# DEFINING A STRATEGY: AVOID, RESIST OR GIVE WAY TO WATER?

**HAZARD**

RAINFALL AND FLOODS

COASTAL DYNAMICS

**COST**

€ € €

low

**LEVEL OF SKILL**

medium

**When a property is exposed to the risk of flooding or coastal flooding, it's important to define a damage limitation strategy before a crisis occurs, based on the characteristics of the building and the hazard. There are three strategies for tackling water issues: avoid water (place buildings out of reach of water), resist water (prevent water from penetrating the building), or give way to water (allow water to enter the building in a controlled manner).**

## IMPACTS

These strategies are complementary rather than mutually exclusive. They are all an integral part of disaster risk management and are all essential:

- **Avoid strategy**: based on the precautionary principle, the indisputable priority is to avoid endangering people's lives and livelihoods.

- **Resist strategy**: primarily aimed at mitigating impacts, particularly for structures that are already built and exposed. However, if the protection of life can't be guaranteed with certainty, it's imperative to revert to the Avoid strategy.

- **Give Way strategy**: involves a change in our approach to space and the phenomenon of flooding. In other words, learning to coexist with water. Many examples can be found in flood-prone public spaces that are temporarily occupied by water and can be used afterwards, such as houses on stilts.

The Avoid strategy is considered by the European Centre for Flood Risk Prevention (*CEPRI*) to be the most efficient and cost-effective, as it eliminates all potential damage caused by water. Given that its implementation parameters are restrictive (see Installation Guide), it is only an option in certain situations. The next most cost-effective strategy is Resist, followed by Give Way.

Beware: **the wrong choice of strategy can have serious human and material consequences**. You need to be particularly vigilant and take into account the characteristics of the hazard when considering the Resist strategy, because if the building is not capable of preventing water from penetrating, the lives of the people inside could be put at risk.

It's important to note that **none of these three strategies is suited to potential strong current zones.**

## INSTALLATION GUIDE

To determine what strategy to adopt in the face of a risk of flooding and/or coastal flooding, it's advisable to carry out a preliminary flood vulnerability assessment. You can either call on a professional or carry out the assessment yourself. Doing it yourself involves evaluating the building's exposure to climate risks on one of the government platforms *Vigicrues* and *Géorisques*, which develop scenario models of future floods and coastal flooding, and assessing the sensitivity of the building using self-assessment tools such as those developed by *CEPRI*.

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The **Avoid strategy** can only be applied to new constructions, and should be preferred over the other two approaches, provided that it doesn't put anyone at risk. Where possible, it's preferable not to build in areas exposed to climate risks such as flooding and coastal dynamics. However, in situations where there is no other option, solutions include raising the structural elements of the building (construction on stilts, raised embankments, etc.).

The **Resist strategy** is applicable to existing structures. However, for future buildings, it's important not to rely exclusively on this strategy, which is unreliable due to the uncertainties associated with climate change and the potential effects of extreme weather. This is the most intuitive strategy for occupants, who tend to barricade themselves in their homes when water rises. Be aware, however, that in addition to appropriate communication on the risks, the effectiveness of this strategy is subject to a number of conditions:

(1) the maximum height of water must not exceed 1 metre;

(2) the duration of submersion must be limited (no more than 48 hours);

(3) the warning time (time between the announcement of the arrival of water and its actual arrival at the building) must be sufficient to allow temporary obstruction devices to be put in place.

Anti-water devices are part of this strategy and include cofferdams and non-return valves for pipes.

The **Give Way strategy** can be applied to both existing and new buildings. However, this strategy should be a last resort, as it exposes the interior of the building to significant potential damage. It should be implemented when it is **not possible to elevate the structure** or when the characteristics of the flood make the resist strategy impossible (i.e., the water has to penetrate the building to avoid excessive damage caused by the mechanical action of the water). If this strategy is chosen, water-resistant materials, such as concrete or steel, should be used to preserve the building's interior spaces and essential equipment and activities should be located on the upper floors.

## WEAK POINTS AND STRONG POINTS

⊕ Whatever strategy is adopted, it's **essential to** set up a refuge area to ensure the safety of building users. An awareness-raising campaign must also be run to **inform building occupants of the climate risks** to which they are exposed and **how to behave** in the event of a natural disaster.

⊕ As far as possible, the social interactions between the occupants of the building **should be strengthened**, as they will help to establish dynamics of mutual aid, essential to the survival of populations in the event of flood or coastal flooding.

⊖ Even properties not damaged by flooding may not be usable or habitable, because they can only be used if local **networks** (roads, electricity, etc.) are still operational. The water management strategy must therefore be combined with **measures to protect networks**, such as effective links or network protection systems.

## FIND OUT MORE

*Centre Européen de Prévention du Risque d'Inondation (CEPRI)* (2009), *Un logement "zéro dommage" face au risque d'inondation est-il possible ?*

*Centre Européen de Prévention du Risque d'Inondation (CEPRI)* (2010), *Le bâtiment face à l'inondation*

*Centre Européen de Prévention du Risque d'Inondation (CEPRI)* (2015), *Comment saisir les opérations de renouvellement urbain pour réduire la vulnérabilité des territoires inondables face au risque d'inondation ?*

*CEREMA & Grenoble Alpes Métropole* (2023), *Guide métropolitain de l'aménagement résilient en zone inondable constructible* (Metropolitan guide to resilient development in buildable flood zones)

French Ministry of Territorial Equality and Housing, Ministry of Ecology, Sustainable Development and Energy (2012), *Référentiel de travaux de prévention du risque d'inondation dans l'habitat existant.*

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