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How the PEF methodology raises awareness on water issues

World Water Day takes place annually on 22 March as a means to bring attention to the important supply and sustainable management of freshwater resources. The day is also a symbolic reminder to take action in tackling the global water crisis, congruent with the Sustainable Development Goal (SDG) 6 that ensures availability and the sustainable management of water and sanitation for all.²

Access to fresh water has never been more critical. Disruptions of all sorts in the water cycle are undermining progress on all major global issues, from health to gender equality, education or industrial development, to name a few.

With water scarcity being a growing environmental concern in many parts of the world, it is important for both individuals and enterprises to address this issue as part of their environmental and sustainability efforts. One way for companies to preserve water is by investing in methodologies that help reduce water consumption or support water recovery through the production cycle. Here, the Product Environment Footprint (PEF) method can address water scarcity is by considering the water use and efficiency of the products and processes.

By reducing the water use of a product or process, companies can conserve water and reduce the impact of their operations on local water systems. This can be achieved through a variety of methods, such as implementing more efficient production techniques, using recycled or reclaimed water, or designing products that require less water to produce. Additionally, companies can use their PEF assessments to identify areas where they can reduce their water use and improve their overall sustainability performance. This may involve re-evaluating their supply chains, choosing suppliers who prioritize water conservation, or engaging in water stewardship activities to protect local water resources.

Water issues in Azerbaijan

¹ https://www.freepik.com/free-vector/watercolor-world-water-day-illustration_23181729.htm

² <https://sdgs.un.org/goals/goal6>

Azerbaijan's climate varies from dry (in the central and eastern parts of the country), to subtropical and humid (in the southeast). Aside from the Caucasus mountains and the Lankaran lowland, the most of the country gets scant rainfall. Because of this, the country's agriculture heavily relies on irrigation, which creates a challenge for the country's 10 million people (as almost half live in rural areas and depend on agriculture).

This is compounded by the fact that Azerbaijan's three main ground water sources – the Kura, Araz and Samur rivers – originate outside the country and are heavily exposed to overuse and pollution from industries and municipalities in neighboring countries and within Azerbaijan. Since not all wastewater treatment facilities are properly functioning, untreated municipal wastewater is the largest source of pollution of the water basins.

Droughts are also common in the country, particularly in the arid central regions. There is strong evidence from recent years that water levels in Kura and Araz rivers, as well as in the reservoirs fed by them, have drastically decreased. Different methodologies such as PEF can provide solutions for the entities working with limited resources such as water.

As well, on the national level, with the start of the Novruz celebrations, Azerbaijan also takes stock of World Water Day, hailing water as a source and precursor of the re-birth of nature, and a reminder of its crucial role. At the same time, in Azerbaijan and across the globe, on 22 March was a strong reminder that that, worldwide, two billion people still do not have access to safe water and 3.6 billion lack access to safely managed sanitation services.³ As only building better water infrastructure is not enough, people need resilient services, particularly in the context of climate change and the increasing population growth.

PEF methodology

In this regard, the PEF methodology designed under the European Union (EU) Single Market for Green Products initiative, can alleviate some of the pressures of industrial water demand. PEF is similar to Life Cycle Assessment (LCA), and the common LCA calculation can be used for the PEF calculations. Just like LCA's, PEF is a science-based, clear method that quantifies all the environmental impacts over the entire life cycle of a product. This includes product's emissions to water, air, and soil emissions, resource use and depletion, the impact of land and water usage, etc.

However, PEF is more stringent in its rules than a 'normal' LCA, due to it being a detailed prescribed method for analysis. The PEF method and its database offer consistency, making it suitable for comparing products within the same product groups.

Impact categories

When applying the PEF methodology, an industry or enterprises can use water-related impact categories and indicators included in PEF, such as:

- **Category – Acidification** (acidification from air, **water**, and soil emissions (primarily sulfur compounds) mainly resulting from combustion processes in electricity generation, heating, and transport)

³ <https://www.who.int/teams/environment-climate-change-and-health/water-sanitation-and-health/monitoring-and-evidence/wash-monitoring#:~:text=46%25%20of%20the%20global%20population,facility%20with%20soap%20and%20water.>

- **Indicator - Accumulated Exceedance – AE (mol H+ eq)**
- **Category - Eutrophication, freshwater** (the potential impact on ecosystems caused by nitrogen and phosphorous emissions mainly due to fertilizers, combustion, sewage systems)
 - **Indicator - Fraction of nutrients reaching freshwater end compartment (kg P eq)**
- **Category - Ecotoxicity, freshwater** (impact of toxic substances on freshwater ecosystems)
 - **Indicator - Comparative Toxic Unit for ecosystems (CTUe)**
- **Category - Water use** (depletion of available water depending on local water scarcity and water needs for human activities and ecosystem integrity)
 - **Indicator - Weighted user deprivation potential (m³ world eq)**

The PEF and Organisation Environmental Footprint (OEF) methods are designed to measure and communicate the life cycle environmental performance of products and organizations. Together, the PEF and OEF constitute the EF methods, grounded on the LCA standard methodology. A calculation based on the general PEF/OEF methods gives quantitative information on the impacts of a product or organization, taking into consideration the entire value chain (from the extraction/growing of resources to the end of life stage), by following a life cycle approach.



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All activities run by a company carrying out a PEF or an OEF require collecting company-specific data for all known inputs and outputs. The data can be, for instance, related to energy consumption, water consumption, land use, materials, emissions (air, soil, water), waste, products and co-products. The datasets created must be EF compliant. Primary data (company and site-specific) are collected for foreground processes (i.e. under the direct control of the organization) and, if possible, for background processes (i.e. not under direct control of the organization). The PEF/OEF methods provide a Data Needs Matrix (DNM) to evaluate the data requirements of all processes modelled in the system (according to the level of influence the company has on the process). Here, it is important to distinguish if the process is run by the company, if it is not run by the company but company-specific data are available, or, if the process is not run by the company and company-specific data are not available.

Secondary data (from e.g. sector-specific databases or literature) must also be EF compliant and may be used to model processes that are included in the system boundary for which primary data are not available (e.g. not run by the company).

⁴ <https://www.sciencealert.com/water-can-separate-into-2-different-liquids-we-just-got-closer-to-knowing-why>

All in all, on World Water Day and beyond, both individuals and industries are prompted to take stock of the critical need to address the global water crisis and wisely manage freshwater resources. With water scarcity on the rise, when it comes to sustainable and environmentally friendly production, methodologies such as the Product Environment Footprint (PEF) can help enterprises rethink their water use and boost the efficiency of their products and processes. By identifying areas where they can reduce and recycle water consumption, enterprises (be they small, medium-sized, or large), can play an active role in preserving water resources for future generations.

About EU4Environment

The “European Union for Environment” (EU4Environment – Green Economy) Action helps the Eastern Partnership countries preserve their natural capital and increase people's environmental well-being, by supporting environment-related action, demonstrating and unlocking opportunities for greener growth, and setting mechanisms to better manage environmental risks and impacts.

It is funded by the European Union and implemented by five Partner organizations - OECD, UNECE, UNEP, UNIDO, and the World Bank – over the 2019-2024 period, with a budget of EUR 20 million.

More information about the Action is available at www.eu4environment.org

For more information about resource efficiency in Azerbaijan, please visit:
www.recp.aceconsultants.az/en