO_2 emissions from mobility have fallen by 4.5 %, and homes and living-related emissions have increased by almost 5 %. The figure for food has remained virtually the same (Federal Statistical Office, 2014).

Figure 29

CO_2 emissions per capita from private consumption in Germany 2000-2010



Source: Federal Statistical Office, 2014

On the one hand a reason for declining in CO_2 emissions from 2001 to 2007 is growth in the market for the green products described in this report. Another is that standard products in other areas (e.g. lighting, cars, heating systems) have become more energy-efficient. There have thus been environmental improvements in areas that are not reflected in the market data analysed here.

On the other hand there are many reasons for the overall increase of CO_2 emissions between the years 2007 and 2010. Consumers' expectations with regard to living space, the furnishing of their homes and the technology they use, as well as personal mobility, are rising. Efficiency gains are reduced or cancelled out because consumers are buying more electronic equipment and travelling longer distances, for example. In addition, ecological products continue to occupy a niche. Their influence is too weak to reduce environmental impact substantially. There is clearly a need for a new and stronger impetus to harness the broad growth momentum of green products, and turn it into a significant reduction in environmental impact. Greenhouse gases represent only a part of this environmental impact. Greater attention must also be paid to aspects such as biodiversity, land use and water and soil conservation.

Environmental impact trends 2000-2010

- Homes and living
- Mobility
- Food
- Other consumer goods

Trends at a glance

Market growth

- Building envelopes
- Solar systems
- Heat pumps
- Green electricity
- Household appliances
- Lighting
- Public transport
- Efficient vehicles
- Carsharing
- Organic products
- MSC products
- Paper
- Textiles
- Sustainable investment products
- Donations for conservation purposes
- Private offset payments

Broad, concerted effort required

The market penetration of green products and services is determined by a variety of factors and by a large number of stakeholders. Consequently, market trends of individual green products can only to a limited degree be transferred to other products.

Key factors determining market mindshare and willingness to buy

At first glance, the various consumer segments offer rather a mixed picture with regard to the significance of green products and consumers' willingness to buy them. A closer look nonetheless shows which factors make a major difference – the cost of sustainable products, their availability, confidence in their individual environmental credentials, and the power of habit and lifestyle.

The cost factor

The cost factor is absolutely central. Only a small number of consumers are willing to pay a premium for green products. This explains the market success of MSC fish, for example, which is barely any more expensive, if at all, than conventionally-caught fish. Energy-efficient appliances can afford to be a little more expensive, because they use less electricity and are therefore cheaper to run.

In contrast, green products have a significantly harder time if their prices are much higher than their conventional counterparts. This is true for some organic foods, for example, as well as for donations and offset payments. Voluntary offset payments – intended to compensate for the emissions caused by air travel by supporting climate conservation projects – make up only a fraction of the cost of those flights, but the offsetting concept is also a difficult one to grasp.

Sufficient availability

A further key factor in the success of green products on the market is that they are sufficiently available. This concerns the volume on offer, proximity to green products and services, and time. For example, tenants in a tight housing market will not always be able to choose their home according to energy-efficiency criteria. Availability is also a key factor with public transport. The greater the distance to the nearest bus/tram stop or the nearest railway station, and the less frequent the service, the more likely people are to resort to personal forms of mobility.

Trust and product labels

With many green products, it is impossible to tell how sustainable their production processes are, or how environmentally friendly they will be in use. Consumers therefore rely on product marks and labels which show the ecological quality of the product in question as simply, reliably and independently as possible. In an ever-denser forest of commercial labels, even a well-known environmental quality mark such as the Blue Angel – the criteria of which are determined by an independent jury according to scientific benchmarks – can lose some of its signpost function for consumers.

The first ecolabel – the Blue Angel

Scandals and controversies can shatter confidence in labels, and it takes time and persuasion to restore it. Having several labels for the same product group creates more confusion than it resolves.

Sustainable investments are likely to be struggling with a lack of consumer confidence. To date, no label has been created that would guarantee a certain standard of sustainability in investments. Frequent uncertainty about the risks and returns of such investments is another factor. There is still a great need for clear information in this area.

As a rule, green products and their labels must achieve a certain level of recognition and usage to generate a degree of trust. This is currently lacking in the case of the EU Ecolabel. Once critical mass is achieved – as was done with the MSC label a few years ago – it is much easier for the product to spread across the market.

Habit and lifestyle

Consumption habits are slow to change, and if green consumption is also associated with new eating habits or different mobility patterns, the shift is much slower. It is likely that the growth of carsharing, for example, is being restricted by habit and lifestyle factors. Despite the financial benefits in many cases, and no need to maintain a personal vehicle, market penetration of carsharing remains very low.

Many stakeholders can drive sustainable consumption

The major factors influencing sustainable consumption are at the same time the elements that can be adjusted to make consumption more sustainable.

Consumers with their consumer choices exert a significant influence over which products will be manufactured, how they will be manufactured, and in what quantities. For sustainable consumption to grow, consumers must be made more conscious of the issues and more aware that their actions are important in achieving more sustainable consumption overall. This is particularly true of the "key points" of sustainable consumption that are associated with personal benefits, such as green investments, heat insulation, carsharing, and energy-efficient vehicles and appliances (Bilharz, 2009). Consumers must also be able to rely on the genuine sustainability of products that are labelled as such. But it must be clear that consumers are only one player among others.

The media and non-governmental organisations, such as environmental conservation and consumer protection groups, have an important role to play here. They inform the public about major sustainability issues, such as climate conservation or critical levels of fish stocks. They research and reveal irregularities, such as misleading declarations, and examine and report on the devastating impacts of situations such as the nuclear disaster in Japan. This makes the media and NGOs crucial to the promotion of sustainable consumption.

Furthermore, where sustainable consumption in particular is concerned, **labelling organisations** perform a very important function. When standing in front of the shelves, consumers want to be able to see quickly and clearly which products are sustainable and which are not – without having to do time-consuming research before they set out for the shops. With the appropriate rules and regulations, labelling organisations enable consumers to recognise a given product's sustainability credentials in the clearest and easiest way possible. The Blue Angel, the "Bio" organic label and the "FairTrade" mark are all prime examples here. Their monitoring mechanisms also build and maintain trust in their label (see also www.label-online.de (in German)).

Retailers perform a gatekeeper function when it comes to sustainable consumption. They act as intermediaries between producers and consumers. Since many consumers shop at as few retailers as possible, it is important that their preferred local supermarket carries as broad a range as possible of green products.

Retailers are also able to influence their customers' purchasing decisions with targeted information and marketing campaigns.

Ultimately, sustainable consumption stands and falls with the basic availability of green products at affordable prices. It is the **producers** which switch to sustainable production methods and manufacture environmentally friendly products. It is they which are absolutely fundamental to sustainable technical progress going forward. They also have an enormous responsibility where the credibility of green products is concerned. If producers claim greater sustainability than they actually offer, they jeopardise not only confidence in their own products but also faith in green products as a whole.

The special role of the state

Governments play a major part in the spread of sustainable consumption. The statutory framework that they create is one of the key factors determining how expensive, how available and how credible green products are on the market.

State action can be very effective, as illustrated particularly well by the success of energy-efficient household appliances. Stricter efficiency requirements for these appliances resulted in particularly inefficient products being removed from the market. As a result, the ecological quality of all of the appliances now on offer has improved markedly overall. Government levies have also made it much more expensive to consume electricity. Consequently, energy-saving appliances represent better value than their inefficient alternatives. The state should also continue to reduce market distortion by phasing out environmentally harmful subsidies, and internalising exogenous environmental costs.

Support programs, such as investment grants for energy-saving building renovations and financial aid for installations generating electricity from renewable sources, are a further important instrument in promoting sustainable consumption. These help ecological alternatives gain a footing in the market sooner than they would otherwise have done, and also enable them to catch up with conventional products. If such programs are designed in a socially responsible way, they further help to establish ecological justice.

Finally, soft measures to encourage sustainable consumption should not be underestimated. Where public-sector bodies raise awareness of, inform about and examine sustainability, and set a good example with public procurement, they contribute significantly to a receptive climate for more sustainable consumption.

Concerted effort required

As we have seen, the decision to buy sustainable products and services is not made solely in store. It is the result of a variety of decisions by all of the parties concerned. Interaction and cooperation between all of these actors is therefore required for sustainable consumption to become the norm.

Conclusion

Continue to tap market potential

Green products and services are gaining ground, but their market penetration remains modest. However, the environmental impact of private consumption can only fall if sustainable products become mainstream, and non-sustainable products are banished to niche markets or removed from sale altogether. This requires a greater effort on the part of all concerned.

The trend towards sustainable consumption

Sustainable consumption has become a trend in Germany – according to the hypothesis stated at the beginning of this report. The facts and figures presented here confirm this: double-digit growth rates, considerable willingness to buy, and also high market shares for energy-efficient white goods. The following can be said in summary:

Sales growth: With only a few exceptions, sales of green products and services are growing steadily. Growth rates are often in the double-digit range and in some cases as high as three or even four digits. A++/A+++-rated dishwashers are a shining example here, posting a 1,134 % increase in sales in 2011, and further growth of 33.4 % in 2012.

Growing market share: Higher sales growth cannot be equated to rising market share, as conventional markets also continue to expand. Green products and services are nonetheless conquering a greater proportion of the market in the majority of product categories examined here. Although the gains in the organic food and public transport segments are less than one percentage point, other product categories are expanding much more rapidly. Household appliances, for example, have advanced by between 5 and 28 percentage points, clearly showing that green products are entirely good enough for the mass market.

High level of consumer acceptance: Even with products that are less in demand, willingness to buy sustainable alternatives is much higher than their current market shares would suggest. For example, in 2010 12 % of survey respondents said that they make carbon offset payments or would make them in the future, and 24 % said that they buy or would buy green power. Meanwhile, 34 % of respondents said that organic food was very or fairly important to them. This certainly does not mean that willingness to buy can be transformed easily into actual purchases, but it is an important indication that the market potential of sustainable products has not yet been exhausted.

More sustainable alternatives: A wide variety of more sustainable alternatives

exists in all relevant consumer sectors, and they are increasingly becoming part of standard product ranges. This is true of the homes and living sector, where sufficient heat insulation is the norm when buildings are renovated, and with the large selection of energy-efficient A+++-rated appliances. It applies to mobility, with carsharing schemes in all major towns and cities, and to efficient cars that produce less than 100g CO_2/km in emissions. While choice is gradually improving, so, too, is availability. Internet shopping is one of the reasons for this, as is distribution via supermarkets and do-it-yourself stores.

Sustainable consumption not (yet) a roaring success

The trend in sustainable consumption is heading in the right direction, but it is still too soon to describe it as a roaring success. There are still many obstacles to overcome, not to mention counter-trends in some areas.

Falling sales and market shares: There have been setbacks in the growth of green products and services. Heat pumps lost market share between 2008 and 2012, for example. Rising sales and market shares thus cannot be taken for granted. Instead, they require sustained and repeated marketing efforts.

Environmental impact unclear: While environmental impact – in the form of per-capita CO_2 emissions, for example – fell marginally between 2000 and 2007, they continuously increased again until 2010. This clearly shows that growth in sales of green products and services does not automatically result in a decline in environmental impact. In addition, if we look at global environmental impact as a whole, we observe that developing countries are catching up with our non-sustainable levels of consumption much faster than we are moving towards sustainable products and services. In other words, we should not content ourselves with low growth figures for green products, but must instead take action to increase the rate at which these products are moving into the mass market and are displacing non-green products from the market.

The Ecodesign Directive is no cure-all: The Ecodesign Directive has recorded impressive successes so far with household appliances and the regulation of standby power consumption. That said, even this political instrument has its limits with regard to the promotion of green products. For example, the market share of energy-efficient light bulbs increased only very slightly between 2008 and 2012, which shows the depth of inertia that established markets sometimes display. The long lead times required to regulate individual products under the Ecodesign Directive should also make us wary of a certain "tortoise and hare" approach, in that new products have already reached the market by the time an older product has been included under the Directive, or relative efficiency gains are cancelled out by rising expectations, such as more efficient, but larger TV screens.

Consumers still need help finding their way: The more sustainable product alternatives become established in different markets, the more help consumers need to find their way around. Labels are, in principle, important signposts here. Although we are some way away from the somewhat

unrealistic target of a single, all-encompassing sustainability label, there is still considerable room for improvement in practice. Even the relatively well-established and well-known EU energy efficiency label is still creating unnecessary confusion with its opaque "+++" categories. In many segments – such as clothing, wood products and green energy – there is a proliferation of competing labels. Those such as the EU Ecolabel remain largely unknown and are barely relevant on the market. Environmental labels also still have a long way to go before they become established in online shopping.

Recommendations: encourage the uptrend

Critical remarks about the obstacles in the way of further progress towards sustainable consumption also offer useful clues as to how this large, and as-yet unexhausted, market potential can be tapped. The key recommendations for environmental policy are summarised below:

View consumer acceptance as a solid foundation: We should not attach too much weight to the "willingness to buy" expressed in surveys. There is considerable distance between willingness to buy and an actual purchase, because the purchase decision always incorporates a wide range of differing criteria in addition to environmental considerations. However, fundamental acceptance from the consumer base is a good starting point for advertising campaigns by the companies concerned, and for public-sector promotion schemes for green products. At relatively little expense, such endeavours can finally open doors among the consumer public.

Keep an eye on determining factors: The differences in market trends between green products clearly show that successful market penetration relies on a variety of determining factors – from costs, availability and confidence in ecological credentials, to how these products and services fit into different lifestyles.

Fine-tuned marketing: Marketing for green products and services is generally more complex and demanding than for conventional products. These products' environmental benefits tend to be rather abstract, and consumers require the corresponding proof, such as certification. In keeping with the idea of a good marketing mix, this requires coordinated marketing and a coordinated policy mix. This is another area in which household appliances serve as a prime example. The Ecodesign Directive lays down minimum standards.

Energy consumption stickers offer a standardised and familiar means of picking out the top energy-efficient performers. The right point-of-sale marketing can increase the pace of market penetration.

Pick up the pace: If we want to win the global race against time to conserve the climate, the switch to sustainable consumption must pick up pace first and foremost here in the world's industrialised countries. This demands more ambitious targets, such as CO_2 limits for cars. Fair market conditions for green products are also essential to avoid the environmental damage – and thus costs – of conventional products being passed on to the general public for any longer.

Focus the overall economic framework on sustainability: To avoid product-related approaches such as the Ecodesign Directive lagging behind developments in the real world, the over-arching economic framework must set the underlying direction more clearly, i.e. it must be focused on sustainable development. Energy and resource-use levies are worth mentioning here such as the phasing out of environmentally damaging subsidies as well as forward-looking carbon market.

Act on a variety of fronts to grow the market: One product-related policy instrument alone will not make a great difference. Whether bans, minimum standards, grant funding or labels, concerted action on a variety of fronts is always necessary for green products and services to penetrate the market successfully.

Strength in numbers: Sustainable consumption cannot be achieved by public-sector initiatives alone, neither is it the result solely of voluntary decisions by consumers. Instead, all of the actors involved must make a concerted effort so that green products and services diffuse more quickly across the market. In addition to the legal framework referred to above, consumer-oriented environmental policy can also help in many respects to achieve such shared responsibility.

Outlook: heading in the right direction, but need to move faster

Sustainable consumption is a trend, but it cannot sustain itself. A broader effort is needed. All of the actors involved, from the political sphere, manufacturing and retailing, through to the consumers themselves, are still called upon to act on a daily basis. It must be remembered, in particular, that green products and services can only achieve a greater share of the market if they begin to crowd out non-sustainable consumption. This report is the first to take a snapshot of where green products stand today. The Federal Ministry for the Environment intends to repeat this study every two years, thereby allowing it to identify the challenges on which further work is needed, so that green products can succeed on the mass market.

References

A

AMR (2012): Research to gauge consumer attitudes and behaviour towards ecolabels, sustainable seafood, and MSC certification: Attitude and Awareness Study (PowerPoint presentation).

B

Bilharz, M. (2009): "Key Points" nachhaltigen Konsums.

Blue Angel (2008-2012): Number of companies per label fee class (7 classes).

Breitinger, M. (2013): Mogelpackung Ökolabel, in: Zeit Online, 30 October 2013, URL: http://www.zeit.de/mobilitaet/2013-10/energieeffizienz-auto-label (last visited 09.12.2013).

Bund Ökologische Lebensmittelwirtschaft (BOELW) (2014): Zahlen, Daten, Fakten: Die Bio-Branche 2013, URL: http://www.boelw.de/uploads/media/pdf/Dokumentation/Zahlen__Daten__Fakten/ZDF_2013_Endversion_01.pdf (last visited on 18.02.2014).

Bundesverband CarSharing e.V. (2013): Jahresbericht Bundesverband CarSharing 2012/2013.

Bundesverband der Deutschen Fleischwarenindustrie e.V. (BVDF) (2013): Geschäftsbericht 2012/2013.

Bundesverband des Deutschen Papiergroßhandels e.V. (2012): Jahresbericht 2012: Zahlen und Fakten.

Bund Ökologische Lebensmittelwirtschaft (2010): Zahlen, Daten, Fakten: Die Bio-Branche 2010.

Bund Ökologische Lebensmittelwirtschaft (2011): Zahlen, Daten, Fakten: Die Bio-Branche 2011.

Bund Ökologische Lebensmittelwirtschaft (2012): Zahlen, Daten, Fakten: Die Bio-Branche 2012.

Bund Ökologische Lebensmittelwirtschaft (2013): Zahlen, Daten, Fakten: Die Bio-Branche 2013.

C

Council Regulation (EEC) (1987), No. 1760/1987, Official Journal of the European Communities, No. L 167, 26 June 1987, pp. 1–8.

D

Deutscher Spendenrat e.V., Gesellschaft für Konsumforschung (GfK) (2012): Bilanz des Helfens. Press release.

E

Eco-Labelling Ordinance (Oeko-Kennzeichen-Verordnung (OekoKennzV)) (2002): Verordnung zur Gestaltung und Verwendung des Öko-Kennzeichens, amended by Art. 1 V of 30.11.2005 I 3384.

European Commission (2013): Communication from the Commission to the Council – concerning a consultation on Fishing Opportunities for 2014 (COM (2013) 319 final).

European Commission (EC) (2013): European Parliament votes in favour of the EU's budget framework 2014-2020, 19 November 2013, URL: http://ec.europa.eu/agriculture/newsroom/144_en.htm (last visited on 10.12.2013).

European Commission (EC) (2011): Proposal for a Regulation of the European Parliament and of the Council on the financing, management and monitoring of the common agricultural policy, Brussels, 19 October 2011 (COM(2011) 628 final/2 2011/0288 (COD).

European Commission (EC) (2009): Directive 2009/28/EC of the European Parliament and of the Council, of 23 April 2009, on the promotion of the use of energy from renewable sources and amending and subsequently repealing Directives 2001/77/EC and 2003/30/EC.

European Commission (EC) (2007): Council Regulation (EC) No. 834/2007 of 28 June 2007 on organic production and labelling of organic products.

Energy Saving Ordinance (Energieeinsparverordnung (EnEV)) (2009): Verordnung zur Änderung der Energieeinsparverordnung vom 29. April 2009 (Federal Law Gazette 2009, Part I No. 23).

Energy Saving Ordinance (Energieeinsparverordnung (EnEV)) (2007): Energieeinsparverordnung vom 24. Juli 2007 (Federal Law Gazette I, S. 1519).
European Union (2013): Regulation (EU) No 1380/2013 of the European Parliament and of the Council of 11 December 2013 on the Common Fisheries Policy.
European Union 2010/31/EU (2010): Directive 2010/31/EU of the European Parliament and of the Council of 19 May 2010 on the energy performance of buildings.
Eurosif (2013): European SRI Study 2012, URL: http://www.eurosif.org/research/eurosif-sri-study/sri-study-2012 (last visited on 28.01.2014).
Eurosif (2010): European SRI Study 2010. Germany.

F

Federal Environment Agency (UBA) (2013): What matters 2013, URL: http://www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/schwerpunkte_2013_eng_bf.pdf.
Federal Environment Agency (UBA)/Initiative pro Recycling: Umweltengel, Blauer Engel (without year): Wegweiser für den Einkauf graphischer Papiere, URL: http://www.fups.ch/documents/Umweltzeichen.pdf (last visited on 28.01.2014).
Federal Government (2009): National Electromobility Development Plan.
Federal Highway Research Institute (2007): Fahrerlaubnisbesitz in Deutschland, Heft M187, 2007.
Federal Industrial Association of Germany – House, Energy and Environmental Technology, BDH (2013a): Pressegrafik Marktentwicklung 2002-2012.
Federal Industrial Association of Germany – House, Energy and Environmental Technology, BDH (2013b): Schornsteinfeger und Heizungsindustrie: Stagnation im Wärmemarkt verstärkt, press release of 12.09.2013.
Federal Industrial Association of Germany – House, Energy and Environmental Technology, BDH 2012: Heizungsindustrie: Arbeitsplatz- und Umsatzrekord trotz Modernisierungsstau in Heizkellern, press release of 10.02.2012.
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (2013): Renewable Energy Sources in Figures: National and International Development.
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) (2012): Renewable Energy Sources in Figures: National and International Development.
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) /Federal Environment Agency (UBA) (2013): Umweltbewusstsein in Deutschland 2012: Ergebnisse einer repräsentativen Bevölkerungsumfrage.
Federal Ministry for the Environment, Nature Conservation and Nuclear Safety (BMU) /Federal Environment Agency (UBA) (2010): Umweltbewusstsein in Deutschland 2010: Ergebnisse einer repräsentativen Bevölkerungsumfrage.
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) (2013): General Information - Products and Environment, URL: http://www.bmub.bund.de/en/topics/economy-products-resources/products-and-environment/general-information/?cHash=708635c8a9f766bc5d0c165b53867c44 (last visited on 28.01.2014).
Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety (BMUB) (2012): Europäisches Umweltzeichen, URL: http://www.bmub.bund.de/themen/wirtschaft-produkte-ressourcen/produkte-und-umwelt/umweltfreundliche-beschaffung/umweltzeichen/europaeisches-umweltzeichen/ (last visited on 28.01.2014).
Federal Ministry for Transport, Building and Urban Development (BMVBS) (2012): CO_2-Gebäudesanierung - Energieeffizient Bauen und Sanieren: Die Fakten.
Federal Ministry for Transport, Building and Urban Development (Bundesministerium für Verkehr, Bau und Stadtentwicklung (BMVBS)) (2011): Evaluierung ausgestellter Energie-ausweise für Wohngebäude nach EnEV 2007, BMVBS online publication No. 01/2011.
Federal Motor Transport Authority (KBA) (2013):): Monatliche Neuzulassungen - Neuzulassungsbarometer im Dezember 2012.
Federal Motor Transport Authority (KBA) (2013b): Fahrerlaubnisbesitzer in Deutschland (estimate)
Federal Motor Transport Authority (KBA) (2012): Monatliche Neuzulassungen - Neuzulassungsbarometer im Dezember 2011.

Federal Motor Transport Authority (KBA) (2011): Press release 3/2011: Der Fahrzeugbestand am 1. Januar 2011.
Federal Network Agency (pub.) (2009/2010/2011/2012/2013): monitoring reports.
Federal Statistical Office (2014): CO_2 Emissionen der privaten Haushalte. Contribution to the UFOPLAN initiative "Nachhaltiger Konsum: Entwicklung eines deutschen Indikatorensatzes als Beitrag zu einer thematischen Erweiterung der deutschen Nachhaltigkeitsstrategie" (unpublished).
Federal Statistical Office (2013a): Laufende Wirtschaftsrechnungen 2011. Einnahmen und Ausgaben privater Haushalte.
Federal Statistical Office (2013b): Statistisches Jahrbuch 2013: Deutschland und Internationales.
Federal Statistical Office (2013c): Umweltökonomische Gesamtrechnungen, Teil 2: Energie.
Federal Statistical Office (2013d): Volkswirtschaftliche Gesamtrechnungen. Private Konsumausgaben und verfügbares Einkommen.
Forum nachhaltige Geldanlagen (FNG) (2011): Marktbericht nachhaltige Geldanlagen 2010. Deutschland, Österreich und die Schweiz.
Forum nachhaltige Geldanlagen (FNG) (2013): Marktbericht nachhaltige Geldanlagen 2012. Deutschland, Österreich und die Schweiz.
Forum nachhaltige Geldanlagen (FNG) (2012b): Nachhaltige Geldanlagen.

G

Geltinger (2012): Verbal information provided by Gerlinde Geltinger, Communications Manager, Marine Stewardship Council, 04.10.2012.
German Advisory Council on the Environment (2011): Sustainable Management of Fish Stocks: Reforming the Common Fisheries Policy, Statement No. 16, Berlin.
German Bundesbank 2012: Geldvermögen der privaten Haushalte.
German Energy Agency (dena) (2011): Einfach Strom sparen: Ich will doch kein Geld verschleudern. Energiespartipps für Haushaltsgeräte.
German Heat Pump Association (bwp) (pub.) (2013): BWP-Branchenstudie 2013.
German Institute for Economic Research (DIW) (2013): Strukturdaten zur Produktion und Beschäftigung im Baugewerbe – Berechnungen für das Jahr 2012.
German Institute for Economic Research (DIW) (2012a): Strukturdaten zur Produktion und Beschäftigung im Baugewerbe – Berechnungen für das Jahr 2011.
German Institute for Economic Research (DIW) (2012b): Verkehr in Zahlen 2012/2013.
German Solar Industry Association (2013): Statistic data on the German solar heating (solar thermal) industry.
Gesellschaft für Konsumforschung (GfK) (2013a): Marktdaten Haushaltsgeräte und Beleuchtung.
Gesellschaft für Konsumforschung (GfK) (2013b): Marktdaten Ökolabel GOTS.
Gesellschaft für Konsumforschung (GfK) (2012): Marktdaten Haushaltsgeräte und Beleuchtung.
Gesellschaft für Unterhaltungs- und Kommunikationselektronik (gfu)/Gesellschaft für Konsumforschung (GfK) (2013): Der Markt für Consumer Electronics: Deutschland 2013.
GoingElectric (2012): Zulassungsstatistik 2011.
Green Car Congress (2013): EU agreement pushes full implementation of 95 g/km CO_2 target for cars back 1 year to 2021, expands use of supercredits, 27 November 2013, URL: http://www.greencarcongress.com/2013/11/20131127-europe.html (last visited on 31.12.2014).

H

Hamburgisches WeltWirtschaftsInstitut (HWWI) (2012): Konsequenzen der Energiewende.

I

Infras/DLR (2010): Mobilität in Deutschland 2008. Kurzbericht.
International Council on Clean Transportation (ICCT) (2012): European Vehicle Market Statistics: Pocketbook 2012.
International Geothermal Center (GZB) (pub.) (2010): Analyse des deutschen Wärmepumpenmarktes. Bestandsaufnahme und Trends.

J

Jungbluth, N. et al. (2012): Umweltbelastungen des privaten Konsums und Reduktionspotenziale: Schlussbericht. Im Auftrag des Schweizer Bundesamtes für Umwelt.

K

Karlsruhe Institute of Technology, Institute of Transport Studies (2013): German Mobility Panel, MOP): Scientific support and initial analysis. 2013 report: Alltagsmobilität (autumn survey 2012).
KfW Bankengruppe 2013: Förderreport KfW Bankengruppe 2012
KfW Bankengruppe 2012: Förderreport KfW Bankengruppe 2011
KfW Bankengruppe 2011: Förderreport KfW Bankengruppe 2010
KfW Bankengruppe 2010: Förderreport KfW Bankengruppe 2009
KfW Bankengruppe 2009: Förderreport KfW Bankengruppe 2008

M

Marine Stewardship Council (MSC) (2013): Personal contact with Ms Emefa Attigah of MSC Berlin.
Marine Stewardship Council (MSC) (2012): Personal contact with Ms Emefa Attigah of MSC Berlin.

O

Öko-Institut (2011): Grobscreening zur Typisierung von Produktgruppen im Lebensmittelbereich in **Orientierung am zu erwartenden CO_{2e}-Fußabdruck.**
Oekotest/Robin Wood (2013): Deutschland: Wirklicher Ökostrom ist die Nadel im Heuhaufen, 2.9.2013, URL: http://www.oekonews.ch/index.php?mdoc_id=1082978 (last visited on 5.12.2013).
Organic Agriculture Act (Oeko-Landbaugesetz (OELG)) (2008): Oeko-Landbaugesetz vom 7. Dezember 2008 (Federal Law Gazette, I S. 2358).

P

Patterson, L.A. (1993): A three-level game approach to understanding agricultural policy in the European Community: a study of the 1988 Stabilizers Agreement and the 1992 Mac-Sharry Reform Package.
Puls, T. (2013): CO_2-Regulierung für Pkw: Fragen und Antworten zu den europäischen Grenzwerten für Fahrzeughersteller, published by IW Köln, Cologne.

R

RAL gGmbH (pub.) (2013a): Blauer Engel und EU-Ecolabel. Zahlen zu Anzahl der Zeichennehmer pro Entgeltklasse (unpublished).
RAL gGmbH (pub) (2013b): EU-Ecolabel. Zahlen zu Anzahl der Zeichennehmer pro Entgeltklasse (unpublished).
Reichmuth, M./Lorenz, C./Beestermöller, C./Nabe, C./Markgraf, C./Schließer, J. (2014): Marktanalyse Ökostrom: Endbericht, edited by the Federal Environment Agency (UBA).

S

Statista – The Statistics Portal 2013: Geldvermögen der privaten Haushalte in Deutschland von 1991 bis zum 1. Halbjahr 2013 (in Milliarden Euro).

T

Tänzler et al. (2014): Marktanalyse zur freiwilligen Kompensation von Treibhausgasemissionen in Deutschland. A study on behalf of the German Emissions Trading Authority (DEHSt) at the Federal Environment Agency (forthcoming)

U

Urgewald (without year): Zertifikate für Recyclingpapier im Vergleich, URL: http://papierwende.urgewald.de/index.php?page=2-186-620 (last visited on 28.01.2014).

V

Valentine-Urbschat, M./Bernhart, W. (2009): Powertrain 2020: the future drives electric, edited by Roland Berger.
Verband Deutscher Papierfabriken e. V. (vdp) (2014): Personal contact with Mr Gregor Andreas Geiger of the vdp.
Verband Deutscher Papierfabriken e. V. (vdp) (2012): Leistungsbericht "Papier 2011".
Verbraucherzentrale (2013): Besonders sparsame Haushaltsgeräte 2013/14: Eine Verbraucherinformation, URL: http://www.verbraucherzentrale-energieberatung.de/web/downloads/VZE_Sparsame_Haushaltsgeraete.pdf (last visited on 28.11.2013).
Verbraucherzentrale Bremen (vz Bremen) (2012): Klimafreundliche Sparanlage.

W

Wendler, D. et al. (2010): Der Carbon Footprint von Kapitalanlagen. Ermittlung der Treibhausgasintensität der Kapitalanlage privater Haushalte.

Publication details:

Publisher:
Federal Environment Agency UBA
Wörlitzer Platz 1
06844 Dessau-Roßlau
Germany
e-mail: info@umweltbundesamt.de
website: www.umweltbundesamt.de
www.fuer-mensch-und-umwelt.de

/umweltbundesamt.de
/umweltbundesamt

This booklet is based on the research project entitled “Marktbeobachtung nachhaltiger Konsum: Entwicklung eines Instrumentes zur Langzeit-Erfassung von Marktanteilen, Trends und Treibern nachhaltigen Konsum” (“Monitoring the market for sustainable consumption: developing a tool for the long-term tracking of market shares and trends in and the drivers of sustainable consumption”). The study was financed by a grant from the Federal Ministry for the Environment, Nature Conservation and Nuclear Safety‘s Environmental
Research Plan (UFOPLAN)
(grant number: 3711 93 301).

Research and report:
Myriam Steinemann, Dr. Regina Schwegler, Gina Spescha (INFRAS, Zurich)
With input from: Dr. Michael Bilharz (Federal Environment Agency UBA)
Translation: Jane Catterall
e-mail:
myriam.steinemann@infras.ch,
regina.schwegler@infras.ch,
gina.spescha@infras.ch

Project support and editing:
Section III 1.1, General aspects of product-related environmental conservation, sustainable patterns of consumption, innovation program
Dr. Michael Bilharz

The document is also available to download as a PDF file:
www.uba.de/publikationen/green-products-in-germany-2014

Design:
publicgarden, Berlin
www.publicgarden.de

Sources of pictures:
Cover: Yagi Studio/gettyimages.de
Page 2: PhotostudioD29
Page 4: danstar/shotshop.com
Page 21: Neil Bernstein/shotshop.com
Page 22: DC_1/shotshop.com
Page 27: Bernd Leitner/shotshop.com
Page 41: Jupiterimages/thinkstockphotos.de
Page 42: michellegibson/istockphoto.com
Page 52: Günter Fischer/panthermedia.net
Page 56: TommL/istockphoto.com
Page 59: Wladimir Bulgar/shotshop.com

As at: May 2013

▸ The document is also available to download as a PDF file.
www.uba.de/publikationen/
green-products-in-germany-2014

www.facebook.com/umweltbundesamt.de
www.twitter.com/umweltbundesamt