

Experts from nearly twenty countries are gathering in Greece this month to kick off DESIRE, a large international project working to fight land degradation and desertification and to develop strategies for sustainable land use. Coen Ritsema, the project's initiator, explains what he wants to achieve.

A DESIRE FOR SUSTAINABLE LAND USE

Drought and forest fires threaten around 300,000 square kilometres of territory within the Mediterranean basin alone. Forest fires, intentional or otherwise, can turn a lush green environment into a barren desert. Fire destroys the soil structure by incinerating the organic matter in the topsoil and severely reducing the soil's water retention capacity. If this happens, rainfall can lead to heavy erosion.

Recovering burned areas is one of the many challenges facing DESIRE, a large international project working to fight desertification and land degradation. Participants include 28 research institutions, NGOs and policymakers from all over the world. The aim is to come up with alternative strategies for the use and protection of vulnerable areas. DESIRE will last five years and has funding of around nine million euros, of which the European Union will contribute seven million. "Together with one or two partners, we at Wageningen UR have started gathering research ideas," explains project coordinator Coen Ritsema of the research institute Alterra. "This seems to have caught on; everyone wants to participate. Science is only truly effective if you know how to combine forces. I find doing fundamental research tremendously rewarding, but above all I also want to make sure things happen."

And this call for action is sorely needed. Land degradation and desertification affects more than 250 million people worldwide. Climate change, water and wind erosion, large-scale timber extraction, forest fires and increasing soil salinisation are taking

their toll. Rapid population growth and an ever-increasing intensification of land use are degrading vulnerable lands. The vegetation disappears and that can lead to complete desertification. "Land degradation and desertification are two of the greatest global environment problems," says Ritsema. "One third of the world's land surface area is already more or less affected. More than a billion people will soon suffer the consequences if policies do not change."

Hot spots

As part of the research eighteen hot spots have been identified, covering a wide range of problems, from southern Europe to Australia, Chile and the United States. Ritsema: "We're adopting a practical approach. We will first inventorise local knowledge. Together with the local residents, we will study the regional methods and techniques used to prevent land degradation. We then want to exchange this knowledge between regions. Techniques developed by farmers in remote

regions of Mexico to protect the soil and retain water may also be useful in Botswana, and vice-versa. Scientists do not have a complete overview of all the traditional know-how; at the same time farmers are unaware of new scientific insights, which is why we want a mix of recipes. We also want to test new methods at the hotspots and follow the results long-term." These trial sites will be designated as demonstration sites. In addition, a web-based information system will be made available to various target groups.

DESIRE should ultimately lead to practical guidelines for responsible land use, both for farmers and land owners, as well as for policymakers and governments. "We are dedicated to the community as a whole," says Ritsema. "Searching for possibilities is one thing. But implementing these ideas on a large-scale also requires political support. Which is why the project consortium consists of a mix of partners, such as researchers, NGOs and policymakers."

Sustainable land use

In recent years, Ritsema has been doing research on the Loess Plateau in the China's Yellow River basin. "There are several problems at work here. The fast growing rural population farms very steep loess slopes more and more intensively. The steep slopes are extremely vulnerable to water erosion. On top of that, it rains less frequently, but in heavier downpours, which wash the fertile loess away. Mud, not water, flows through the rivers. Gullies cut through the landscape and grow into deep ravines, rendering the land useless for farmers."

In addition to water erosion, wind erosion is also a growing problem. Ritsema: "Beijing is regularly buried under dust during dry periods. This has prompted a series of initiatives currently in progress. The World Bank also is supporting, for example, the construction of expensive dams and buffer basins to retain more water and sediment on the plateau. But in the long run a more sustainable land development plan is needed, including perhaps only allowing fruit and nut trees to be planted on steep slopes. With computer simulation models, we can calculate the effect of all sorts of measures on a river basin. The solution chosen always depends on the country's financial capacity."

Ritsema is personally very interested in studying irreversible changes after which a system irrevocably degrades. "We would like to investigate how that works and how to use such knowledge to better manage our natural environment. Around four million euros of DESIRE's total budget is earmarked for universities. I'm hoping there will soon be 10 to 15 doctoral students around the world tackling this problem."

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