**// Project description**

*The site analysis revealed the importance of natural elements in Copenhagen.*

*Wind firstly operated by the wind farm and other except the water was far more profitable than threatening.*

*Indeed, because of the 200 days of rain per year, its floods, and a significant rise in sea level due in less than a century, Copenhagen undergoes water.*

*The idea is to exploit this element to catastrophic pace to make it beneficial to the city and its citizens.*

***The project***

**The Wave** operates a catastrophic scenario to raise awareness about the risks of global warming.

The project symbolizes the interaction between human action and the nature thanks to the strong gesture of artificial wave and the creation of a piezoelectric wall.

Their correlation allows nature to be independent and to enter into a cycle to generate and store energy depending on the weather.

Our device offers to stage the elements by creating a random show for the town recalls its commitment to the environment.

This is why our system is so direct that it is visible from the Little Mermaid, the main attraction of the city.

**The Wall: energy sensor**

Our project located Refshaleon water of the iconic statue of the Little Mermaid, is positioned as a symbol.

Our facility is a juxtaposition of piezoelectric columns forming a wall that can capture any kind of energy (rain, wind ...) to store enough energy to power an engine for creating an artificial wave.

Piezoelectric materials have the characteristic of producing energy by deforming, and conversely, to deform in the presence of a magnetic field .

The first application of piezoelectricity was sonar, at today it is possible to recover energy by slabs , and transform it into electricity for the passage of persons or vehicles. But also in front of a building to use all the natural energies that may exist.

Piezoelectricity certainly become the technology of the future electricity production without environmental impact and without constraint for the user.

***The Wall: A new attraction in Copenhagen***

On the site people can come to Copenhagen practice sports such as cycling but also come walking through the columns and watch the movement of the leaves that capture the energy.

The wall is in perpetual motion through the piezoelectric sheets constantly changing its appearance.

We show two possible states of the wall. The first in its most current state featuring the wind and rain, and the second showing the impact of the surf against the wall.

***The creation of the wave***

We propose a breaking wave dynamics that will be created by the displacement of a body of water over a distance of 600 m with a submerged mechanical pulley system-belts.

To create an artificial wave must act on several factors such as:

- The water level

- Flow

- The background

- And systems (which differentiate the type of wave)

It is estimated that over 1 meter wide wave of a period of three seconds and height 0.6 meters to a power of 1 kW. Power is nearly 600 times higher for a wave height 7.5 m. We hope to produce a wave of 4m and thus produce between 400 and 500 kW wave.

***Strategic perspective***

We opted to cut frankly the site depending on the orientation of the project.

The installation is positioned so that the show is visible from The Little Mermaid statue is a symbol and main attraction of the city of Copenhagen.

Indeed it is in this historic place, that people will be able to contemplate this wave materializing energy.

The frequency of the wave will be random and unexpected as it will trigger depending on the weather.

It causes surprise and offers a setting of natural elements reminiscent of the city's commitment to the environment.

**// Environmental impact statement**

***THE WAVE***

**-** Piezoelectric materials offer a reduction in fossil fuel consumption but also lower energy consumption which will generate an increase in the lifetime systems.   
This is one of the only "clean energy" that does not have a negative side effect due to energy consumption.   
More ecological impact due to the use of these systems is nil or almost nil in opposite to hydropower plants that completely alter the ecosystem by causing flooding and climate variations.   
In the long term, when the oil will be more expensive, piezoelectricity is one of the least expensive forms of electricity production.

**-** The project will be a symbol for the city, the project fits into the ecological approach of the city and enhances their attraction of the Little Mermaid.

**-** The project contributes to the environnement quality and gives outdoor spaces for users.

**-** The system proposes create a public space with interesting acoustic qualities of the wind on the one hand and on the other hand subtle visual ambiance du of water and sky reflection and movements of piezoelectric sheets.

**-** This type of installation does not require much construction work, it helps to minimize the impact of construction site on the environment. Also it cand be build quickly because columns can be installed in « kit ».

**-** The project allows convenient maintenance since the structure is in the open air.