



# SAND! – Alternative sand production and reducing risk of dredging in Vietnam

## Client II – International partnerships for sustainable innovation

**Sand and gravel are the world's most mined resources. By far the most mining is done in the Asia-Pacific region. Sand extraction is often associated with negative consequences for the environment. In Vietnam, for example, dredging to extract sand from water causes massive environmental problems. The German-Vietnamese project "SAND!" develops technological and management-based methods for reducing the environmental impact of dredging in the Mekong Delta, while also generating alternative building material resources.**

### Sand shortage in emerging markets

Sand has become an increasingly global commodity. According to UN Environment, global sediment extraction for the construction industry is currently estimated at 50 billion tonnes a year. Sand is used not only in the building materials industry but also for beach building, shale gas production and the manufacture of many products, particularly in the electronics sector. Sand shortages are among the most pressing problems in the construction sector in emerging markets, including Vietnam. In addition, there are massive environmental problems caused by dredging to extract sand from water.

The Vietnamese market for environmental technologies and services is growing rapidly. The mining industry is increasingly looking for solutions for the safe and environmentally friendly use of scarce resources.

The "SAND!" project aims to develop both technological and management-based methods to reduce the environmental impact of dredging in Vietnam's Mekong Delta, as well as to develop alternative building material resources so that dredging work will no longer be needed in the mid-term.



Dredging in Vietnam.

A scenario analysis for minimizing risk will be developed based on modeled simulations and an actual state analysis

of the environmental problems caused by dredging. This scenario analysis will focus on stabilizing the water bed and the banks of the Mekong Delta as well as reducing the flood risk.

At the same time, a comparative environmental assessment for alternatives to sand extraction will also be carried out. This will include an evaluation of primary and secondary raw materials and an options analysis for exploiting alternative mineral resources, for instance, through recycling and crushed sand extraction. The existing barriers that currently prevent potential alternatives from being used are to be eliminated through the development of a regulatory framework for the future use of substitute mineral construction materials and crushed sand produced from solid rock. This will include quality assurance requirements for the use of alternative construction materials.

### Integrative approach to problem-solving

The partners involved will pursue needs-based goals and develop practical, marketable methods for the responsible extraction of raw materials as well as the environmental assessment and rehabilitation of mining sites. These methods will be incorporated into future mining projects in Asia. Existing contacts are to be strengthened, new business relationships established, and orders obtained for further engineering services during the project and after its completion. The province of An Giang serves as a reference example for further implementation in Vietnam and beyond. The interdisciplinary project calls for a cooperative approach, which in turn requires the practical and theoretical skills of the German and Vietnamese partners in very different fields. The approach includes stocktaking, conceptual and technological development, pilot implementation, and assessment of pilot application results as well as the necessary methodology and multiplication for

transferring the results into practice, an institutional analysis, and appropriate training for local partners.



Crushed sand extraction in Vietnam.

The project analyses sustainability potential both at individual stages along the value chain and at regional level with the overall aim of developing a best practice strategy.

Technical and political recommendations for action  
Solutions to the sand shortage problem are urgently needed, not only in Vietnam but throughout Southeast Asia. Given the rapid economic growth and the swift increase in demand for raw mineral materials for the construction industry in particular, environmentally friendly technologies are in great demand. Since these problems are relevant not only in the case study region but also in other parts of Vietnam and Southeast Asia, “SAND!” can serve as a model for other regions.

Overall, the project will contribute to sustainable development in Vietnam by improving sediment management in the Mekong River and related aspects concerning sustainable resource, land, and water management, including flood control.

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