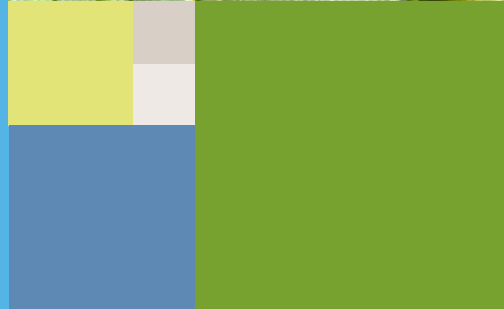




Knowledge grows

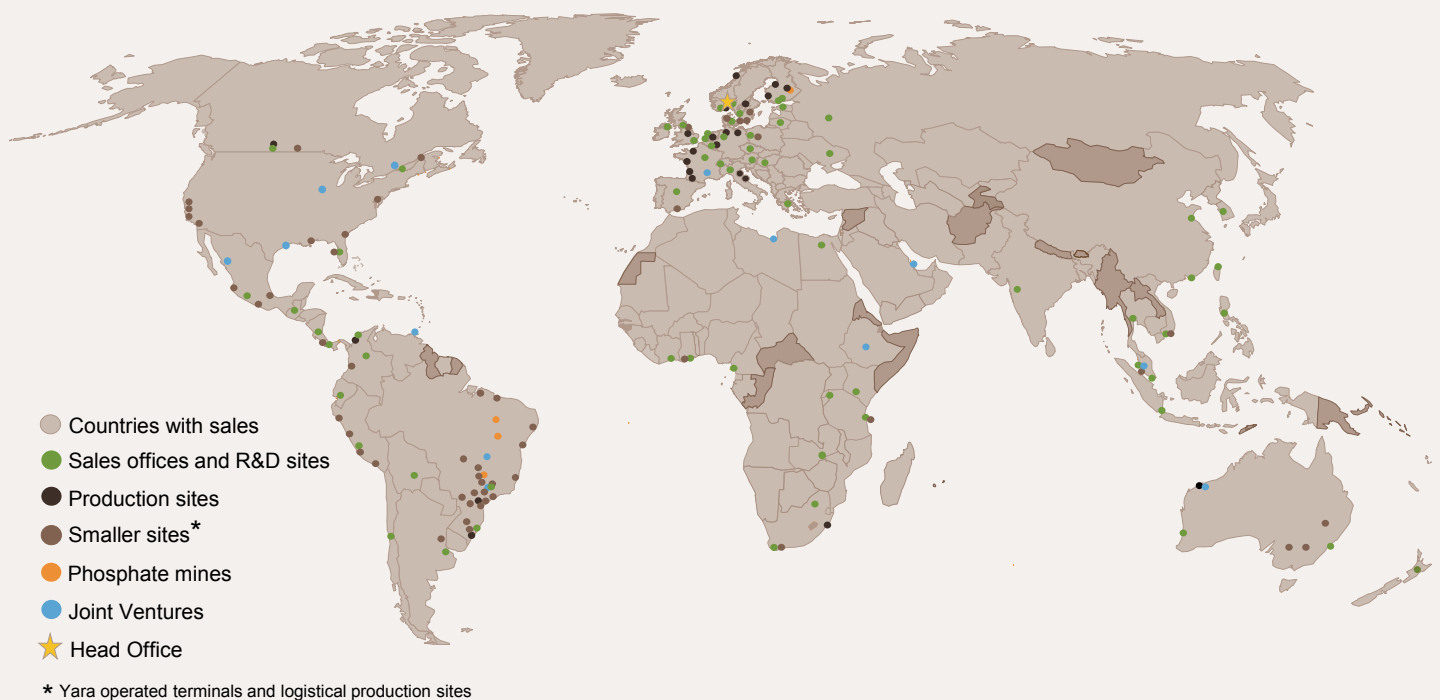
CEO Water Mandate report 2015: Communication on progress



About this report

Yara has been a ‘CEO Water Mandate’ signatory since July 2014. Launched in July 2007 by the UN Secretary-General, the CEO Water Mandate is a unique public-private initiative designed to assist companies in the development, implementation, and disclosure of water sustainability policies and practices.

Established by the UN Global Compact, the initiative was created out of the acknowledgement that global water challenges create risk for the private sector, public sector, local communities, and the environment alike. This report has been assembled from Yara’s GRI reporting, the annual reports and other sources.



Who we are

Yara’s knowledge, products and solutions grow farmers and industrial customers’ businesses profitably and responsibly, while nurturing and protecting the earth’s resources, food and environment.

Our fertilizers, crop nutrition programs and technologies increase yields, improve product quality and reduce the environmental impact of agricultural practices.

Our industrial and environmental solutions improve air quality by reducing emissions from industry and transportation, and serve as key ingredients in the production of a wide range of goods. Throughout our organization, we foster a culture that promotes the safety of our employees, contractors and society.

Founded in 1905 to solve emerging famine in Europe, today, Yara has a worldwide presence, with close to 13,000 employees and sales to about 160 countries.

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Yara's approach

Agriculture today uses 11% of the world's land surface, but accounts for 70% of the water withdrawals worldwide. On more or less the same land area, by 2050, world agriculture will need to produce 60% more food globally. If current water consumption patterns continue, two-thirds of the world's population will live in water-stressed countries by 2025. By 2050, demand for water will increase by 55%. These trends indicate that water-wise agriculture is key to meet future food demand without compromising freshwater resources.

Irrigated agriculture currently accounts for 20% of the total cultivated land, but contributes 40% of the global food production. So while irrigated agriculture is two to three times as productive as rainfed agriculture, its impact on water resources is much larger. Some of the increased food supply might have to come from further expansion of irrigated land, but most of it could be obtained through more resource efficient irrigation technology and improved agricultural practices. Water use efficiency in both irrigated and rainfed agriculture has to improve, and crop nutrition plays an important role in achieving this.

In the debate about sustainable agricultural water use, attention is mainly focused on issues such as irrigation technology, water retention of the soil and drought tolerant varieties. In addition, nutrient management is central when looking at water footprint analyses, as nutrient supply exerts strong control over crop yield, water consumption, and potentially contributes to pollution of freshwater bodies.

If crops are not optimally fertilized, more water is needed for every kilo of final product. Proper crop nutrition management can substantially improve agronomic water use efficiency.

Yara's ongoing research demonstrates positive effects of crop nutrition on water use efficiency (WUE). Nutrient supply increases agronomic water use efficiency, as a consequence of reduced soil evaporation and drainage losses and increases in the harvestable portion of the plant's biomass.

Yara is dedicated to resource efficiency and environmental stewardship in its own operations. Yara provides knowledge, products and solutions for sustainable agriculture. With regards to water, Yara develops knowledge, products and tools to support improved water use efficiency and nutrient use efficiency in agriculture.



While fertilizers are fundamental to feeding the global population, there are also potentially detrimental impacts on the environment from using organic or mineral fertilizers.

It is of great importance to use fertilizers correctly. Wrong application can cause growth in unwanted areas, such as algae bloom in rivers and sea. There are several examples of incorrect fertilizer application, mainly related to the wrong amount, the wrong nutrients, wrong placement or at the wrong time.

Yara is a proponent of nutrient management systems and tools designed to achieve better fertilizer use efficiency in the agricultural sector. Nutrient management means that fertilizer demand is calculated based on soil analysis, yield expectations, desired crop quality and climate.

Yara firmly believes that organic nutrients available at a farm should be used first. Mineral fertilizers should then be added based on the calculated nutrient gap. Nutrient management also contains guidelines for the correct choice of fertilizer products and application methods.

The use of precision tools and technology should be encouraged to enable farmers to add just the nutrients needed, in the right amount at the right time, thereby greatly reducing negative environmental impact while optimizing the yield.

Yara is through its HESQ Policy dedicated to excellence in its company performance on health, safety, environment and quality, which also implies minimizing emissions to water. While the release of fertilizer from Yara's own operations is at a very low level, losses of fertilizers to the environment is a challenge in the agricultural sector. Yara engages to promote increased productivity and reduced environmental impact from fertilizer use.

Based on these perspectives, Yara believes that engaging downstream of its own business, towards the agricultural sector, provides the most material opportunities for improvement. Hence our reporting and activities are focused on value chain engagement.

Technology-driven precision

Yara develops supporting tools for improved precision in farm management, including special solutions for water management.

As part of Yara's offerings on Farm Management Systems, the Yara Water Solution is an integrated tool enabling farmers to irrigate on-demand and to save 20-30% of water. A key component is the innovative Water-Sensor, which assesses the water status of the crop by measuring the pressure of the leaf. Through an online system and software platform, the measurements are translated into precision supply of water and crop nutrients.

This solution is currently marketed for citrus and olives, while other crops are being researched.

Yara also markets several precision farming tools, which will help optimize crop nutrition and support water use efficiency. These tools include the handheld N-Tester and the tractor mountable N-Sensor to measure instantaneous nitrogen demand of the crop.



Direct operations

Yara carefully manages its direct use of and emissions to water. Water is used in Yara's production primarily for cooling purposes, and to a lesser extent, steam production and manufacturing processes.

Water use for production

Yara used totally 923 million m³ of water in 2015 in its production. This covers all Yara's major production sites (27 large volume chemical and mining sites included in the 2015 reporting).

The majority of the water used (97.7%) was surface water, including water from wetlands, rivers, lakes and oceans. The rest was split equally between ground water and water purchased from municipal water supplies or other water utilities. Water is used in Yara's production primarily for cooling purposes, and to a lesser extent, steam production and manufacturing processes. Thus, nearly all of the water withdrawn by Yara is returned to the water course unpolluted.

Most of the Yara sites have certified environmental management systems in place. 17 sites out of 27 are currently ISO14001 certified, one is partially certified, while processes are due for the remaining sites. Each certified site has assessed risks related both to the use of water as well as discharges to water as a part of their environmental impact assessment. In addition, six sites have carried out specific water risk assessment for their operations covering risks related to flooding, drought, use of water and discharges to water.

Water recycling corresponded to 8% of fresh water withdrawal (71 million m³). No water sources are significantly affected by Yara's withdrawal of water.

The Yara site in Ravenna, Italy, has identified the potential flooding of the Candiano Canal to represent a risk to the site. High canal water level is covered by the site's emergency procedure to prevent pollution of the river in case of flooding.

Water management related to mining operations has triggered significant public interest in Finland. Yara's Siilinjärvi apatite mine assessed water management in detail as a part of the national Mining Stress Test program, conducted by the Ministry of Environment. The assessment included safety of dam constructions, tailings dams and water lagoons, potential leakage risks of harmful substances, water balance scenarios for example in a case of extraordinary precipitation, and finally emergency preparedness and communication practices.

The need for improvements to sanitary systems has been identified in two sites. A sanitary water treatment plant is under construction in Cartagena, Colombia, and the sanitary water system of the Pardies, France, plant has now been connected to the municipal waste water treatment system.

Risks related to rivers providing the main water supply have been assessed in Köping, Sweden, and Rostock, Germany, where the River Warnow is also the source for drinking water of the Rostock city.

Water conservation and waste-water treatment

Yara's environmental policy was updated in 2014, also reflecting the life cycle aspects of fertilizers.

Company commitment:

"We will promote sustainable agriculture and deliver environmental solutions contributing to global growth while addressing food security, resource efficiency and environmental protection. We will emphasize energy efficient operations and reduce emissions and environmental impact of our processes and products."

For Yara's own production plants, this implies continuous focus to reduce emissions, set targets and initiate actions to improve environmental performance. Compliance with statutory requirements, permits and corporate standards is a minimum expectation for any operation.

Emissions to water are measured, analyzed and registered according to national regulations. The main potential impact on water caused by nitrogen and phosphorus emissions is eutrophication. Thus, the water and air emission data is combined to characterize their eutrophication potential, measured in tonnes of PO₄-equivalent.

Yara's emissions impacting eutrophication totaled 3,800 tonnes of PO₄-equivalent in 2015. The total volume of water discharge was 800 million m³ in 2015. A large part of this is returned unpolluted cooling water. 56% of the water volume is discharged into the sea, 35% into rivers and 9% into lakes.

Several Yara plants are taking actions to separate their wastewater streams more efficiently and to prevent spillages and accidental discharges. Yara's plant in Le Havre, France, has isolated an area with earlier contamination and equipped the ponds with pumps to drain polluted water for treatment. Yara's sites in Porsgrunn and Glomfjord, Norway; Köping, Sweden and Uusikaupunki, Finland have all invested in improving their waste water treatment systems with the goal of reducing nutrient discharges to water. The Yara mine in Angico dos Dias, Brazil, and the Belle Plaine plant in Canada are investigating how to improve treatment and separation of water from storm flooding. Yara Uusikaupunki and Siilinjärvi plants in Finland as well as the Cartagena plant

in Columbia are taking actions to improve the circulation of nutrient containing waters. The Yara plant in Rio Grande, Brazil, has an action plan in place to reduce emissions, effluents and to increase recycling.

The Yara plant in Rostock, Germany, discharges its waste water to a small river, the Mühlbach. Actions are ongoing with the local authorities to clarify the water status of the river by detailed data sampling, and to protect and enhance the water quality with the aim of achieving good status. As a first step, Yara Rostock has contributed to this by increasing the basin capacity for rainwater prior to biological treatment to reduce nitrogen emissions to the river. Thus the lowest discharge of nitrogen in the history of the plant has been reached.

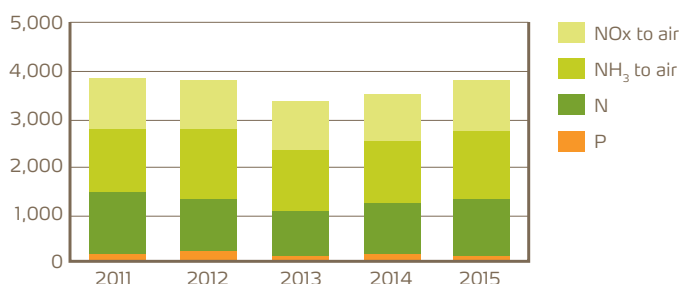
Yara commits to have all of its current major production sites certified according to the environmental management standard ISO14001. This includes assessing risks related to both the use of water as well as discharges to water, as a part of the environmental impact assessment.



New technology

Treatment of wastewater where nitrogen is present in low concentrations is a rising challenge for fertilizer plants. Testing of novel wastewater treatment technologies and investigating their feasibility is currently ongoing e.g. in Yara's plants in Tertre, Belgium; Le Havre, France; Sluiskil, the Netherlands and Siilinjärvi, Finland, each facing their specific challenge with the water quality.

Emissions contributing to eutrophication



Reducing phosphorous leakage to the Baltic Sea

Yara's site in Uusikaupunki, Finland, has invented solutions to prevent phosphorus leakage from a gypsum pile to the sea. The outcome is being monitored, while the site is also doing development efforts to find the best techniques to treat the gypsum pile.



At the Yara plant in Uusikaupunki, a gypsum pile containing leftover phosphorous (P) from a closed manufacturing process has been a source of P discharge to the Baltic Sea. Now, the phosphorus load from the gypsum pile has been reduced to a fraction of the original amount.

Yara, together with the authorities, studied different ways to reduce the discharge. As a result, an insulation wall was built around the gypsum pile. At its deepest, the pile is eight meters below sea level. This posed exceptional difficulties during the construction of the wall. The wall was completed in autumn 2013, and the project investment totaled some EUR 3.5 million.

In addition to the wall, the basin was repaired. Now the most phosphorus-rich water is pumped into the basin before it goes to the wastewater treatment plant. The phosphorus collected from the pile is then re-used at the fertilizer plant.

The sea condition is monitored regularly in cooperation with the authorities. Preliminary results show increasing phosphorus content inside the wall, and decreasing on the outside. Conclusive results will take years to measure as existing P in the sediments are slowly disseminated.

Raising awareness

Yara's activities are guided by the principles of Product Stewardship, outlined by Fertilizers Europe and the International Fertilizer Industry Association (IFA). Based on a commitment to promote sustainability and safe practices throughout the life cycle of fertilizers, the principles ensure that proper care is taken along the entire value chain, from product development and sourcing of raw materials, through production, storage and distribution, to sales, delivery and application. Assessments of health, safety, environmental and security impacts of products and services cover all life cycle stages.

All Yara's operations in Europe are in full compliance with the requirements of the Fertilizers Europe Product Stewardship Program. Outside Europe, Yara is implementing the IFA Protect & Sustain product stewardship program on a country by country basis. Yara has contributed to the development of this program. In three years, thirteen non-European Yara units have already received the IFA Protect & Sustain certificate, ten of them reaching the highest "Excellence" level. The whole Yara business in USA, Canada and Mexico, a large part of Yara's business in Brazil and Latin America, as well as an increasing share of Yara's business in Asia and Africa are covered. Remaining units will follow suit, as Yara aims to have all operations outside Europe certified to the program.

Water sustainability incorporated in decision-making

Yara prepares an environmental impact assessment for any new major operation or extension. As a part of this, potential damage to nature or impact to natural resources are evaluated, and necessary prevention, management and remediation measures are considered.

Such assessments have been made recently, for example, in Siilinjärvi, Finland, for the enlargement of the apatite mine area, as well as at other sites where start-up of mining activities are under consideration.



Value chain engagement

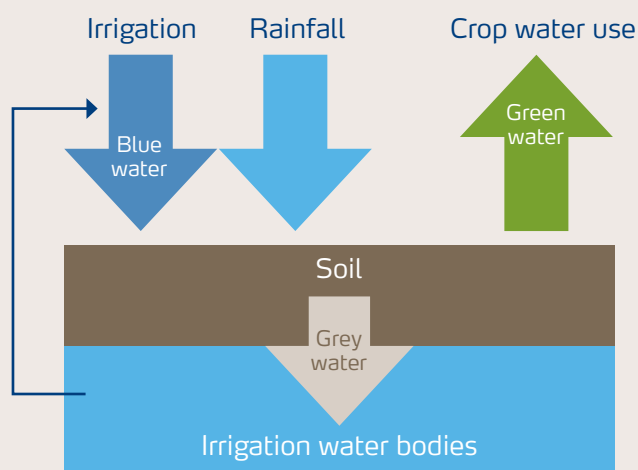
Yara is committed to promoting sustainability and safe practices throughout the life cycle of fertilizers. Assessment of health, safety, environmental and security impacts of products and services covers all life cycle stages.

Yara, as the world's leading producer of mineral fertilizers, is a key player in promoting and facilitating sustainable agriculture. Yara has developed extensive agronomic knowledge that it shares with farmers, helping them to boost their yields while contributing to sustainable agriculture. We have a systematic approach to monitoring and reviewing the quality and handling of all our products.

Yara has calculated the water footprint of plant nutrition, also quantifying effects of crop nutrition management on potential freshwater pollution.

Growing knowledge reduces water consumption

Yara does extensive research and development to help improve the water footprint of growing crops. The water footprint quantifies crop water use via evapotranspiration (green water), how much irrigation water is used (blue water) and to what extent freshwater is polluted (grey water).



Nutrient management has been proved to be significant in water footprint analyses, impacting yields, water consumption and potentially water pollution. Both Yara's and external studies confirm that crop nutrition increases efficiency of water use by crops.

Due to more vigorous and productive plant growth and less unproductive water loss via soil evaporation, supplying in particular nitrogen (N) fertilizer up to an optimal level will improve the water use efficiency. If the nutrient supply is above the crop's requirement, the risk of freshwater pollution increases.

Also, supplying the crops with balanced crop nutrition ensuring all nutrients are available will further improve the water use efficiency. These effects have been documented both in pot experiments for precise measurements as well as in farming practice at field trials.



Collective Action, Public Policy and Community Engagement

Taking a clear stance on water, Yara has published a position paper outlining its main knowledge and views on the global challenge of freshwater availability. More specifically, Yara has also published position papers on both the EU Common Agricultural Policy reform and the company's Baltic Sea engagement, promoting how agriculture can be both productive and environmentally sound.

The topic of water use efficiency is taken into account in a number of partnerships and collaborative initiatives where Yara is involved. We are a partner in the EU-project WEAM4i (Water & Energy Advanced Management for Irrigation). The aim of the project is to improve the efficiency of water use and reduce the costs of power irrigation systems. WEAM4i is a European project co-funded by the European Union under the 7th Framework Program.

Besides developing supporting technology and knowledge on how to improve water use efficiency in farming, Yara works broadly to seek implementation of this knowledge.

Baltic Sea engagement

Yara drives innovation to reduce phosphorous leakage and engages in dialogue to promote best farming practice for a cleaner Baltic Sea, by increasing agricultural productivity.

Around 90 million people live in the Baltic Sea area and are affected by its poor ecological status. Today the Baltic Sea is considered to be one of the most polluted seas in the world. Agriculture is one part of a complex set of challenges.

Yara has introduced the innovative P-trap, substantially reducing the phosphorous (P) discharges from P-rich soils through gypsum treatment (photo). Through the SAVE project, 1,500 hectares will be treated with 6,200 tonnes of gypsum to reduce P discharges. Co-sponsored by Yara and partners, the implementation will be during fall 2016 in coastal southwest Finland.

Entering as a partner in the Baltic Deal Bridge project, Yara shares and promotes its knowledge across the Baltic Sea region. Yara is contributing at conferences and field days, supporting precision farming not least by demonstrating the benefits of the Yara N-Sensor.



Yara engages to promote our knowledge and solutions, as well as to argue the case for improved productivity. To this end, in 2016 Yara participated at a cross-cutting roundtable discussion in London, UK, hosted by Unilever and Xynteo, where stakeholders from organizations and businesses discussed innovative and business driven approaches to improve water use efficiency.

Similarly, Yara has on several occasions been represented at high-level forums on the challenges in the Baltic region, voicing our support for productive yet low-impact farming. Yara's CEO has twice delivered clear company commitments at the Baltic Sea Action Summit, pledging to work with the farming community to share knowledge and demonstrate technology and solutions.



Public-private coffee partnership

In 2010, Yara decided to engage in the Vietnamese Coffee task force. The task force was established following a regional WEF meeting in June 2010. .

The partners include other multinational companies, NGOs and support from the Ministry of Agriculture. The aim is to promote sustainable coffee production – putting the smallholder farmer at the center.

Prevailing farmers' practices involve both extensive irrigation and over-supply of fertilizer. Based on Yara's knowledge, farmers are advised to use our nitrate-based NPK instead of fertilizers based on urea and ammonia sulfate. This has helped increase both yields and profitability, while reducing the carbon footprint.

Through improved farming practices and balanced crop nutrition, the water footprint has been reduced by up to 40%.

Transparency

Yara reports according to the GRI framework, and its full reporting is available online:

http://yara.com/sustainability/reporting/gri_reporting/

Yara's commitment to the CEO Water Mandate has been confirmed in its Financial Report 2015, in the report from the Board of Directors.

Yara Grows Knowledge to nurture life by delivering solutions for sustainable agriculture and the environment. Our fertilizers and crop nutrition programs help produce the food required for a growing world population. Our industrial products and solutions reduce emissions; improve air quality and support safe and efficient operations.



About Yara

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www.yara.com

Yara International ASA
Drammensveien 131
N-0277 Oslo
Norway
Tel: +47 24 15 70 00
Fax: +47 24 15 70 01

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