

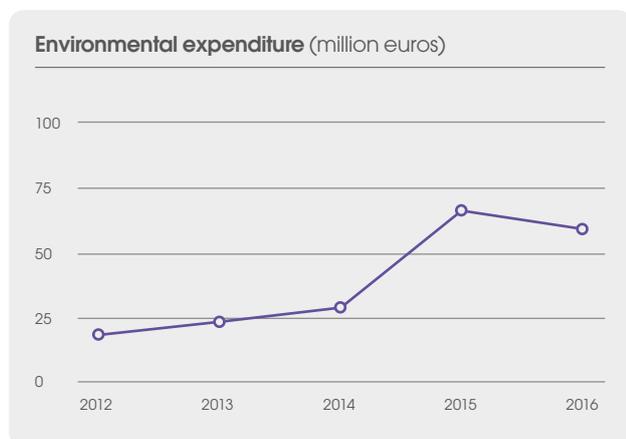
# Environmental performance

Addressing our environmental responsibilities creates value for our business, our customers and the communities in which we operate.

## Environmental management

Environmental Management Systems (EMS) have been developed and implemented at most of the Group installations to improve monitoring and reporting of environmental impact. All Group cement plants have an EMS, ISO14001 or similar. In 2016, a revision to the EMS was launched to meet the new certification standards defined by ISO14001/2015. All three TITAN cement plants in Greece and one cement plant in Bulgaria have already integrated those requirements and have been certified accordingly.

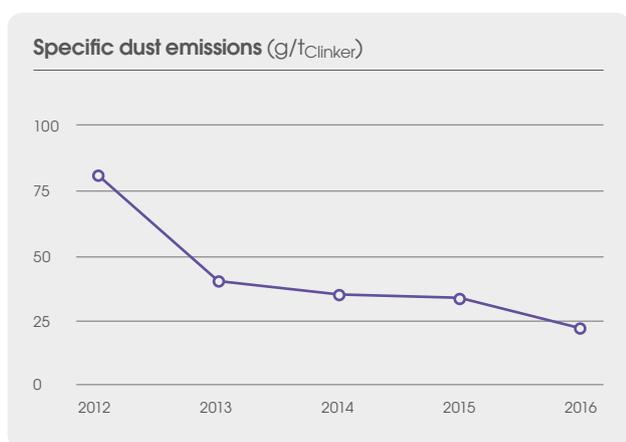
Our environmental monitoring, reporting and management practices follow the WBCSD/CSI guidelines where applicable.



## Air emissions

TITAN Group has invested heavily in new technologies to reduce its air emissions. In 2016, Group specific dust emissions decreased by about 33% compared to previous year to 23.9g/t<sub>Clinker</sub>.

Both NO<sub>x</sub> and SO<sub>x</sub> specific emissions remained broadly at the same level as 2015 at 1,702.9g/t<sub>Clinker</sub> and 205.6g/t<sub>Clinker</sub> respectively.



## Specific dust emissions

**23.9g/t<sub>Clinker</sub>**  
(2015: 35.7g/t<sub>Clinker</sub>)

## Specific NO<sub>x</sub> emissions

**1,702.9g/t<sub>Clinker</sub>**  
(2015: 1,705.8g/t<sub>Clinker</sub>)

## Specific SO<sub>x</sub> emissions

**205.6g/t<sub>Clinker</sub>**  
(2015: 206.0g/t<sub>Clinker</sub>)

## Quarry rehabilitation and biodiversity

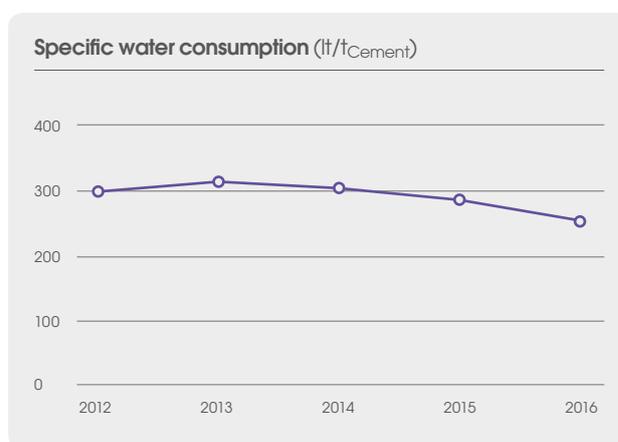
Rehabilitation activities and biodiversity management are a key focus area for TITAN, mitigating the adverse impacts of the extraction process with the aim of creating a net positive effect where possible.

In 2016, new rehabilitation plans were developed for the quarries of the Beni Suef cement plant in Egypt, increasing the percentage of the Group's quarry sites where Quarry Rehabilitation Plans are in place and implemented to 87%.

## Water management

Efficient water use and management at TITAN's production sites is an important sustainability goal. TITAN implements water management systems on its sites to monitor and optimize water use and report water data in a consistent way, according to the WBCSD/CSI. In 2016, specific water consumption at the Group's cement and grinding plants and their attached quarries decreased a further 11% compared to 2015, reaching 255.1lt/t<sub>Cement</sub>.

Water recycling facilities are operating in 92% of the Group's cement plants. 25.0 million m<sup>3</sup> of water was recycled at Group level in 2016, which is equivalent to 82% of the total water withdrawn.



## Climate change

Climate change is among the most significant global challenges today. TITAN is implementing a climate change mitigation strategy, which includes the increased use of alternative fuels, ideally biomass and the reduction of thermal energy consumption at its facilities. The use of alternative fuels increased in 2016 to 8.6% <sup>Thermal basis</sup>. Our subsidiary companies GAEA Bulgaria and GAEA Egypt have the objective of sourcing and producing suitable alternative fuels for our plants.

We address our carbon emissions in line with the Kyoto Protocol (using 1990 as the base year for CO<sub>2</sub> emissions) and report the CO<sub>2</sub> emissions from our cement plants. In 2016, specific CO<sub>2</sub> emissions increased marginally by 1.7% to 718.0kgCO<sub>2</sub>/t<sub>Product</sub>, mainly due to the forced change of fuel mix in Egypt, as well as the reduction in the sales of processed fly ash, a cement substitute material produced by our US-based ST Equipment and Technology (STET) subsidiary.

### Gross direct specific CO<sub>2</sub> emissions

**718.0kgCO<sub>2</sub>/t<sub>Product</sub>**

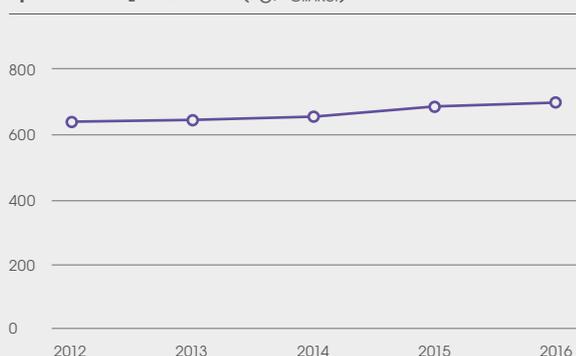
(2015: 706.1kgCO<sub>2</sub>/t<sub>Product</sub>)

### Thermal energy consumption

**46,855 TJ**

(2015: 43,965TJ)

#### Specific CO<sub>2</sub> emissions (kg/t<sub>Clinker</sub>)



## Circular economy

The reduction, reuse and recycling of raw materials, energy and waste are key elements of the Group's environmental policy. In 2016, 5.1% of the total raw materials for the production of clinker and cement were alternative raw materials sourced from such activities, reducing the consumption of extracted (natural) raw materials as well as the by-products that go to landfill. Furthermore, in Greece and the USA, TITAN has implemented programs to collect concrete returns and use them as alternative raw materials for clinker production and block production or aggregates for pavements and other uses.

Similarly, using alternative fuels (163,357 metric tons in 2016) helps to conserve non-renewable fossil fuels, allows for energy recovery and minimizes waste to landfill, while reducing the net amount of CO<sub>2</sub> emissions. Dried sewage sludge, refinery sludge, tires, RDF and agricultural waste are the alternative fuels used at different Group cement plants.

Our US-based subsidiary STET provides solutions for the management of fly ash, minimizing the need, cost and risk associated with landfilling. Its products can be used either as alternative raw materials or for energy recovery.

In 2016, 80.8% of the waste produced by the Group as part of its everyday activities was collected, stored and disposed of through authorized contractors for reuse, recycling or recovery.

### Externally recycled waste material

**413,553 metric tons**

(2015: 294,000 metric tons)

### Percentage of alternative fuels in the total fuel mix

**8.58%<sup>Thermal basis</sup>**

(2015: 6.75%<sup>Thermal basis</sup>)

### Electrical energy consumption

**1,751GWh**

(2015: 1,600GWh)