



FROM **WAVE TO WAVE**  
*Atelier of Waters and Energies*



An initiative promoted by:



Partners:



In collaboration with:



Under the sponsorship  
of the University of Modena and Reggio Emilia



With the support of:

Comunità Montana dell'Appennino Reggiano  
Unione dei Comuni dell'alto Appennino Reggiano



Centre for environmental  
and sustainability  
education, accredited  
by Regione  
Emilia-Romagna



### ***From Wave to Wave - Atelier of Waters and Energies***

It is a place, which allows the exploration of both the physical phenomena and the material and expressive features of water and energy. It is situated in Ligonchio, the highest Municipality of the Province of Reggio Emilia, inside the National Park of the Tuscan-Emilian Apennines.

This project proposes an approach to science which invites children, teenagers and adults to look at things in an unusual way, to get curious, to ask questions about what apparently cannot be explained, to research and to make new attempts, to build up hypothesis and theories trying to check them through the experimentation.

We think at the Atelier *From Wave to Wave* as a beating soul where mind and hands, rationality and imagination work together, are interlaced and complete each other, thus generating new knowledge about the world.

An Atelier where we can observe the nature, we can explore and reflect about its potentials. In this sense the territorial specificity of the Park, the value of its autochthonous essences, the living animal species, its rivers and streams can become places of encounter and of investigation strongly interlaced with the system of the Hydroelectric Power Station in Ligonchio.

The project is fostered by the National Park of the Tuscan-Emilian Apennines in collaboration with the Municipality of Ligonchio, Enel and with the consultancy of Reggio Children.



# Project phases

**The project**, output of the work of an interdisciplinary team composed of pedagogistas, atelieristas, architects, designers and physicists, is inspired by the educational experience of the Infant Toddler Centres and Preschools of the Municipality of Reggio Emilia and by the experience of the Atelier Ray of Light, an experimental project about perception and physics of light, placed and developed within the International Centre Loris Malaguzzi.

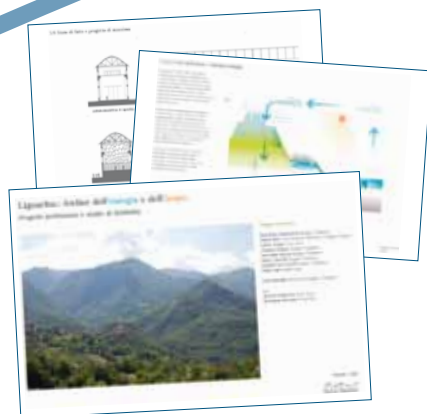
Just one big **atelier spread out** on the territory, where external and internal explorations and experimentations can be interlaced together and can feed each other, thus generating a wider sensitivity about the topics of science and ecology. These themes generate then the idea that man and habitat are in a constant interaction and mutual modification process.

## 2008

The National Park of the Tuscan-Emilian Apennines with the support of the Municipality of Ligonchio assigns to Reggio Children the drawing of a feasibility study concerning the creation of an atelier focussed on water and energy in Ligonchio.



1



2

## 2009

From Wave to Wave - Atelier of Waters and Energies *in progress*.

First experimentation of atelier, composed of a prototype of a learning environment about water and of a multimedia exhibiting path that illustrates the main topics of the feasibility study.

## 2010

Base camp opening

3

**The Base camp** proposes some magnifying glasses on the phenomena at the base of functioning of the Hydroelectric Power Station and on the natural phenomena, encountered in the different places of the spread out atelier, thus allowing new and more focussed experimentations.

**In the outdoor Camps**, instead, children and teenagers have the opportunity to explore natural phenomena through an environmental and seasonal, perceptive and emotional immersion that makes the experimentation acted in different forms.



4

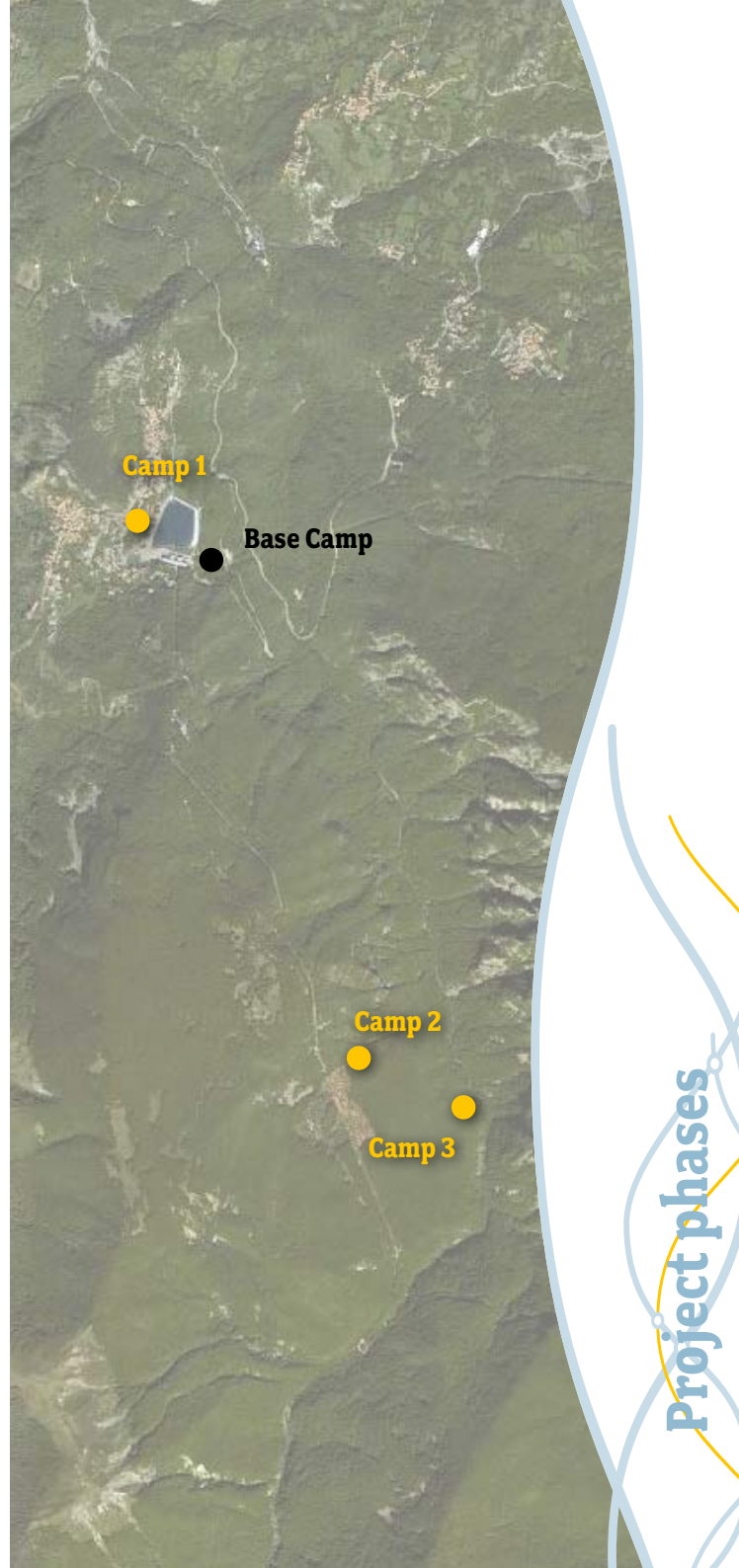
**2011**

Camp 2 and Camp 3  
very first experimentations

5

**2014**

Camp 1 opening



Project phases

## **National Park of the Tuscan-Emilian Apennines**

On the climatic and cultural boundary between Europe and the Mediterranean, an area rich in biological diversities, complex ecological systems and extraordinary natural habitats, it is above all a park “of the man”, whose identity is given by the output of a century-long activity of the resident communities. The landscape is characterised by numerous villages, a very thick network of trails, wide beech and chestnut woods, and artistic, cultural, agricultural and food production that constitute a precious heritage protected with high commitment by the Park.

## **Municipality of Ligonchio**

Situated within the National Park of the Tuscan-Emilian Apennines, it is placed at 1,000 m abs and it’s the “highest” Municipality on the Reggian Apennines. The village is situated between the valley of the Ozola stream and the valley of the Secchia river on the slopes of Monte Cusna (2,121 m) covering an overall surface of 61.6 km<sup>2</sup>.



## Enel Hydroelectric Power Station

In the Municipality of Ligonchio there are two working **Enel Hydroelectric Power Stations**. The hydroelectric Power Stations, constructed since the '20s, accompanied and strongly influenced the economic development of the territory and represent an important historical and architectural heritage of this place.

The Power Stations produce in the average 56.500 MWh every year exploiting the waters of the Rossendola and Ozola streams and of their numerous tributaries.

In the area there are two basins collecting the waters, one in Presa Alta (1,229 m) and the other in Ligonchio in front of the Power Station (1,000 m) and a charge basin in Tarlanda (1,207 m).



# Project topics

The Hydroelectric Power Station is the ideal starting point to understand some phenomena connected to water and energy.

Water and energy, actually, are two elements that since ever characterise the story of the Municipality of Ligonchio by qualifying its identity.

In this sense the project of the Atelier *From Wave to Wave* takes shape from the dialogue with the territory and it is inspired by this dialogue to build up **research topics**.

## Water

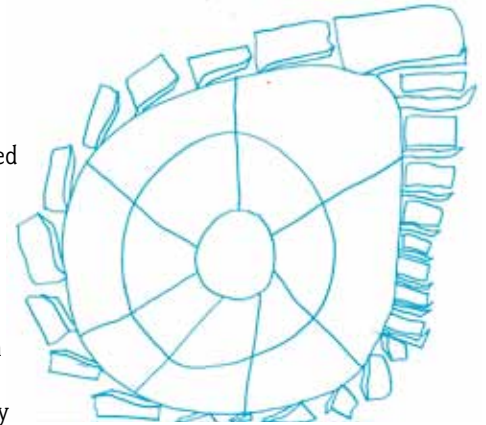
### *The cycle of water*

Water features supported men's life and the development of men's activities: its cycle influenced by the sun supplied energy for the development of modern society.

In nature water is widely spread out and takes different forms from the solid water (ice) to the liquid water (simply water) up to the gaseous state (water vapour).

Getting aware of these dynamics and processes is fundamental to understand how man's wit could generate extraordinary projects like the Power Station of Ligonchio.

In particular, the different Plugs and Stations, the Power Station, the basins are places where to observe, analyse and understand water as an element able to bring life (and energy) also in relation with the specific ecosystems inside the Park.





## Energy

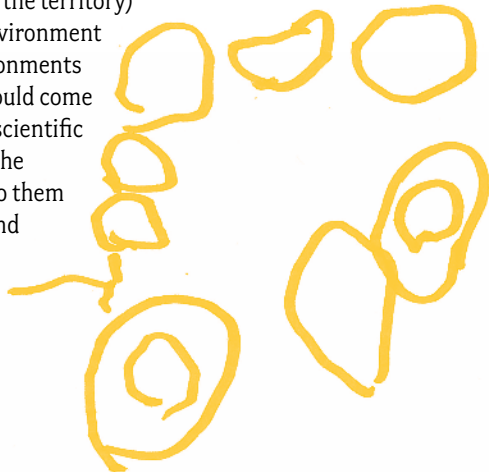
*Energy as modification of the state of matter*

The matter is everything that has a mass. Roughly said the energy is everything that, even if without mass, is able to produce physical effects on the materials.

The contest of the Power Station of Ligonchio is the starting point to understand not only what is happening uphill (the water cycle) but also downhill from the power production to support a path of education about energy and about sustainable development.

Thus a constant relation between the macro-environment (the Hydroelectric Power Station in relation with the natural environment and the territory)

and the micro-environment (the indoor environments of the Atelier) should come out, because the scientific phenomena and the concepts linked to them could belong to and cross the two dimensions.



## Complexity and casualty in nature

*Story of a water drop*

The complexity and the precision of the design inherent the natural world are often difficult to understand and to envisage but they deserve to be examined thoroughly and extrapolated as far as possible in the context of the Park and of the Power Station of Ligonchio.

For example we can consider a pair of water drops composing the rain falling on the Park of the Tuscan-Emilian Apennines, a ridge park: the two water drops are similar, they fall one close to the other, then they land on the ground. From the "landing area" they start a long journey towards the sea, in the case the drops are destined to directly reach the seaside. Which sea? It depends on the landing point: either on the Tyrrhenian or on the Adriatic side. A minimal variation of the landing area implies a drastic change of the path followed with variations of hundreds of kilometres. A water drop can reach the mouth of Po river, while its twin, which hits the ground only a few millimetres away, can reach the Tyrrhenian Sea.



## Credits

National Park  
of the Tuscan-Emilian Apennines - [www.parcoappennino.it](http://www.parcoappennino.it)

The Park, established in May 2001 to protect an area of 26.149 hectares, is situated in the Northern Apennines, between the Emilia-Romagna Region and Tuscany Region and covers four Provinces: Parma, Reggio Emilia, Massa - Carrara and Lucca.

Reggio Children s.r.l. - [www.reggiochildren.it](http://www.reggiochildren.it)

Reggio Children was established in 1994 as an international centre to promote the rights of children through pedagogical and cultural exchange between the early childhood institutions of the Municipality of Reggio Emilia and teachers, university professors, researchers and scholars from all over the world. It has contacts with more than 110 different Countries and as publishing house it has publications in 20 languages.

ENEL - [www.enel.it](http://www.enel.it)

Enel is the largest Italian electric power utility company with almost 30 million customers and heavily contributes to satisfy the energetic need of the Country. Since 2006 it is also the second gas public utility company at national level. The Enel Group works in 40 Countries in 4 continents and has more than 61 million customers in the electric and in the gas sector.

Cooperativa "Il Ginepro" - [www.ilginepro.coop](http://www.ilginepro.coop)

The social cooperative "Il Ginepro", established in 1987, deals with the introduction of disadvantaged people in the world of work and has its seat Ginepreto near Castelnovo ne' Monti. Since 2009 it manages, in collaboration with the National Park of the Tuscan-Emilian Apennines and Reggio Children, the Atelier *From Wave to Wave* in the Enel Hydroelectric Power Station in Ligonchio. This service contributed to keep young qualified people in the territory of the ridge. Currently 84 professionals and 6 collaborators are working in the cooperative and more of 50% are disadvantaged people.

## Project team

Carla Rinaldi, President of Reggio Children

Benedetta Barbantini, Research, Professional Development and Consultancy - Reggio Children

Mariaelena Bega, Pedagogista - Cooperative Coopselios

Olmes Bisi, Professor of Physics  
at the Ingegneria Faculty of Reggio Emilia - University of Modena and Reggio Emilia

Giulio Ceppi, Architect, creative and managing director  
Total Tool Milan

Claudia Giudici, Pedagogista, Responsible for Research,  
Professional Development and Consultancy - Reggio Children

Giovanni Piazza, Atelierista and designer of early childhood  
environments, consultant of Reggio Children

Marco Storchi, Management Consultant of Reggio Children

Isabella Veà Vecchi, Atelierista, Responsible of the Exhibits,  
Publishing and Atelier - Reggio Children

Tullio Zini, Architect, designer of the International Centre  
Loris Malaguzzi

## Group of the atelieristas

Annalisa Garbati

Daniela Giacobelli

Sara Scaruffi

Ilaria Gentilini

Giada Galassini

Then people created the volunteer association  
"Amici dell'Atelier delle Acque e delle Energie  
*Di Onda in Onda*" (Friends of the Atelier of Waters  
and Energies *From Wave to Wave*) aimed at  
fostering and supporting the Atelier activities.





The image features a large green right-angled triangle on a white background. The hypotenuse of the triangle runs from the bottom-left corner to the top-right corner. To the left of this hypotenuse, there are several vertical, wavy orange lines of varying lengths and thicknesses, resembling scribbles or stylized vertical strokes. The word "Tasca" is printed in a simple black font in the lower-right area of the triangle.

Tasca



It's possible to visit the Atelier  
**by reservation only**  
Cooperative "Il Ginepro"  
tel: 331/6149145 (from 9.00 to 18.00)  
email: [info@diondainonda.com](mailto:info@diondainonda.com)  
[www.diondainonda.com](http://www.diondainonda.com)

Follow the atelier on 

How to get to the Atelier *From Wave to Wave*  
in the Enel Hydroelectric Power Station Via del  
Lago, 1 – Ligonchio (Reggio Emilia)

- from Reggio Emilia: drive along the SS 63 of the Cerreto Pass up to Castelnovo ne' Monti, then either continue following the same road until Busana and follow the signs to Ligonchio or go to Carnola, Cerrè Sologno and follow the signs to Ligonchio
- from Modena: drive along the SS 486 of the Radici Pass up to Cerredolo, continue to Gatta, pista Gatta - Pianello and then follow the signs to Ligonchio
- from Tuscany: through Pradarena Pass (possible itinerary: Lucca, Castelnuovo Garfagnana, Sillano, Passo di Pradarena, Ligonchio), or through Cerreto Pass (possible itinerary: Aulla, Fivizzano, Passo del Cerreto, Collagna, Ligonchio)

