



Challenge #2: A traffic light for water consumption

Revise the concept of the „Wasserampel“ and maximise its use by the general public

Climate change and increasing water demand pose growing challenges to our water resource management. To promote the responsible use of water and to inform the population at an early stage about possible restrictions in water supply, the water traffic light was developed. This tool changes from green to yellow and finally to red to indicate the availability of water in different areas. Red stands for emergency, in which case the hazard prevention ordinances of the municipalities take effect and bans can be imposed. In the version of the water traffic light that currently exists in the district works, there is a grey stage before the red stage; the idea behind this was that one wanted to take care of hazard prevention before emergency management – however, this stage must be taken out of the concept, since municipalities may only use the hazard prevention ordinance and thus prohibitions in the case of proven concrete dangers. Thus, new approaches must be taken, whether as traffic lights, speedometers or other display instruments that serve to visualise levels defined by various measured values (e.g. temperature, precipitation, well measurements, reductions at upstream suppliers, disruptions, etc.).

Your task:

1. **Revise:** Revise the concept of the water traffic light by removing the envisioned grey precursor (if possible, feel free to programme a mock-up of the new variant)
2. **Develop a strategy:** Develop a comprehensive strategy for the dissemination and use of the water traffic light in our community. Consider target audiences, communication channels and the involvement of relevant stakeholders such as schools, businesses, the respective mayors and local authorities.
3. **Campaign planning:** Create creative and engaging communication campaigns that promote the water traffic light and motivate people to use it. This can include social media, events, training and other marketing methods.
4. **Build partnerships:** Seek partnership opportunities with local businesses, schools and other organisations to help spread the word about the water traffic light and incentivise use.
5. **Promote education:** Develop educational materials and workshops to raise awareness of the importance of sustainable water use and highlight the benefits of the water traffic light.
6. **Monitoring and feedback:** Implement mechanisms to monitor the dissemination and use of the water traffic light. Continuously collect feedback from users to improve the application and respond to community needs.

Evaluation criteria:

- Simplicity and simultaneous efficiency of the revised traffic light concept.
- Effectiveness of the strategy for dissemination and use (e.g. creativity and expected effectiveness of the campaigns).

Rewards:

- Contribution to sustainable water use and environmental protection
- Recognition and visibility for the Challenge winners
- Possible support for the implementation of the strategy.

Further Informationen:

- Water traffic light of the district works [\[retrieve here\]](#)
- Information on water supply with general saving tips of the district works [\[retrieve here\]](#)
- Publication according to the new drinking water ordinance [\[retrieve here\]](#)
- Sustainable in the MKK with water saving tips [\[retrieve here\]](#)
- Sample of a hazard prevention ordinance [\[retrieve here\]](#)

Challenge Partner



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Challenge #5: We need to water properly

Sustainable and Efficient Irrigation in Public Facilities

In public facilities, plants, trees and flowers are often irrigated without accurate monitoring of the amount and determination of demand, which is not only inefficient but also wastes scarce drinking water.

This Challenge invites creative approaches and technologies to optimise irrigation in public facilities while promoting the sustainable use of water resources.

Food for thought:

1. Demand-oriented and efficient: How can the irrigation of public facilities in the urban area be made demand-oriented and efficient? Which technologies and approaches can help to optimise water consumption?
2. Alternative water sources: What alternative water sources can be used for irrigation instead of drinking water? How can these be sustainably developed and used?
3. Sensor technology: What sensor technology and monitoring technologies are needed to accurately determine the water requirements of plants in public facilities? What or which sensors would be necessary to use no drinking water?
4. Platform: How could the collected data be summarised in a user interface that is as easy to use as possible? (A mock-up is welcome, but does not have to be programmed necessarily).
5. Responsible personnel: Which groups of people in the municipality or other relevant organisations would buy, use and control such a system, and how can their needs be taken into account? Which criteria would be most relevant for the personas?

Reward:

- If the idea is followed up, Endress+Hauser Germany invites the team to a workshop at its headquarters in the Basel area to further work on the topic.

Challenge Partner

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Challenge #6: Forest Guards in Darmstadt's Westwald

Satellite-based time travel in Darmstadt's Westwald to analyse the loss of vitality

The aim of this unique challenge is to record the changes in Darmstadt's Westwald (western forest) over the last eight years using the latest remote sensing technology. Climate change has had a major impact on this valuable forest and we need your innovative ideas to analyse the changes in vegetation and assess the loss of vitality. With the Sentinel-2 satellites of the Copernicus Earth Observation Programme, you can access high-resolution images in the visible and infrared spectrum to document the condition of the Westwald. Your solutions will help provide valuable insights for the protection and restoration of this threatened ecosystem. Be part of this exciting project and help to preserve and protect Darmstadt's Westwald. Let's make a difference together!

The Challenge:

Use satellite-based remote sensing technologies, in particular the Sentinel-2 satellites of the Copernicus Earth Observation Programme, to monitor the condition of the Westwald and analyse changes in vegetation in the forest over a period of eight years. Your task is to record and assess the loss of vitality in this forest area, which has been severely affected by climate change.

Background:

Darmstadt's Westwald is a valuable ecosystem that is suffering from the effects of climate change. The Sentinel-2 satellites offer the possibility to acquire high-resolution images in the visible and infrared spectrum. These images make it possible to detect and analyse changes in forest vegetation. Your goal is to quantify and map the loss of vitality and healthy forest cover over the last eight years.

Possible approaches:

Your solution may include developing algorithms to analyse sentinel images, identifying vitality losses in different forest areas, creating time series to track changes and providing concrete recommendations for forest conservation. Your work will help to provide important information for the protection and restoration of this endangered forest area.

Challenge Partner

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