Executive Summary:
Energy Efficient Buildings: Europe


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Section 1  
EXECUTIVE SUMMARY

1.1 Introduction

This Navigant Research study assesses the 28 member states of the European Union (EU), plus Norway and Switzerland. The aggregate residential and commercial building stock for these countries is 23 billion m² of floor area. Roughly three-fourths of this floor area is in the residential sector. New construction adds an estimated 1% to the existing building stock per annum. Energy efficiency retrofit rates across the continent are also widely estimated at 1% of the stock per annum. Buildings account for 40% of Europe’s final energy consumption and thus are a key consideration in efforts to improve efficiency.

The policy landscape for energy efficiency is primarily influenced by two pieces of EU legislation: the Energy Performance of Buildings Directive (EPBD) and the Energy Efficiency Directive (EED). Both directives strongly influence the market and create a solid basis for market activity. More specifically:

» The EPBD applies to new construction and major building renovations. It includes a number of key elements, including a progressive tightening of building codes leading to requirements for nearly zero energy buildings (nZEBs) for public buildings by 2019 and private buildings by 2021; inspection of large energy-consuming mechanical equipment; energy performance rating of buildings; and the introduction of financial instruments to improve building energy performance.

» The EED covers all energy consumption in the EU and sets a target for energy consumption to be 20% less than business-as-usual (BAU) trends from a 2005 baseline by 2020. Its key elements include the development of national-level action plans for 1.5% year-to-year energy reductions from the buildings sector; the renovation of the public building stock at levels of 3% per annum; and specific targeting of small and medium enterprises (SMEs) for auditing and energy efficiency improvement actions.

As with all EU directives, individual member states are required to draft national-level legislation to fulfill the mandates of the directive. Certain countries have proven to be more effective and innovative than others. The member states of Northern Europe tend to be the leaders in energy efficiency policy, though this is not uniformly the case. Belgium and Finland were recently cited by the European Commission for failing to fully transpose key elements of the EPBD. Additionally, an energy efficiency non-governmental organization (NGO), the Coalition for Energy Savings, that assessed the individual member state energy efficiency action plans required by the EED found only 3 of 27 to be of suitable quality and completeness to deliver on the 1.5% yearly energy reduction target.
1.2 Market Issues

Overall, the policy landscape for energy efficiency in Europe is among the most stringent in the world, though enforcement and coherence across the whole of Europe is a concern. The market is also hindered by factors that are common to energy efficiency markets globally:

» Lack of technical resources and capacity within companies to elevate energy efficiency decision-making to the highest levels
» Competing options for corporate investment
» Split incentives between tenants and landlords
» Lack of incentives and long payback periods
» Lack of public sector capacity to manage large portfolios and prioritize investments

Thus, in spite of the relatively high and rising energy costs in Europe and a vast array of technology and service options available, the energy efficient buildings market is under-delivering the cost-effective and technically feasible improvement opportunities available to consumers.

1.3 Technology Issues

Different approaches to energy efficiency are needed based on the range of building vintages in Europe and the construction and use differences between the residential and commercial stock.

For the heating, ventilation, and air conditioning (HVAC) sector, residential premises are heating-led. However, air conditioning use that requires high-efficiency systems is increasing, particularly in Western Europe and Southern Europe. Residential controls – from basic thermostats and radiator controls to more advanced wireless and web-enabled systems – can contribute energy reductions. Many residential heating systems also double as water heaters. Widely available technologies such as condensing boilers are keys to improved performance.

In contrast, commercial premises are cooling-led and require better efficiency for space cooling and ventilation. Various mixed-mode, ductless, and variable speed/variable frequency drives and motor options can be deployed in this market. Improved controls for commercial HVAC systems can help ensure that heating and cooling are not running simultaneously and that zoning, temperature points, and ramp-up/down cycles effectively match building occupancy.

Short payback lighting efficiency gains in both the residential and commercial sectors are being driven by light-emitting diode (LED) lighting. Residential lighting controls are a small part of the market but will become more commonly deployed. Commercial lighting controls show great potential in controlling lighting consumption based on occupancy and daylighting levels. Leasing models for the lighting sector are also emerging.

Thermal efficiency improvements are particularly relevant for the residential sector. Many homes lack sufficient insulation levels or still contain single-pane windows. Additional internal or external wall insulation and high-performance glazing (both static and dynamic) are widely
available, albeit at long payback periods. In the commercial sector, heat attenuation and avoiding internal heat gains are the more pressing issues. Fabric improvements such as high-performance glazing and shades and louvers are available solutions. Phase-change materials, a niche product, can help regulate internal heat gains.

Energy management technologies – both hardware and software – can provide low-cost performance improvements and are an area of dynamism in the energy efficient buildings market. Greater functionality and lower-cost sensors, monitors, and analytics are driving better information and more actions on performance and efficiency. Related to this is the services sector – commissioning and tuning of building systems and energy management services provided through software as a service (SaaS) or facility management models. Such services expand the range of options and opportunities for building owners to manage and reduce consumption.

1.4 Product and Service Vendors

The product side of the energy efficient buildings market is led by a number of large OEMs, several of which are Europe-based and significant global players. Many of these OEMs have been expanding into services, and the services share of their revenue should only increase. Numerous startups are also populating the marketplace for software and energy management services.

Many of the large OEMs and facility management companies act as energy service companies (ESCOs) as well, providing performance contracts for energy efficiency. In this role, they scope and execute capital improvements to improve building energy performance and guarantee the level of energy savings to be achieved by the end customer. They may also organize financing for the project. This ESCO/performance guarantee market sits largely in the public sector. Commercial uptake of ESCO services has been modest.
1.5 Market Forecast

The European market for building energy efficient products and services is estimated at €41.4 billion ($56 billion) in 2014 and is expected to rise to €80.8 billion ($109 billion) by 2023 at a compound annual growth rate (CAGR) of 7.7%. The HVAC and controls segment is the largest market area. The energy management technologies, water heating and efficiency, and services and commissioning segments are expected to show the highest growth rates throughout the forecast period. The ESCO market, which is a subset of the total energy efficient buildings market rather than additive, will grow from about €2.1 billion ($2.9 billion) in 2014 to just over €3.1 billion ($4.2 billion) in 2023.

Chart 1.1 Energy Efficient Product and Services Revenue by Product Type, Europe: 2014-2023

The European energy efficient buildings market is led by three countries: France, Germany, and the United Kingdom (grouped as Northwest Europe). They are the three largest countries in terms of building stock and consistently show strong policy support and companies with product and service innovation. The next two largest building stock countries – Italy and Spain – have many elements of promising markets but less effective policy and regulatory frameworks than some of their European peers. The Scandinavian countries, though individually small markets, show the strongest regional total products and services revenue CAGR of the five European regions (Northwest Europe, Western Europe, Scandinavia, Southern Europe, and Eastern Europe) assessed.
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Section 10

SCOPE OF STUDY

This Navigant Research report analyzes and forecasts the market for residential and commercial building energy efficient products and services in Europe. The factors that are enhancing or hindering the market on a European and regional basis are discussed, along with technology drivers for increased building energy performance. The 28 member states of the EU, plus Norway and Switzerland, are grouped into five regions: Northwest Europe, Western Europe, Scandinavia, Southern Europe, and Eastern Europe.

Key European market participants are profiled and market revenue forecasts are provided for the forecast period 2014-2023. The market forecasts are broken out by six key product and service elements: HVAC and controls; lighting and controls; water heating and water efficiency; insulation and glazing; energy management technologies; and services and commissioning. Revenue for the ESCO market is provided as well. Note that this revenue is considered a subset of the overall energy efficient products and services market in Europe, not an additive figure. Forecasts are also segmented by development type, building type, and the five European regions, with special focus on the leading countries (France, Germany, and the United Kingdom).

SOURCES AND METHODOLOGY

Navigant Research’s industry analysts utilize a variety of research sources in preparing Research Reports. The key component of Navigant Research’s analysis is primary research gained from phone and in-person interviews with industry leaders including executives, engineers, and marketing professionals. Analysts are diligent in ensuring that they speak with representatives from every part of the value chain, including but not limited to technology companies, utilities and other service providers, industry associations, government agencies, and the investment community.

Additional analysis includes secondary research conducted by Navigant Research’s analysts and its staff of research assistants. Where applicable, all secondary research sources are appropriately cited within this report.

These primary and secondary research sources, combined with the analyst’s industry expertise, are synthesized into the qualitative and quantitative analysis presented in Navigant Research’s reports. Great care is taken in making sure that all analysis is well-supported by facts, but where the facts are unknown and assumptions must be made, analysts document their assumptions and are prepared to explain their methodology, both within the body of a report and in direct conversations with clients.

Navigant Research is a market research group whose goal is to present an objective, unbiased view of market opportunities within its coverage areas. Navigant Research is not beholden to any special interests and is thus able to offer clear, actionable advice to help clients succeed in the industry, unfettered by technology hype, political agendas, or emotional factors that are inherent in cleantech markets.
**NOTES**

CAGR refers to compound average annual growth rate, using the formula:

\[ \text{CAGR} = \left( \frac{\text{End Year Value} + \text{Start Year Value}}{1\text{steps}} \right) - 1. \]

CAGRs presented in the tables are for the entire timeframe in the title. Where data for fewer years are given, the CAGR is for the range presented. Where relevant, CAGRs for shorter timeframes may be given as well.

Figures are based on the best estimates available at the time of calculation. Annual revenues, shipments, and sales are based on end-of-year figures unless otherwise noted. All values are expressed in year 2014 U.S. dollars unless otherwise noted. Percentages may not add up to 100 due to rounding.
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