



From bathing-water data to public decisions

What timely information and risk education are worth

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BlueAdapt · Bathing Water Directive Expert Group · 24 September 2026



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People can see most coastal risks — not this one

The weather

you can see it

The waves

you can see it

The crowd

you can see it

Pathogens

mostly you cannot

A laboratory result usually takes longer than a day.

So somebody has to measure the water, forecast it, and tell people what today's risk is.

The hazard is invisible to the person making the decision. That is what makes the information a public service.

The pathogens BlueAdapt studied — bacteria such as E. coli, enterococci and Vibrio, enteric viruses and cyanobacteria — are almost never visible at the beach; a heavy algal bloom sometimes is.



Three levers, and only one of them is usually priced

Mitigation

Clean the water.

Wastewater, storm overflows, the catchment.

Costed and appraised regularly.

Adaptation

Measure and forecast the water, and tell people.

Monitoring, models, warnings, apps.

Its benefits are rarely valued.

Education

Explain what the risk actually is.

Campaigns, schools, media, leaflets.

Almost never valued.

BlueAdapt put a value on all three — and on what happens when you combine them.

How these three typically enter economic appraisal, not a systematic review of appraisal practice. The three interact: they should be distinguished when they are measured, and assessed as the package people actually experience.

The United Kingdom: how to communicate risks?

The Safer Seas and Rivers Service — a free app from the charity Surfers Against Sewage. Around 600,000 users, 450+ coastal and river sites, real-time sewage-spill alerts.

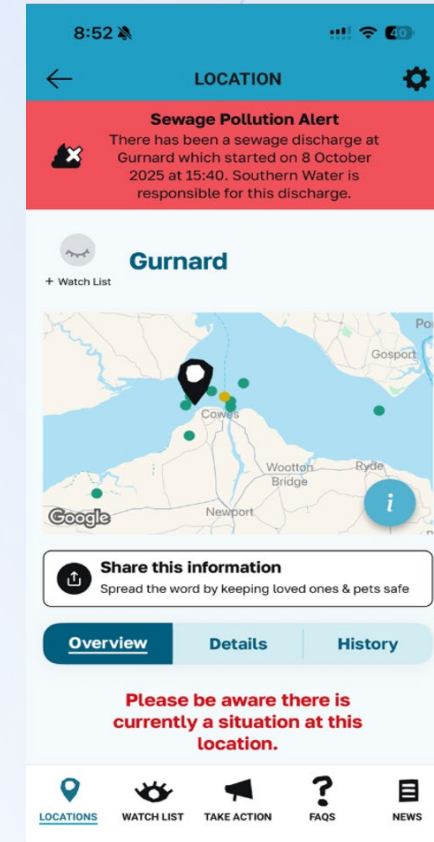
88%

of the 1,901 users who got a warning about a beach they meant to visit changed their plans.

About 45% stayed out of the sea; about a quarter went to a different beach.

From multiple methods: people already look for water quality before they swim, and there is “a lot of information noise” from competing sources. Trust in who issues the warning decides the response — and some, fatigued by frequent alerts, stopped reading them or uninstalled the app.

University of Exeter and University of Galway with Surfers Against Sewage · 2024-season survey of 2,837 users, 23 interviews



A live alert, as users see it



At the beach, the question is not what the season was like

Which site should I go to?

What is the advice right now?

What does it mean — and what can I do instead?

The four-year classification

Excellent · Good · Sufficient · Poor

Is this site generally well managed? Stable, comparable, published once a season.

Today's advice

Bathing advised against · short-term pollution notice

Should I swim here now? Changes within the season. Needs precision, a time, a source, and an action.

People act on both, but they are different decisions. Both already sit inside the Directive's information duties — the practical question is whether people get that information.

BlueAdapt does not set a required testing frequency or the accuracy any forecast should reach. What follows is about the value of the information and how it is presented.



Poland: what is that information worth, and does explaining help?

3,300+

coastal users of the Polish Baltic, surveyed over two years

Randomised

one group gets a full explanation of the health risk, another only a short quiz with feedback

Choice experiments

repeated choices between beaches, and between public programmes (mitigation, adaptation) — the trade-offs are what give us the values

The explanation worked as teaching. Straight afterwards, quiz scores were 7.2 out of 14 in the quiz group and 8.9 in the group that got the full explanation. Self-rated knowledge was also higher: 6.1 versus 5.0 on a 0–10 scale, a difference of about 1.2 points.

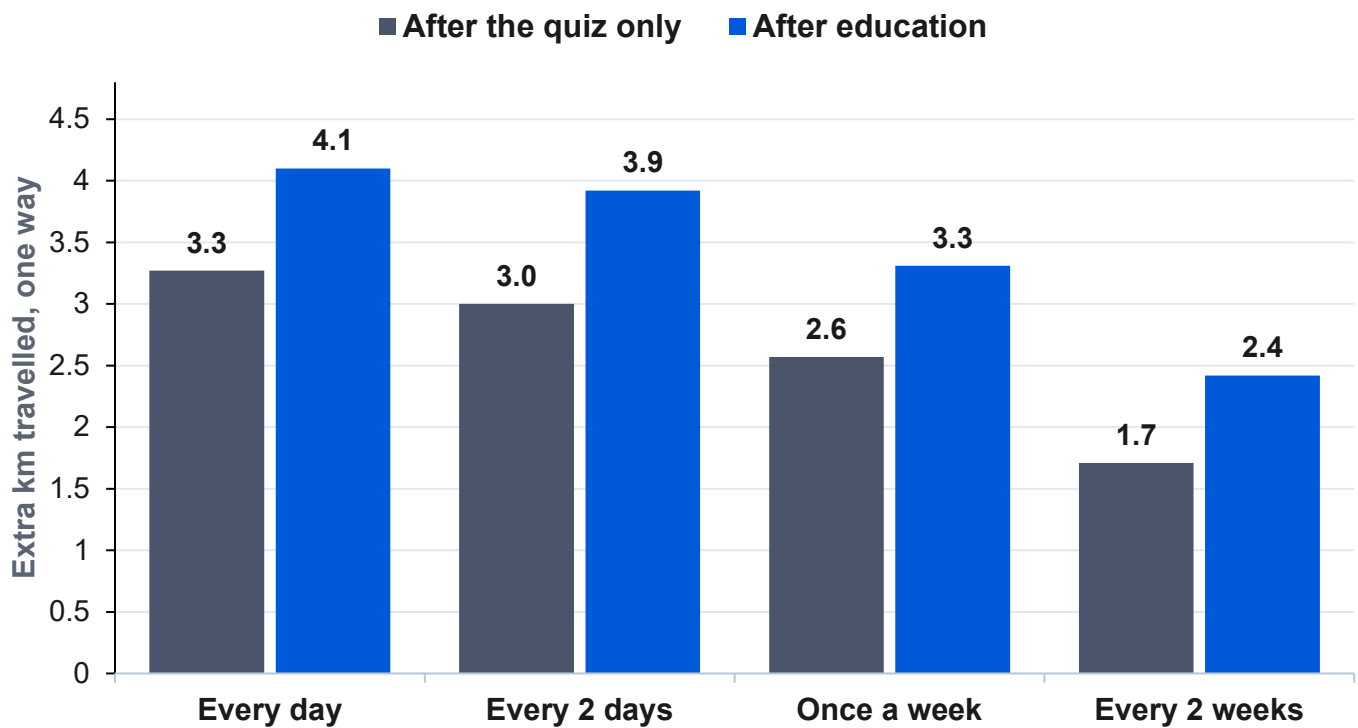
So we can ask a question you cannot ask from monitoring data: what is the information worth, and does explaining the risk change that?

University of Warsaw with Charles University. In the beach-choice experiment the reference group did a quiz with feedback; in the one-year comparison it also includes people who skipped the information round. Quiz scores are group means after the treatment. Models use sub-samples: 1,284 for beach choice, 1,492 for the one-year programme comparison, 1,106 for a separate general-population sample.



Current information has value — and education raises it

How much further people would travel for a beach where the water is tested ...



+25%

more value on daily testing, after one explanation

+0.7 to 0.9 km · ≈ +€0.6 bn a year, EU-wide

What each feature is worth — to one beach user, and to Europe’s beach visitors:

A lifeguard	4.15 km	€3.1 bn
Water tested daily	3.65 km	€2.7 bn
A designated site	3.02 km	€2.3 bn
A weather board	1.38 km	€1.0 bn

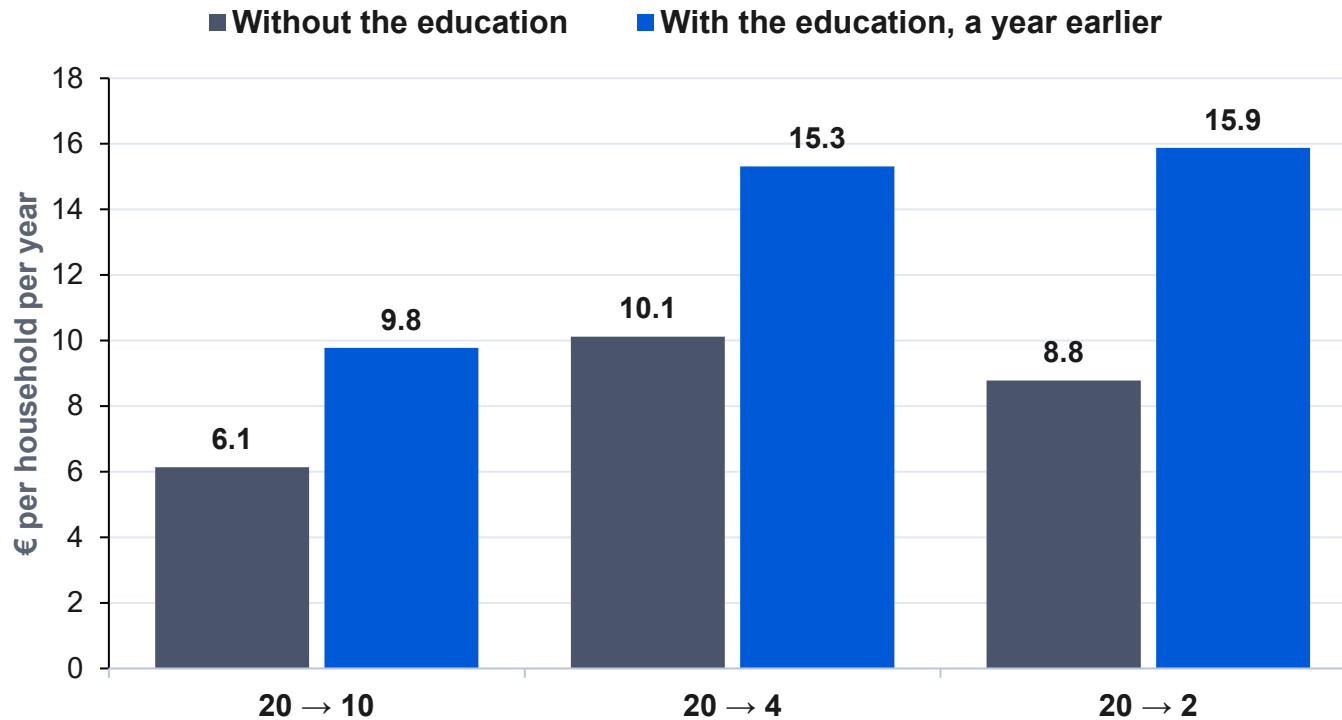
Being told the water is safe today is worth almost as much as a lifeguard.

Kilometres are estimated: 1,284 people, relative to a beach tested once a month, all four gaps significant. Euros are back-of-the-envelope: distance × the study's own travel cost (round trip) × 1.4 billion coastal tourist nights a year in the EU, assuming one beach visit per night.



A year later: more willing to pay for cleaner water

What they would pay to cut infections per 1,000 bath-days, from 20 down to ...



+€105 m

a year for Poland — what a single information package adds to the same programme

The full programme, per household

€15.5 → €22.8 a year (+48%)

Poland, all households

€220 m → €324 m a year

The bigger the health gain

the bigger the difference

1,492 respondents, wave 3 · 'full programme' = cutting infections from 20 to 2 per 1,000 bath-days, with twice-weekly monitoring · national aggregate scales to Polish households



And what people actually did: trips, beach visits, time in the water

With a panel this size we could only have detected changes bigger than about a third.

Trips, beach visits, time in the water

changes of -12% to +16%. None significant.

What a trip is worth to people

no detectable change either.

The people most at risk

fewer long trips, more local ones — a hint of substitution ($p \approx 0.06$ – 0.08).

We expected any change to be well below that — and that is what we find.

We changed what people value. The beaches they actually use did not change.

What the two levers are worth — and what education adds

	Value to one user	Poland, a year	EU, a year
Adaptation Testing the water daily instead of monthly, and publishing the result + education (+25%)	€2 a visit	€18 m	€2.7 bn
	+€0.44 a visit	+€4 m	+€0.6 bn
Mitigation Cutting infections from 20 to 2 per 1,000 bath-days, checked twice a week + education (+48%)	€15.5 a household a year	€220 m	€3.1 bn
	+€7.4 a household a year	+€105 m	+€1.5 bn

Education is not a third benefit to add on.
It raises the value of the two things we are already paying for.

Back-of-the-envelope. Adaptation: value per visit × 9 m assumed Polish coastal visits; × 1.4 bn EU coastal tourist nights, one visit per night assumed. Mitigation: coastal users' value per household × 14.2 m Polish and ≈202 m EU households, if every Member State ran the equivalent programme (a separate nationwide sample gives €17.3 per household). Polish values transferred unadjusted — illustrative, not an EU estimate.



Three things to build into water policy

1

Appraise the whole package

Cleaning the water, monitoring and forecasting it, and educating people are one intervention, not three budgets. And because what people will pay depends on what they know, an appraisal has to state what the public was told.

2

Supply the signal people are asking for

The demand is real and we can measure it. It needs monitoring and forecasting that give a current, local answer — not just a seasonal average.

3

Refine the signal, and test what works

Wording, risk categories, who issues it, the channel and the timing all change what people do. Keep what works, and decide who maintains it.

The efficient package is mitigation, adaptation and education together.

Communicating risk: do people understand it, and can they act?

Six choices every warning system makes — what we know, and what is still open

Design choice	What we know	Still open — worth testing
Who issues it authority · operator · NGO app · other users	UK Trust in the issuer decides whether people act on a warning.	Do official and user-generated alerts reinforce each other, or compete?
How it reaches people beach sign or e-sign · website · app push · SMS	UK 88% of warned app users changed plans. US 41% of beachgoers had never read a warning sign.	Which channel reaches people who never look it up?
When it arrives lab result (1–3 days late) · forecast · real-time alert	PL Frequent information is valued almost like a lifeguard. Practice Scotland, England and Copenhagen already forecast it.	What is a forecast worth — and what do false alarms cost in trust?
What it says status · cause · duration · what to do · alternatives	UK Suggesting an alternative beach changed little (early trial results).	Categories, colours or numbers — which do people read correctly?
What people already know nothing · one explanation · campaigns · schools	PL One explanation raised the value of daily information by a quarter; the knowledge faded within a year.	Does explaining change what people do, not only what they value? How often to repeat it?
Who it is for residents · tourists · families · swimmers · vulnerable	PL More vulnerable people value daily information about a third more.	Who cannot act on a warning — and what then?

Measure the whole chain: reach → understanding → trust → action → exposure → health. Most systems stop at reach.



Design a policy with us — and test it as it is rolled out

Mitigation, adaptation, education — or any combination. **Providing information is a policy too.**

1 Design the options

With you: what to offer, to whom, through which channel — and costs vs. benefits of each option.
Before anything is built, we can measure what has the highest net benefit to people.

2 Roll out and evaluate

Experiment, e.g., randomised versions inside a national app, website or SMS service. Single sites can also be test beds.

3 Measure what matters

Understanding, trust and what people do — which site, when, whether they go in. With health data: exposure and illness. And the value, for your appraisal.

**You get evidence for your own appraisal and reporting.
Required warnings stay available to everyone throughout.**

Monitoring produces information. Its public value also depends on whether people can understand it and use it.

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Thank You

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