Project: European Climate Corridor

Background:

The proposed 'European Climate Corridor' project focuses on stemming the loss of biological diversity in Europe in relation to climate change. As a consequence of the increasing temperature and the changes to their natural environment, animals and plants will respond to climate change and try to migrate to habitats more suitable for themselves. These climate change adjustments and the associated migratory movements of species do not orient themselves according to national borders; the project will therefore need to build a pan-European network of climate corridors to facilitate the natural dispersal of species in response to climate change.

1.1. Approach and Justification

Over the past few decades, an increase in average temperatures of both the earth's atmosphere and the sea has been observed. This heat increase occurs mainly because of the increased emissions of greenhouse gases (GHGs) from burning fossil fuels, commercial-scale agriculture and livestock farming as well as other factors such as mass deforestation. The future levels of greenhouse gas emissions and the specific effect these will have on climate systems is difficult to estimate. Climate modelling can only project future possibilities by making assumptions about expected trends (see also 5th Assessment Report 2014, Intergovernmental Panel on Climate Change/IPCC). However, basic evidence from climate research indicates that the seasonal and spatial patterns of temperature and precipitation will change globally, which will have significant impact on ecosystems. Even today, natural habitats are transforming as flora and fauna try to adapt by migrating to new areas. While not completely superfluous, scientific inventories of ecosystems are now only valid for a limited period due to the unstable climate and migration movements of different species as a result. This means all efforts must be made to help environmental systems adapt to climate change quickly.

At the same time, it is important to note that environments with intact environments that possess a high degree of ecosystem connectivity, otherwise known as landscape connectivity, facilitate easier ecological adaptation compared to environments that are effectively fragmented into ecological islands with little or no connectivity. The fragmentation of natural habitats is one of the main causes for the loss of biodiversity. The primary aim of the project is therefore to link up large habitats throughout Europe by creating a network of climate corridors. This is an essential requirement for the conservation of biodiversity in Europe, independent of what extent of climate change we actually expect.

Furthermore, climate corridors not only support biodiversity but also contribute

towards climate change mitigation by acting as carbon sinks as well absorbing and storing moisture from the environment. In particular, this will be the case with land that is re-forested or developed back into wildlife habitats. As with all conservation projects, the project will also help to increase our understanding of nature, which will be crucial to the success of the project overall. That is why the project will also make targeted use of public relations work in order to include people in the development of pan-European climate corridors.

To that end, our intention is to name the project EUCLID after the Greek mathematician Euclid, who lived around 300 BC and whose most well-known achievement was the collection and creation of a unified body of mathematical knowledge. In a similar way to Euclid, this project wishes to bring together existing knowledge and expertise in conservation methods for the purpose of creating a network of pan-European climate corridors. One can also read the project name as a shortened form of 'European Climate Corridors' (EUropean CLimate CorrIDors).

As with all its projects, Naturefund wants EUCLID to be realized together with a network of collaborative partnerships and sponsors and especially with the people.

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2. Climate Corridors

The intention of the EUCLID project is to create three climate corridors across Europe going in a north-south direction and one climate corridor going east-west. These climate corridors will form a network in which habitats are protected and connected with one another. The criteria for establishing climate corridors will be the geological, ecological and biological conditions that best facilitate biodiversity, climate adaption and migratory movements.

2.1. The Basic Idea of the Climate Corridors

A corridor is a core area between 200m and 1,000m wide, similar to the Green Band, which forms the spine of each corridor. Just like a ‘rib-cage’, existing National Parks and other conservation areas can be integrated into the spine in form of an interconnected system of protected areas, so that exchange and migration of various species between different habitats is made possible. This basic structure is an idealized description that would always have to be adapted to suit the local circumstances.

In some cases, it may not be possible to connect land into the network immediately and as such it is acknowledged that the creation of the European climate corridors will be a lengthy process and will only be implemented in stages and undertaken regionally. Here it makes sense for a single European country, such as Germany, to be the first to initiate establishment of such climate corridors.

2.2. Belfort Gap

One climate corridor will be the regions north and south of the Belfort Gap (the Burgundian Gate) situated between the Vosges and the Jura mountains, which connects the Rhine Valley with the foothills of the Valley of Saône that were formed by the rivers of Ognon and Doubs. The corridor, which will extend in the direction south-west to north-east, is part of a system of trenches that make up the Mediterranean Mjøsen Zone. This zone is made up of fractures in the Earth's continental crust and traverses Europe from the Mediterranean Sea via Marseille, along the Rhine valley, and up to the Lake of Mjøsa in southern Norway, with a total length of 2,000 km. Evidence shows that during the last time it switched from a cold period to a warmer period, the Rhine-Rhone corridor was an important route between South-West and Central Europe enabling colonization with sub-Mediterranean species (see Image 1).

Image 1: Belfort Gap
Source: Wikimedia 2011

In future, it is expected that the Belfort Gap will remain the main gateway for the migration of species travelling from South-West Europe, especially those that prefer warm rather than hot climates. The Belfort Gap has particular ecological significance since this area acts as an important ‘stepping stone’ to facilitate the difficult climate-related switch between the Jura and Vosges mountain ranges and the Rhone and Rhine trenches. If species are to spread out this far north, then such stepping stones are particularly needed here. As well as restoring the rivers and meadows of the Rhone, Saône, Doubs and Rhine valleys as distribution routes, it will also be important to create a transversal axis between the Vosges Mountains and the Palatinate Forest in order to provide dispersal possibilities into the warm and dry biotopes (see image 2).

Image 2: River-meadow-corridor, Rheinaue
Source: Karlsruhe University

2.3 The European Green Belt

A second corridor is the European Green Belt - a conservation project that aims to protect the biotope network that developed during the Cold War in the shadow of the Iron Curtain. This former border area was left largely to nature throughout Europe, functioning as a sanctuary for many endangered species. With a total length of 12,500 kilometers, the Green Belt extends from northern Norway to the Black Sea and the border of Turkey, passing through 23 European countries (see map below). The European Green Belt proceeds, with exceptions of the steppe-areas, through all the biogeographic regions of the continent. 38 national parks are now located directly on the European Green Belt. However, several important areas are not yet designated as nature reserves and the integrity of the Green Belt is threatened by many factors. These include deforestation, the construction of transport infrastructures and intensive agricultural use. Yet, there are many areas that can still be secured for conservation.

Image 3: The European Green Belt
Source: European Green Belt

2.4. Trans-European Forest Corridor and East European Migratory Bird Routes

The third corridor is the Trans-European Forest Corridor that extends through Estonia, Latvia, Lithuania, Belarus, Poland, Romania and Bulgaria up to the Turkish border. Since the year 2000, forestry experts from BirdLife have charted the forests that have ecological value and have been left to grow naturally (or at least close to this) within Eastern Europe.

Image 4: Trans-European Forest Corridor
Source: NABU Germany

Their key findings include the following: rich deciduous and mixed forests in the Baltic States, alpine coniferous forests in the upper reaches of the Carpathians and montane beech forest and thermophile deciduous forest in the Balkans. These forests provide a natural habitat for forest-dependent animal and plant species. However, only eight percent of these ecologically important forests are currently under protection. Focus must therefore be placed on the protection and connectivity of more of these natural habitats for the survival and conservation of numerous species and as a means of creating an ecological corridor for the migration of species.

At the same time, one of the most important migratory bird routes in Europe extends from the Bosporus up to the Baltic States. Here, along the eastern

border of the European Union, the protection of ecologically important forests, as well as wetlands, can enable the survival and conservation of numerous species by helping to mitigate the negative impacts of climate change on migratory birds by protecting their migratory and rest habitats.

2.5. The Danube

As Europe's second-largest river, the Danube travels over 2,800 kilometres and passes through 10 European countries from its source in the Black Forest to where it feeds into the Black Sea. It provides a continuous connection from west to east, which means it is ideal for use as a climate corridor.

The wetlands and moors along the Danube count as some of the most productive ecosystems in Europe and are becoming more and more important due to their role as flood buffers and carbon sinks.

Image 5: The Danube's course
Source: Wikimedia 2013, Tom Gonzales

Large parts of the Danube region have been drastically changed from their natural state as a consequence of river straightening, pollution and drainage. Around 80% of the wetland area along the Danube River has disappeared already. Many moors were drained for agricultural and forestry-related purposes. In addition, land consolidation has isolated various moors and important habitats from one another.

In the last few years some of the areas along the Danube have been placed under nature conservation and some strategies to use the Danube sustainably have been implemented, including amongst other things the Danube River Network and the "ARGE Schwäbisches Donaumoos" in Bavaria. However, no-one has as yet come up with holistic, cross-border solutions that recreate the natural habitats and their vital environmental functions along the Danube.

4. Communication

For the success of the project as a whole, open and transparent communication is very important. It will help to promote willingness, acceptance and support for climate corridors from the European population. Numerous people can be reached and informed about the various nature protection initiatives not only through use of the traditional media, such as print, radio and television, but also by creating an online portal and integrating social media networks. Similarly, opportunities will be given for people to actively engage and so become directly and personally involved. As part of the initiative, Naturefund will create an interactive map that will show the daily development of the project and give people the opportunity to become involved and donate to help in the development of a particular area or take on a sponsorship role. In this way, people also start to identify with a particular conservation protection project.

5. Outlook

The construction of climate corridors facilitates the adaptation responses of species to the effects of climate change. Not all species will be able or willing to utilize these corridors for climate adaptation. Nevertheless, the project may still become an important measure for conserving biodiversity. Measurable conservation successes can be achieved through the protection and restoration of areas. With the help of effective communication and a transparent display of successful conservation projects, we hope to gain additional commitment from individuals, communities and organisations for the establishment of EUCLID, the European Climate Corridors.