

## Climate ADAPT

### Aggregates – the essential ingredient for adaptation

With sea levels raising and the effects of extreme weather conditions, such as floods, droughts and uncontrolled fires, ever more present, one “ingredient” will be essential to protect people living along the coasts and on river-banks: aggregates. Aggregates are sand, gravel, crushed rock, as well as recycled, manufactured and marine aggregates and they are the key element in building dams, dikes and coastal structures combined with nature-based solutions. Aggregate extraction sites close to rivers can function as a retention area to lower the peak of flood waves and offer sand to fill urgently needed sand bags.



#### Essential

Aggregates have been used for millennia to build human infrastructure such as houses or roads, proof being not only the well-known animated cartoon ‘The Flintstones’, who were living and working in an aggregates extraction site – a quarry, but also most of the ancient buildings, from any time in history, made of stone.

Today, the aggregates demand in Europe covers approximately 3 billion tonnes annually and are used to build Europe’s essential infrastructure including homes, roads, railways, schools, or hospitals. With climate change effects impacting our lives, the adaptation has already begun in countries where the rise of sea levels or frequent flooding make their impacts felt.

In order to protect coasts from the rise of sea levels, dikes and other coastal structures are being built onshore, to lift the coastline a few meters above the sea level so that the human settlements and further

developments are protected, as the Netherlands have done for decades. Large structures might be built offshore, to brake the waves before they reach the coast<sup>1</sup>. Aggregates are also used in many parts of Europe against the erosion of coasts and for beach nourishments, large quantities of sand are usually poured to enlarge the beach into the sea in order to keep the water further away from the human settlements, but also to maintain touristic activities<sup>2</sup>.

In the Netherlands, aggregates extraction sites are considered retention areas for floods because they can retain millions of cubic meters of water, before this water reaches the cities and villages down - or upstream and cause disasters. Needless to mention that aggregates are used and will be used to build dams which again prevent floods downstream, as extreme weather conditions will cause more floods.

For all these purposes, aggregates are essential and it is important to make sure that these materials will be readily available when and where needed.

### **Sustainable**

Aggregates are not only essential for climate change adaptation, but make a significant contribution to sustainability. Aggregate production entails a negligible level of CO<sub>2</sub> emissions (3-5 kg/tonne produced) and companies are fully committed to sustainable development. Aggregates producers have a recognized track record, by the European Commission and environmental NGOs, of actions in response to climate change and in preserving biodiversity and the environment in general.

In order to act towards limiting the effects of climate change, aggregates companies have begun investing in the production of renewable energy on-site, installing wind turbines and solar panels on land or even on quarry/gravel lakes. Projects on the electrification of machinery are underway as well, with Nordic countries being quite advanced in this quest. Examples of different projects and investments to mitigate climate change in the aggregates industry are countless across Europe and there is a trend that will continue to grow in the upcoming years.

UEPG promotes sustainable aggregates extraction across Europe and demonstrates through its good practices that socio-economic activities can be part of the solution for nature conservation objectives. Water bodies in extraction sites are often thriving habitats for numerous species of fishes, amphibians and water birds. Quarry faces can host birds such as sand martins, but also larger species like owls, hawks or eagles. With the concept of temporary nature, mammals such as rabbits or foxes find their place in the unexploited parts of extraction sites too. In cooperation with NGOs, academia and other stakeholders, UEPG is now aiming to connect nature protected areas with aggregates extraction sites used as stepping stones.

Aggregates are part of the solution when it comes to climate change mitigation, adaptation and environmentally friendly economic activities and the industry is ready to contribute to the challenge of adapting to the inevitable effects of climate change in order to preserve life in Europe.

Visit UEPG's [website](#) and find out more about aggregates.

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<sup>1</sup>Dick Butijn (2020), Rising sea levels: The Haakse Dike – an escape route for the wealthy west? - <https://innovationorigins.com/en/rising-sea-levels-the-haakse-dike-an-escape-route-for-the-wealthy-west/>

<sup>2</sup>Porr.ro - Protection and rehabilitation of an area of the Black Sea coast near Constanta - <https://porr.ro/en/projects/protection-and-rehabilitation-of-an-area-of-the-black-sea-coast-near-constant/>