



Mississippi Valley Restored Ecosystem Project



The project aims to reforest one million acres of the Lower Mississippi Alluvial Valley. The region is one of the most important ecosystems in North America, but has suffered sustained deforestation. Tree planting will reduce an estimated 200 tCO₂e per acre, as well as creating revenue for landowners, jobs in the area, and improving water quality and biodiversity. The project developer received the 2009 Innovation Award from the Southern Growth Policies Board.

About the project

The project area encompasses the Lower Mississippi Alluvial Valley, which includes parts of the states of Louisiana, Mississippi and Arkansas. The Lower Mississippi Alluvial Valley was once covered by 22 million acres of dense forests, but now supports less than 20% of the original as a result of sustained deforestation and a change to agricultural land use over the past 50 years.

The project plants trees on land that has been in continuous agricultural use for decades. Landowners who enrol in the project commit to protecting the trees, a system which creates regional scale to produce multiple conservation, wildlife, and ecosystem benefits.

The new forest will consist of 50% native cottonwood and 50% native hardwood trees. Cottonwoods are the fastest growing native tree, and can grow 8 to 12 feet in height each year. They act as a 'nurse tree' by protecting the hardwoods from direct sun, helping to accelerate the growth and quality of the forest. This speeds up the sequestration of carbon while creating habitat for wildlife within three years. Federal biologists estimate that in just seven years, the interplanted forest holds twice as many migratory birds than a comparable field planted with just hardwoods.

Limited harvesting is allowed after the trees have grown to the point where crowding may cause some tree deaths, so it is expected that cottonwoods will be removed in the first 25 years of the project. The result will be a native hardwood forest. The forested areas will be maintained over a period of 40 years.

In the absence of the project, continued use of the land for crops or pasture would prevent natural regeneration of trees. Planting of trees to convert the land use from agriculture to forestry would require significant capital investment. Also, conversion of land use to forestry would result in a decrease in income to landowners for decades. Carbon finance assists in getting over these investment barriers.

The Mississippi Valley

The hardwood ecosystem of the Lower Mississippi Alluvial Valley is one of the most important on the North American continent. Considered North America's rainforest, the forestland is a vital habitat for migratory birds and numerous plant and animal species. Forty percent of North America's waterfowl and sixty percent of all bird species migrate along the Mississippi River, although their population has been dwindling from habitat loss.

The Mississippi River is the largest river in the United States and the third longest in the world. It drains the water of approximately 40% of the United States. The river has an important commercial role: each year over 505 million tons of product valued at \$80-\$114 billion travels down the river.

Deforestation of the area accelerated with the arrival of mechanised agriculture following World War II. It escalated between the mid 1960s and mid 1970s, when prices for soybeans were driven upward and much of the land was converted to farmland. Intensive deforestation and change in land use over the last 50 years have dramatically affected the ecosystem.

The deforestation has resulted in a decline in the quality of the water and wildlife in the watershed because it has lost so much of its natural flood control buffer. According to the U.S. Geological Survey, for every 100,000 acres of farmland restored to its natural forest, the release of 1,550,000 pounds per year (23,250,000 pounds over fifteen years) of nitrogen and phosphorous into the Mississippi River would be avoided. A one million acre restored forest would prevent at least 12 million tons of soil annually from adding to the dead zone in the Gulf, according to estimates by the EPA.

Additional project benefits

Social and economic benefits

The project will provide sustainable income to low-income landowners. In addition, harvesting of wood products will create jobs for harvesters, wood processors, and those who support those wood product production activities. The University of Massachusetts Political Economy and Research Institute found that reforestation and sustainable forestation management produces 39.7 jobs per \$1 million invested, making it the biggest job stimulator of all the categories analyzed.

Water quality benefits

Water quality will greatly benefit from afforested riparian (river edge) buffers. Reforestation minimizes soil erosion and absorbs farm chemicals from surface runoff and groundwater. Furthermore, reforestation reduces sediment and pesticide contamination of streams.

Biodiversity benefits

Reforested land in the area contains significantly more varieties of species compared with land that has not been reforested. A study by the U.S. Forest Service states that the type of planting used in the project holds twice the amount of birds than other forms of reforestation.

Biomass offtake

Landowners participating in the project will be entitled to revenue from thinning the stand to produce biomass supply or other purposes. If the biomass is used for energy generation, the energy could displace generation from fossil fuel, providing the GHG benefit of reducing fossil fuel emissions. These fossil fuel emission reductions would be counted by the entity that reduces fossil fuel emissions so are not part of the project.



Stakeholder engagement

This is a collaborative reforestation project which has created robust partnerships with a leading conservation NGO. During the design phase of the program from 2004 to 2007, the project owner met with landowners, planters, private foresters, government agencies (federal and state), NGOs, land use lawyers, commodity experts, banks (national and local) and government labs such as the USDA Bottomland Hardwood Research Center. As a result of the project activity, the project owner was a recipient of the 2009 Innovation Award from the Southern Growth Policies Board.

About forest carbon

As trees grow, carbon is stored in biomass. About 50% of dry matter is carbon. Forests also release CO₂ during the process of 'respiration', but a forest that is growing (i.e. increasing in biomass) will always absorb more than it releases. This means that the sequestration potential of forestry schemes depends on growing and sustaining the forest. Forests account for over 80% of the CO₂ exchanged between the land and the atmosphere, therefore annually the world's forests exchange 20 times the amount of CO₂ emitted from the use of fossil fuels. Forests have a crucial role in the carbon cycle and in climate change mitigation. Unlike compliance carbon markets, which have been slow to attract forestry projects, the voluntary carbon market has moved decisively to integrate forestry.

