
FTSE Environmental Markets Classification System

A taxonomy to define and measure the global environmental markets



Contents

Introduction	3
Defining emerging sectors of the economy	3
Working alongside ICB	3
Working in partnership	3
EMCS Sector and Subsector overview	4
Environmental markets definition.....	4
E1.0 Renewable & alternative energy	5
E2.0 Energy efficiency	5
E3.0 Water infrastructure and technologies	6
E4.0 Pollution control.....	7
E5.0 Waste management and technologies.....	7
E6.0 Environmental support services	8
E7.0 Food, agriculture and forestry	8
System administration	9
Role of FTSE Environmental Markets Advisory Committee and the frequency of reviews	9
Referencing approach.....	9

Introduction

Defining emerging sectors of the economy

The FTSE Environmental Markets Classification System (EMCS) helps investors define and measure the performance of global environmental markets and is used in the construction of the FTSE Environmental Markets Index Series. Environmental Markets companies are defined as providing products and services that deliver solutions to environmental challenges and include environmental technology, also sometimes referred to as cleantech.

A potential barrier to investment in this area in the past has been the difficulty in defining this market and understanding its investment characteristics. This classification system can be used by investors globally to assist them in identifying and measuring investment opportunities in environmental markets.

With this company classification system the global investment community has sufficient levels of granularity and precision to define this growing area and assist in the design of investment products.

Working alongside ICB

The EMCS is independent of the standard system for classifying companies, ICB[®] (Industry Classification Benchmark). It provides an alternative method for classifying companies that operate in environmental markets and is for use in conjunction with ICB, rather than as a replacement for it.

ICB includes some environmental market categories such as Alternative Energy (0580), Renewable Energy Equipment (0583), Alternative Fuels (0587), and Alternative Electricity (7537). However, because it is still early in the growth and development of environmental markets the number and size of publicly limited companies is relatively small. This means that whilst ICB provides for a few widely recognized categories it does not cater for others, such as solar power or transport energy efficiency, which are present in the EMCS.

Working in partnership

Together, FTSE Russell and Impax Asset Management have collaborated to create the FTSE Environmental Markets Index Series and the EMCS.

EMCS Sector and Subsector overview

The FTSE Environmental Markets Advisory Committee is responsible for the oversight of the FTSE Environmental Markets Classification System. FTSE Russell has more than 20 years experience managing the industrial classification models used by the FTSE and Russell indexes. FTSE Russell understands the requirement to introduce change in a methodical, disciplined and transparent format.

The EMCS is a detailed and comprehensive structure for analysis, facilitating the comparison of companies across two levels; sector and subsector, and across national boundaries. The system defines environmental market companies and allocates each to the subsector whose definition most closely describes the nature of its business. There are currently seven Sectors and 30 Subsectors.

A key concept is that there must be at least one eligible company per subsector. If no companies operate in a particular subsector then that subsector will not be included in the system.

The coding for all sectors and subsectors begins with an “E” for Environmental Markets. This is followed by a number that signifies sector, then following a point “.” a second number that signifies subsector.

Environmental markets definition

Companies that provide products and services offering solutions to environmental problems, or that improve the efficiency of natural resource use.

E1.0 Renewable & alternative energy	E2.0 Energy efficiency	E3.0 Water infrastructure & technologies	E4.0 Pollution control	E5.0 Waste management & technologies	E6.0 Environmental support services	E7.0 Food, agriculture & forestry
E1.1 Wind power generation equipment	E2.1 Power network efficiency	E3.1 Water infrastructure	E4.1 Pollution control solutions	E5.1 Waste technology equipment	E6.1 Carbon and other environmental assets trading	E7.1 Sustainable and efficient agriculture
E1.2 Solar energy generation equipment	E2.2 Industrial energy efficiency	E3.2 Water treatment equipment	E4.2 Environmental testing and gas sensing	E5.2 Recycling and value added waste processing	E6.2 Environmental consultancies	E7.2 Logistics, food safety and packaging
E1.3 Other renewables equipment	E2.3 Buildings energy efficiency	E3.3 Water utilities	E4.3 Public transportation	E5.3 Hazardous waste management	E6.3 Diversified environmental	E7.3 Sustainable forestry and plantations
E1.4 Renewable energy developers and IPPs	E2.4 Transport energy efficiency	E3.4 Diversified water infrastructure and technology		E5.4 General waste management		
E1.5 Biofuels	E2.5 Consumer energy efficiency			E5.5 Diversified waste and technology		
E1.6 Diversified renewable and alternative energy	E2.6 Diversified energy efficiency					

E1.0 Renewable & alternative energy

Companies that provide products and services along the renewable and alternative energy value chain.

Code	Subsector	Description
E1.1	Wind power generation equipment	Companies that design, develop, manufacture, distribute or install wind turbine equipment and components, (including bearings, gearboxes, blades, and towers); and companies that supply specialist materials into the wind value chain.
E1.2	Solar energy generation equipment	Companies that design, develop, manufacture, distribute or install solar photovoltaic or solar thermal equipment and components (including wafers, cells, and modules); and companies that supply specialist materials into the solar value-chain.
E1.3	Other renewables equipment	Companies that design, develop, manufacture, distribute and/or install other renewable energy technologies (other than wind and solar power), including equipment for hydro, wave, tidal, and geothermal energy generation.
E1.4	Renewable energy developers and IPPs	Companies involved in the development, operation and supply of renewable energy power generation including the provision of power from sources such as wind, solar, geothermal, hydro, biomass, landfill gas, and waste incineration.
E1.5	Biofuels	Companies involved in the development, processing, production and distribution of bio-derived fuels for transport, heat and electrical power generation. Bio-derived fuels include bioethanol, biodiesel, and 'advanced' biofuels such as cellulosic ethanol.
E1.6	Diversified renewable and alternative energy	Diversified renewable and alternative energy companies with less than the business threshold derived from any one of these subsectors, but over the threshold when combined.

E2.0 Energy efficiency

Companies that provide products and services enabling more efficient methods of energy usage.

Code	Subsector	Description
E2.1	Power network efficiency	Companies that design, develop, manufacture, distribute or install equipment and services which enhance the efficiency of operation of the electrical power network. This includes advanced meters, distributed generation, "smart grid" technologies, high efficiency power generation, transmission and distribution technologies, and efficient backup power.
E2.2	Industrial energy efficiency	Companies that design, develop, manufacture, distribute or install energy efficient products and services for use in varied industrial markets. These include products and core components which improve energy profiles, and products or systems which reduce energy usage within processes.
E2.3	Buildings energy efficiency	Companies that design, develop, manufacture, distribute or install energy efficient products and services for use in residential, commercial and municipal buildings. Products include integrated buildings control systems, insulation materials, energy

		efficient lighting, efficient heating, ventilation and airconditioning equipment.
E2.4	Transport energy efficiency	Companies that design, develop, manufacture, distribute or apply technology to deliver improved efficiency in the transport sector (including automotive, heavy duty, rail and aerospace). This includes higher efficiency conventional engine and powertrain technologies, and new vehicle technology (such as natural gas engines, hybrids and electric vehicles, including specialist batteries).
E2.5	Consumer energy efficiency	Companies that design, develop, manufacture, distribute or install energy efficient consumer products and services. This includes components for consumer appliances, such as high-efficiency power electronics, LEDs and control systems.
E2.6	Diversified energy efficiency	Diversified energy efficiency companies with less than the business threshold derived from any one of these subsectors, but over the threshold when combined.

E3.0 Water infrastructure and technologies

Companies that provide or operate technologies, infrastructure and services for the supply, management and treatment of water for industrial, residential, utility and agricultural users.

Code	Subsector	Description
E3.1	Water infrastructure	Companies that supply products (including specialty pipes, pumps, valves, actuators, hydrants and meters) and services that enhance water infrastructure systems. This includes companies engaged in the development and construction of water infrastructure or coastal defence projects.
E3.2	Water treatment equipment	Companies that design, develop, manufacture, distribute and/or install technologies or facilities for the separation and purification of water to meet environmental standards. This includes membranes, ultra-violet, desalination, filtration, ion exchange, biological treatment and environmental treatment.
E3.3	Water utilities	Companies that operate water treatment and supply infrastructure, providing potable water or wastewater and sewage services.
E3.4	Diversified water infrastructure and technology	Diversified water infrastructure and technology companies with less than the business threshold derived from any one of these subsectors, but over the threshold when combined.

E4.0 Pollution control

Companies that provide technologies to reduce and monitor the contamination of air and soil to address global, regional and local environmental problems.

Code	Subsector	Description
E4.1	Pollution control solutions	Companies that design, develop, manufacture, distribute or install equipment and services for reduction, prevention or clean-up of air or soil pollution. Pollutants include sulphur dioxide, nitrous oxide, mercury, particulates, carbon monoxide and carbon dioxide. Principal areas are the industrial and power generation sectors (such as smoke stack scrubbing technologies), and the transportation sector (such as particulate filters and catalytic converters). This also includes companies facilitating the substitution of more polluting fuels by cleaner burning fuels in areas of chronic air pollution.
E4.2	Environmental testing and gas sensing	Companies that provide environmental testing, sensing, measuring and monitoring technologies and services, such as chromatography and mass spectrometry.
E4.3	Public Transportation	Companies involved in the development and operation of public transportation systems and the manufacture of related equipment and components. This includes companies that design, develop and manufacture bicycles, and those that operate city cycle hire schemes.

E5.0 Waste management and technologies

Companies that provide and/or operate technologies, systems and services for waste management, reuse and recycling.

Code	Subsector	Description
E5.1	Waste technology equipment	Companies that design, develop, manufacture, distribute and/or install waste technology equipment and system services that create value from the waste stream. Equipment includes sorters, reverse-vending machines, composters, anaerobic digesters, waste-to-energy systems, collection, registration and logistics systems and other materials processors.
E5.2	Recycling and value added waste processing	Companies that are involved in the processing of waste to derive value. Operations include recycling (in particular metals, plastics, oils, paper and aggregates), composting, mechanical biological treatment, and energy recovery.
E5.3	Hazardous waste management	Companies that are involved in the processing and treatment of hazardous waste such as clinical waste, batteries, end of life vehicles, electronic equipment (e-waste) and radioactive waste.
E5.4	General waste management	Companies that are involved in general residential and commercial waste management operations, typically including collection, processing and disposal (including landfill).
E5.5	Diversified waste and technology	Diversified waste management and technology companies with less than the business threshold derived from any one of these subsectors, but over the threshold when combined.

E6.0 Environmental support services

Companies that provide environmental support services through consultancy, or trading services in environmental assets and securities. Furthermore, diversified environmental companies are also included in this sector.

Code	Subsector	Description
E6.1	Carbon and other environmental assets trading	Companies that derive investment returns from sourcing, creating and trading carbon credits and other environmental assets such as sulphur dioxide pollution permits.
E6.2	Environmental consultancies	Companies that provide advice and/or support regarding environmental issues and strategies, and in the development of projects and infrastructure (e.g. the building of renewable energy projects). Companies that manage and certify environmental performance and planning issues for new and existing construction, and engineering projects are included.
E6.3	Diversified environmental	Diversified environmental companies with less than the 20% threshold derived from any one environmental sector, but over 20% when combined.

E7.0 Food, agriculture and forestry

Companies that improve yield and productivity in agriculture, silviculture, aquaculture and food production or distribution, whilst minimizing negative environmental impacts.

Code	Subsector	Description
E7.1	Sustainable and efficient agriculture	Companies involved in designing and supplying more efficient machinery and equipment; yield enhancement and resilience of crops and animal products (excluding genetically modified organisms); more efficient farming; and organic food producers and distributors.
E7.2	Logistics, food safety and packaging	Companies involved in raising food safety standards; food monitoring and testing; packaging technologies that extend shelf life and reduce waste; and efficient logistics systems and infrastructure.
E7.3	Sustainable forestry and plantations	Companies that, according to verifiable international standards and protocols, maintain or improve the long-term productivity of timberlands and plantations while enhancing the efficiency of input resources used.

System administration

Role of FTSE Environmental Markets Advisory Committee and the frequency of reviews

FTSE Russell is responsible for maintaining the classification system. The FTSE Environmental Markets Advisory Committee is responsible for the rules governing the classification system and for approving changes to the system. Reviews take place on an annual basis in December. The reviews are normally the only time when sector and subsector definitions are modified, or new subsectors/sectors added. In exceptional circumstances there may be cases where there is a need for changes outside of this process. In these cases, the matter will normally be put before the full Committee for a decision, however if necessary, and to improve expediency, the Chairman is empowered to authorize changes on behalf of the Committee.

Referencing approach

Where an organization makes use or refers to the classification system's sectors or subsectors they will be expected to fully reference and acknowledge the EMCS.

[For more information about our indexes, please visit ftserussell.com.](http://ftserussell.com)

© 2018 London Stock Exchange Group plc and its applicable group undertakings (the "LSE Group"). The LSE Group includes (1) FTSE International Limited ("FTSE"), (2) Frank Russell Company ("Russell"), (3) FTSE TMX Global Debt Capital Markets Inc. and FTSE TMX Global Debt Capital Markets Limited (together, "FTSE TMX"), (4) MTSNext Limited ("MTSNext"), (5) Mergent, Inc. ("Mergent"), (6) FTSE Fixed Income LLC ("FTSE FI") and (7) The Yield Book Inc ("YB"). All rights reserved.

FTSE Russell® is a trading name of FTSE, Russell, FTSE GDCM, MTS Next Limited, Mergent, FTSE FI and YB. "FTSE®", "Russell®", "FTSE Russell®", "MTS®", "FTSE4Good®", "ICB®", "Mergent®", "WorldBIG®", "USBIG®", "EuroBIG®", "AusBIG®", "The Yield Book®", and all other trademarks and service marks used herein (whether registered or unregistered) are trademarks and/or service marks owned or licensed by the applicable member of the LSE Group or their respective licensors and are owned, or used under licence, by FTSE, Russell, MTSNext, FTSE GDCM, Mergent, FTSE FI or YB. "TMX®" is a registered trademark of TSX Inc. FTSE International Limited is authorised and regulated by the Financial Conduct Authority as a benchmark administrator.

All information is provided for information purposes only. All information and data contained in this publication is obtained by the LSE Group, from sources believed by it to be accurate and reliable. Because of the possibility of human and mechanical error as well as other factors, however, such information and data is provided "as is" without warranty of any kind. No member of the LSE Group nor their respective directors, officers, employees, partners or licensors make any claim, prediction, warranty or representation whatsoever, expressly or impliedly, either as to the accuracy, timeliness, completeness, merchantability of any information or of results to be obtained from the use of the FTSE Russell Products or the fitness or suitability of the FTSE Russell Products for any particular purpose to which they might be put. Any representation of historical data accessible through FTSE Russell Products is provided for information purposes only and is not a reliable indicator of future performance.

No responsibility or liability can be accepted by any member of the LSE Group nor their respective directors, officers, employees, partners or licensors for (a) any loss or damage in whole or in part caused by, resulting from, or relating to any error (negligent or otherwise) or other circumstance involved in procuring, collecting, compiling, interpreting, analysing, editing, transcribing, transmitting, communicating or delivering any such information or data or from use of this document or links to this document or (b) any direct, indirect, special, consequential or incidental damages whatsoever, even if any member of the LSE Group is advised in advance of the possibility of such damages, resulting from the use of, or inability to use, such information.

No member of the LSE Group nor their respective directors, officers, employees, partners or licensors provide investment advice and nothing contained in this document or accessible through FTSE Russell Products, including statistical data and industry reports, should be taken as constituting financial or investment advice or a financial promotion.

No part of this information may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, mechanical, photocopying, recording or otherwise, without prior written permission of the applicable member of the LSE Group. Use and distribution of the LSE Group data requires a licence from FTSE, Russell, FTSE TMX, MTSNext, Mergent, FTSE FI, YB and/or their respective licensors.

About FTSE Russell

FTSE Russell is a leading global index provider creating and managing a wide range of indexes, data and analytic solutions to meet client needs across asset classes, style and strategies. Covering 98% of the investable market, FTSE Russell indexes offer a true picture of global markets, combined with the specialist knowledge gained from developing local benchmarks around the world.

FTSE Russell index expertise and products are used extensively by institutional and retail investors globally. For over 30 years, leading asset owners, asset managers, ETF providers and investment banks have chosen FTSE Russell indexes to benchmark their investment performance and create investment funds, ETFs, structured products and index-based derivatives. FTSE Russell indexes also provide clients with tools for asset allocation, investment strategy analysis and risk management.

A core set of universal principles guides FTSE Russell index design and management: a transparent rules-based methodology is informed by independent committees of leading market participants. FTSE Russell is focused on index innovation and customer partnership applying the highest industry standards and embracing the IOSCO Principles. FTSE Russell is wholly owned by London Stock Exchange Group.

For more information, visit ftserussell.com.

To learn more, visit ftserussell.com; email info@ftserussell.com; or call your regional Client Service Team office:

EMEA

+44 (0) 20 7866 1810

North America

+1 877 503 6437

Asia-Pacific

Hong Kong +852 2164 3333

Tokyo +81 3 4563 6346

Sydney +61 (0) 2 8823 3521