

UPM Rauma

ENVIRONMENTAL AND SOCIETAL RESPONSIBILITY 2018



UPM Rauma

UPM Communication Papers Oy's Rauma mill is located by the sea on the west coast of Finland, near Rauma's city centre. Metsä Fibre Oy's pulp mill, Forchem Oy's tall oil distillation plant and Rauman Biovoima Oy's biofuel power plant are also based at the mill site. UPM Communication Papers Oy produces the raw and chemically treated water used at the site, and is responsible for the treatment of the site's industrial and municipal waste-waters. The companies collaborate closely with energy production, and Rauman Biovoima supplies the city of Rauma's required district heating power. The operations of Rauman Biovoima and the Rauma paper mill support the city's Hinku carbon neutrality project.

The Rauma mill has three paper machine lines, a fluff pulp line, a twin-line debarking plant, two GW plants, two TMP plants, a surface water treatment plant, a biological effluent treatment plant and a landfill site for industrial waste.

The paper machines manufacture magazine papers – one of the machines produces uncoated, supercalendered (SC) paper, while the other two produce lightweight coated (LWC) paper. The paper made in Rauma is used in magazines, sales catalogues and advertising products. RaumaCell produces fluff pulp for the production of hygiene and tabletop products.

Also located at the mill site is Rauman Biovoima Oy's biofuel power plant, which procures most of its operation, maintenance and environmental services from UPM Communication Papers Oy. Approximately 86% of the energy produced by Rauman Biovoima is generated using renewable fuels.

This EMAS statement covers the environmental and social responsibility matters concerning UPM Communication Papers Oy's Rauma mill and UPM-Kymmene Corporation's RaumaCell.



UPM Rauma Environmental and Societal Responsibility 2018 is a supplement to the Corporate Environmental and Societal Responsibility Statement of UPM's pulp and paper mills (available at www.upm.com) and provides mill-specific environmental and societal performance data and trends for the year 2018. The annually updated mill supplements and the UPM Corporate Environmental and Societal Responsibility Statement together form the joint EMAS Statement of UPM Corporation. The next UPM Corporate Environmental and Societal Responsibility Statement and also this supplement will be published in 2020.

We deliver renewable and responsible solutions and innovate for a future beyond fossils across six business areas: UPM Biorefining, UPM Energy, UPM Raflatac, UPM Specialty Papers, UPM Communication Papers and UPM Plywood. We employ around 19,000 people worldwide and our annual sales are approximately EUR 10.5 billion. Our shares are listed on Nasdaq Helsinki Ltd. UPM Biofore – Beyond fossils. www.upm.com

Production capacity	940,000 tonnes of paper 150,000 tonnes of fluff pulp
Personnel	624
Products	Uncoated magazine paper: UPM Max, UPM Cat, UPM Smart, UPM Impresse, UPM Impresse Plus, UPM Max S Coated magazine paper: UPM Star, UPM Ultra, UPM Cote, UPM Valor, UPM Cote Silk, UPM Ultra Matt, UPM Star Silk
Certificates	EMAS – EU Eco-Management and Audit Scheme ISO 14001 – Environmental Management System ISO 9001 – Quality Management System OHSAS 18001 – Occupational Health and Safety System PEFC™ Chain of Custody – Programme for the Endorsement of Forest Certification FSC® Chain of Custody – Forest Stewardship Council® ETJ+ Energy Efficiency System All certificates can be found from UPM's Certificate Finder tool (available at www.upm.com/responsibility)
Environmental labels	EU Ecolabel



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For more information about PEFC products, please visit www.pefc.org



Review of year 2018

In 2018 we continued with measures to improve the energy efficiency of paper production through improvements to process operations. We made an investment to save energy by using the thermal energy from effluent to heat the paper machine hall.

Due to these energy-saving measures, the total electricity consumption of the paper machines slightly decreased compared to the previous year. However, the mill's electricity use per tonne of paper produced slightly increased, due to increased consumption of mechanical pulp compared to the previous year. Steam consumption decreased slightly at the mill level, impacted by improvement in the production efficiency of the paper machines. Water consumption remained at the level for 2017, and the targets for 2018 were not achieved. The mill's solids losses also fell slightly behind the level for 2017, and the overall target was not achieved. The specific emissions of the mill were in compliance with BAT levels in all areas.

No significant changes occurred in the amount of chemicals stored at the mill site in 2018. The most significant change occurred in the years 2016–2017, when the use of SO_2 was abandoned, and the production equipment was disassembled. The Finnish Safety and Chemicals Agency (Tukes) requires an operational principles document and a preventive safety plan, which were updated in 2018. Chemical safety is based on Finnish law and UPM's internal chemical handling standard.

Active preventive safety work was continued in 2018. Six environmental deviations, of which one was a breach of the environmental permit limit values and five had minor environmental impacts, were recorded during the year. The monthly limit value was exceeded in October, which resulted in increased COD loads – 45.38 t/d vs limit value 45.0 t/d. The problem was fixed via dispensing supplementary oxygen. Other measured values (BOD, nitrogen, phosphorus and AOX) did not exceed the limit values. The deviations were reported via the electronic document system for environmental control.

The processed meat company HKScan's Rauma mill started production at the end of 2017. The mill's effluents have been treated at the wastewater co-treatment plant, and they have been successfully treated without problems.

In 2018, noise-prevention work mainly focused on preventive maintenance. The mill received two instances of external noise-related feedback. They were studied, and the noise in these cases was not caused by the operations of UPM Communication Papers. We also voluntarily carried out comprehensive monitoring of noise sources and reported the results to authorities. The goal is to make sure that the noise directed at the immediate surroundings does not increase. Based on the measurement data, noise caused by the forest industry facilities is below permit limits.

Construction work continued at the Sampaanalanlahti field, following from the previous year. The work continued with the stabilisation of the basin masses. Power-plant ash and cement were used as the binders in the mass stabilisation. Dredge spoils from the port's expansion were also delivered for the basin masses, and they were stabilised during the autumn.

A significant change in solid waste treatment and recycling was already made in 2017, when deposits of industrial waste to the Suiklansuo landfill site was stopped and the mill achieved its Zero Solid Waste to Landfill target.

The paper mill has shifted to a Multisite model (ISO certificates, ETJ+) in a quality management system certification, which covers all paper mills in Finland. Both external and internal audits are essential parts of the Multisite model. Internal audits are conducted by auditors from other units, which also gives us a new perspective into the development of our operations. Inspecta Sertifiointi Oy is responsible for external auditing.

Review applications for the environmental permit for the mill, the port and the wastewater co-treatment plant were submitted for processing in 2015. This was based on the requirement in section 80 (1) of the Finnish Environmental Protection Act to apply for environmental permit review, due to new BAT conclusions. The environmental permit had to also be reviewed due to changes in operations. The environmental permit for the Rauma paper mill and the port became legally binding with the Vaasa Administrative Court's decision on 20/09/2018. The Vaasa Administrative Court has not yet processed the new environmental permit for the wastewater co-treatment plant.



Timo Suutarla,
General Manager



Pasi Varjonen,
Safety and Environmental Manager

Responsibility figures 2018

Waste



Reused ash

100%

Safety



70%

less lost time accidents (LTAs)
resulting in absences than in 2017.

Energy



Percentage of biomass-
based fuels at the mill

86%

Taxes



UPM's local tax impact in Rauma approx.

EUR 23 million

Real estate taxes EUR 0.5 million

Estimated municipal tax on salaries EUR 5.6 million

Estimated corporate income tax EUR 17 million
based on the number of employees*

* Approximately 30% of this goes to municipalities,
which is split between each municipality according
to their share of business activities and forest operations

Water



Percentage of recycled nutrients
in the effluent treatment plant

99.7%

Consumption impact



Mill's consumption impact in the region approx.

EUR **31** million

In Finland approx.*

EUR **59** million

* Generated through the private consumption of commodities from internal and indirect employees' net wages.

Health

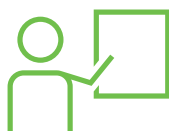


Decrease in the total amount of absences

11%

during the last five years

Stakeholder collaboration



Collaboration with educational institutions

30 people

This number consists of apprenticeships, diploma students and on-the-job learners

Supply chain



99.6%

of raw materials spend (excl. wood) qualified against the UPM Supplier and Third Party Code.

Employment



Workforce at the Rauma mill in 2018

624 people

Indirect impact on local employment

660 people

Summer workers and trainees

95 people

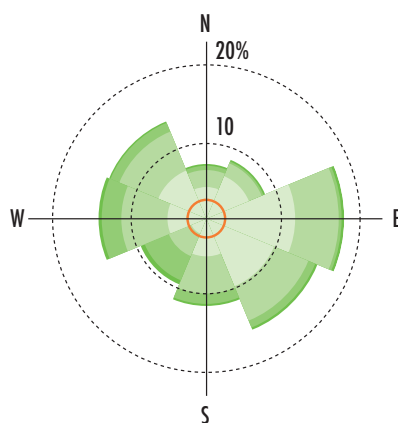
Air



In 2018, sulphur emissions were slightly bigger than in 2017. Nitrogen oxide emissions also increased slightly compared to 2017, as well as fossil CO₂ emissions. The increased airborne emissions were caused by the increased amount of energy obtained from Rauma Biovoima. Renewable fuels were the source of 79% of all of UPM Rauma's CO₂ emissions.

The air-quality measurement point nearest to the Rauma mill is located in Sinisaari, approximately 0.5 kilometres (towards the city) from the mill.

The wind rose shows the direction of the wind.



Wind rose, m/s

- Calm
- 0.5–3
- 3–5
- 5–7
- >7

Source: Finnish Meteorological Institute, Monitoring air quality in Sinisaari, Rauma in 2018.

Waste

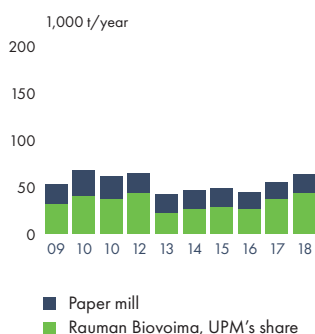


Ash from the power plant was reused in the construction works at the Sampaanalanlahti field, as in previous years. The rest of the generated waste was mill waste, recycled fibre, metal and hazardous waste, and combustible waste.

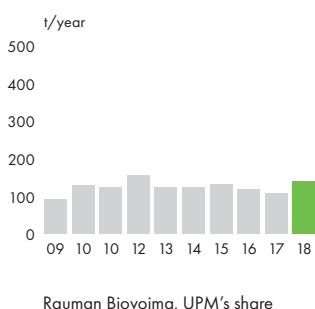
All solid waste is reused as materials or energy. Ash is generated at the Rauman Biovoima power plant, and all of the ash was reused as building material for the Sampaanalanlahti field. In 2019, our goal is to continue to use ash and other recycled materials from the forest industry, potentially in surface structures for landfill sites and in the construction of storage areas, etc. We are also looking into new ways of reusing materials in earthworks. Ash will be used to replace other construction materials, such as cement.

The use of the Suiklansuo landfill area ended in 2017. The last deposits to the site before it was closed down were green liquor dregs from Metsä Fibre Oy and mill waste from UPM.

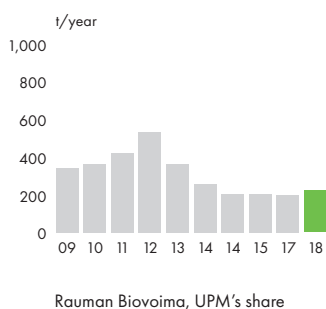
Fossil carbon dioxide, CO₂



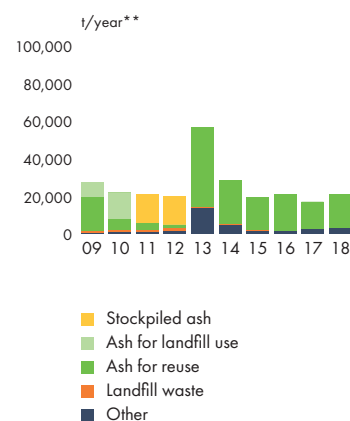
Sulphur dioxide, SO₂



Nitrogen oxides, NO_x



Waste and reuse*



* ash, Rauman Biovoima's share
** calculated as dry weights

Water



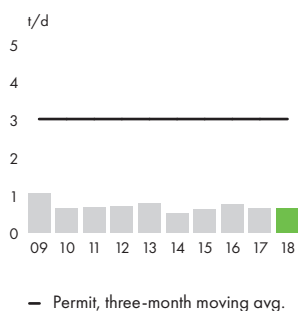
An operational committee made up of representatives from UPM Communication Papers Oy, Metsä Fibre Oy and the city of Rauma is in charge of developing the co-treatment and monitoring its success. UPM Communication Papers Oy still has responsibility for wastewater treatment.

Wastewater treatment results were good as usual, with the exception of August–

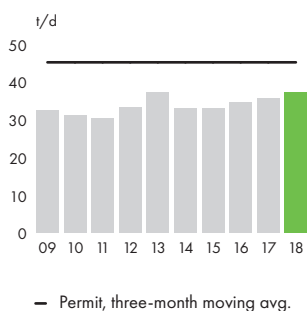
October. During August–October, the wastewater treatment plant had runnability problems, which presented as increased loads, especially in terms of COD and phosphorus. The co-treatment plant's situation was fixed by dispensing temporary supplementary oxygen, which had a clear mitigating effect. The runnability problems resulted in the reporting of one monthly limit value breach in October in terms of COD –

other characteristics were clearly below the permit limits. Annual total emissions were in compliance with BAT levels. The wastewater effluent load from the forest industry and the joint treatment plant is now so low that the state of the sea water can no longer be significantly improved by making treatment more efficient.

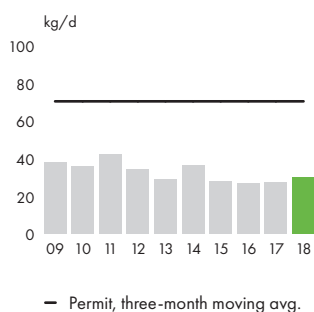
Biological oxygen demand, BOD₇



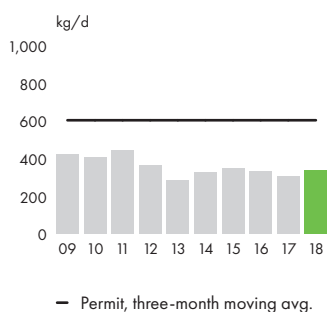
Chemical oxygen demand, COD_{cr}



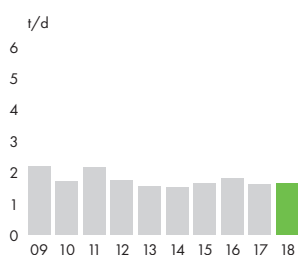
Phosphorus, P



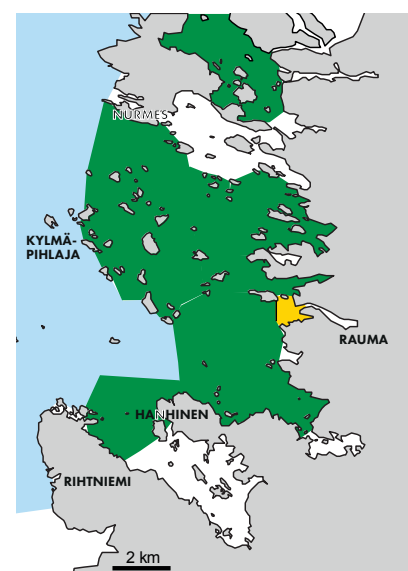
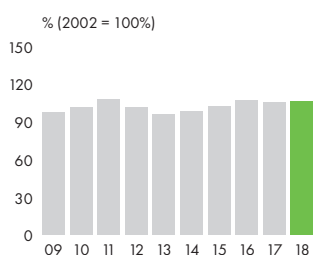
Nitrogen, N



Suspended solids into the sea



Process water consumption



- Excellent
- Good
- Satisfactory
- Passable
- Poor

The general usability of the Rauma sea area in 2018.

The classification is based on the phosphorus and chlorophyll content and the amount of E. coli bacteria in the production layer between June and September. The classification was determined based on the weakest quantity.

Source: Lounis-Suomen vesi- ja ympäristötekniikka Oy

Societal responsibility

Well-functioning dialogue with stakeholders is key to our success. We are committed to promoting the vitality of the communities near our facilities through active collaboration and open dialogue with different stakeholders, as well as through different sponsorship projects and employee volunteering.

We collaborate with our stakeholders

We are involved in the JOKI programme, the main goal of which is to improve the water management of the lower part of the Eurajoki water system, and to ensure and improve the water quality. The focus of the programme is on measures that concretely improve the quality of water and decrease nutrient load.

We are also participating in the process of building a carbon-neutral Rauma. The city of Rauma is part of the HINKU Carbon Neutral Municipalities project. The HINKU criteria require that municipalities decrease their operations' greenhouse gas emissions. Involvement from residents, summer residents and companies is required. UPM Communication Papers Oy and Rauman Biovoima Oy are involved with the project, and our mill received the right to use a "HINKU – Towards a carbon neutral Rauma" sign in December 2018.

We create economic wellbeing

We impact local communities and societies in various ways. Understanding the impact that we have is an essential component of our business success. In many locations, we are a significant employer, taxpayer and partner to local entrepreneurs, making positive contributions to the local economy. UPM Communication Papers Oy has a significant employment effect in the Rauma area, and the mill employs 624 people. We apply several precautionary measures to mitigate and remedy potential adverse environmental and social impacts on our surrounding communities.

Tax revenue generated by UPM's business operations is an essential part of our social impact. UPM pays corporate income taxes in the countries where we create added value and generate profit. Due to our corporate and operational structure, we mainly report and pay our corporate income taxes in the countries of production and in the countries where innovations are being developed. In addition to the taxes we pay on income, our various production inputs and outputs are also subject to taxation. Taxes are paid in accordance with the local tax legislation and regulations of the country in question.

In 2018, UPM (Group) paid approximately 283 million euros (251 million in 2017) in total in corporate income taxes and real estate taxes.

The mills' operations also benefit the local community in many ways. Real estate taxes and the municipal share of corporate income taxes paid by UPM support the local economy. In addition, the taxes and social security contributions that UPM employees pay on their wages have also a significant local impact. Furthermore, the purchasing power of UPM employees and subcontractors maintains and enhances the vitality of the community.

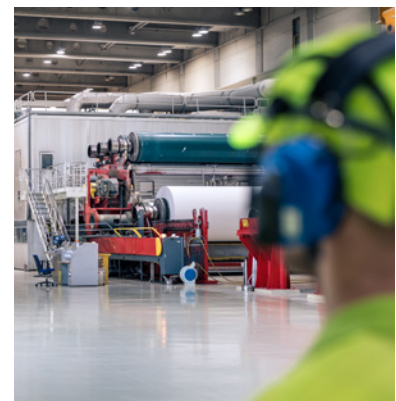
Responsible sourcing

UPM is committed to responsible sourcing practices throughout the entire supply chain. We work closely with our suppliers to ensure that they understand and meet all of the company's requirements for sustainability and responsibility.

We require all suppliers to uphold the UPM Supplier and Third-Party Code, which lays out our minimum requirements for corporate responsibility relating to environmental impact, human rights, labour practices, health and safety, product safety, corruption and bribery.

UPM's target is to have 100% of raw material spend and 80% of all spend qualified against UPM Supplier and Third Party Code by 2030 (Qualified spend). In 2018, 94% of UPM's raw material spend and 83% of all spend was qualified against the UPM Supplier and Third Party Code.

Suppliers' environmental and social performance is tracked through regular data collection and analysis. Based on the annual risk assessments, we select the suppliers whose performance we want to study more closely. If any non-conformity is found, the supplier is obligated to take corrective actions. We actively keep track of the results of these actions and are ready to support our suppliers with our knowledge in order to help them enhance their performance.





We want to be the industry leader in health and safety

Our goal at UPM is to be the industry leader in health and safety. Our target is zero fatal and serious accidents. Safety is fully integrated into our daily activities and is not considered secondary to any other consideration. We strive to reduce and eliminate accidents under our control through continuous improvement and effective risk management.

Our employees, as well as business partners and their employees, are required to adopt safe work practices and to comply with the rules and standards that we have established.

Before accessing UPM production sites, contractors participate in UPM safety training, which presents and demonstrates the basic safety requirements. This is complemented with job-specific safety inductions and work permits.

We are committed to the surrounding society

The Rauma mill operates closely with society. UPM Communication Papers Oy supplies the raw water for the city and forest industry. The wastewater co-treatment plant simultaneously purifies the wastewaters of both the forest industry and the community. The operation was started in 2002, and the results have been completely positive. The Rauma production facility for the meat company

HKScan became operational at the end of 2017, and its wastewaters have also been purified at the co-treatment plant as planned.

Rauman Biovoima provides the paper mill with all of the process steam needed and, in practice, all of the district heating power used by the city of Rauma. 86% of the fuel used for producing energy was bio-based.

The deepening work for the southern Rauma channel was started in 2016. The work included dredging, spoil depositing and safety device alteration work related to the channel markings. This project is the Finnish Transport Agency's first sea-way project where all of the clean dredge spoils were deposited in a dredge-spoil basin built in connection with the project. Contaminated soils were deposited in a separate dredge-spoil basin in Sampaanalanlahti, an area owned by UPM Communication Papers Oy, where they were stabilised to form part of the field base.

In 2018, the mill's total wood usage was 1.32 million cubic metres, which mainly came from the adjacent areas.

Active preventive safety work

In terms of occupational safety, there were four lost-time accidents at the mill in 2018, one of which was a contractor accident. There was a good activity level



for the preventive safety work conducted. Personnel made and reported a total of 1,982 safety observations and incident reports, and 1,396 rounds of safety discussion. The personnel were largely very active. The total percentage of absences has decreased by 11% over the past five years. The level achieved was good.

Environmental parameters 2018

The figures related to production as well as raw material and energy consumption are published as aggregated figures on group level in the UPM Corporate Environmental and Societal Responsibility Statement.

Production capacity	Paper Rauma Cell	940,000 t 150,000 t
Raw materials	Pulp and chemicals	See UPM Corporate Environmental and Societal Responsibility Statement for more information
Energy	Biomass-based and fossil fuels Purchased electricity (UPM)	Biogenic 86%, fossil 14% See UPM Corporate Environmental and Societal Responsibility Statement for more information
Airborne emissions	Particulates Sulphur dioxide, SO ₂ Nitrogen oxides, NO _x Fossil, CO ₂	4 t 139 t 232 t 62,477 t
Water intake	Process and cooling water	16,487,690 m ³
Emissions to water	Clean cooling water and rainwater in the area Process effluent Biological oxygen demand, BOD ₇ Chemical oxygen demand, COD _{Cr} Solids Phosphorus, P Nitrogen, N	175,314 m ³ 13,167,883 m ³ 92 t 3,630 t 221 t 4.1 t 45 t
Waste*	Landfill waste Recovered waste – Ash – Metal, electronic waste, etc. – Energy waste – Recycled fibre, etc. – Others Hazardous waste	0 t 17,802 t 1,212 t 669 t 615 t 121 t 31 t
Size of mill area		198 ha

* Waste amounts given as dry weights



Performance against targets in 2018

TARGET	ACHIEVEMENT	COMMENTS
Preventing environmental non-compliance and achieving the "Clean Run" objectives	No	Breach of the COD limit value
Solids loss from paper machines less than 1.4%	No	Achieved rate: 1.8%
Paper-machine water consumption less than 11.6 m ³ /t	No	Not achieved
Further improvement of energy efficiency	Yes	Energy efficiency was improved compared to 2017
Ash re-use rate over 100%	Yes	

Targets for 2019

TARGET
Preventing environmental non-compliance and achieving the "Clean Run" objectives
Further reductions of water consumption and solids loss <ul style="list-style-type: none"> – water consumption less than 11.6 m³/t – Solids loss less than 1.41% of production
Further improvement of energy efficiency
Ash re-use rate 100%



Validation statement

As accredited environmental verifier (FI-V-0001), Inspecta Sertifiointi Oy has examined the environmental management system and the information of UPM Rauma Environmental and Societal Responsibility 2018 report and of UPM Corporate Environmental and Societal Responsibility Statement 2018.

On the basis of this examination, the environmental verifier has herewith confirmed on 2019-04-02 that the environmental management system, this UPM Rauma Environmental and Societal Responsibility report and the information concerning UPM Rauma of UPM Corporate Environmental and Societal Responsibility Statement are in compliance with the requirements of the EMAS Regulation (EC) No 1221/2009.

We reduce the world's reliance on fossil-based materials by developing renewable and responsible products and solutions in all our businesses. **UPM Biofore – Beyond fossils.**



www.upm.com

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Rauma**

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