

# Afforestation

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**Afforestation** is the establishment of a forest or stand of trees in an area where there was no forest.<sup>[1]</sup> Reforestation is the reestablishment of forest cover, either naturally (by natural seeding, coppice, or root suckers) or artificially (by direct seeding or planting).<sup>[2]</sup> Many governments and non-governmental organizations directly engage in programs of *afforestation* to create forests, increase carbon capture and sequestration, and help to anthropogenically improve biodiversity. (In the UK, afforestation may mean converting the legal status of some land to "royal forest".) Special tools, e.g. tree planting bar, are used to make planting of trees easier and faster.



An afforestation project in Rand Wood, Lincolnshire, England.

## Biological process

Gap dynamics refers to the pattern of plant growth that occurs following the creation of a forest gap, a local area of natural disturbance that results in an opening in the canopy of a forest. Gap dynamics are a typical characteristic of both temperate and tropical forests and have a wide variety of causes and effects on forest life.

## In areas of degraded soil

In some places, forests need help to reestablish themselves because of environmental factors. For example, in arid zones, once forest cover is destroyed, the land may dry and become inhospitable to new tree growth. Other factors include overgrazing by livestock, especially animals such as goats, cows, and over-harvesting of forest resources. Together these may lead to desertification and the loss of topsoil; without soil, forests cannot grow until the long process of soil creation has been completed - if erosion allows this. In some tropical areas, forest cover removal may result in a duricrust or duripan that effectively seal off the soil to water penetration and root growth. In many areas, reforestation is impossible because people are using the land. In other areas, mechanical breaking up of duripans or duricrusts is necessary, careful and continued watering may be essential, and special protection, such as fencing, may be needed.

## World regions



Afforested botanical garden in Hattori Ryokuchi Park,  
Japan.

### Brazil

Because of the extensive Amazon deforestation during the last decades and ongoing,<sup>[3]</sup> the small efforts of afforestation are insignificant on a national scale of the Amazon Rainforest.<sup>[4]</sup>

### China

China has deforested most of its historically wooded areas. China reached the point where timber yields declined far below historic levels, due to over-harvesting of trees beyond sustainable yield.<sup>[5]</sup>

Although it has set official goals for reforestation, these goals were set for an 80 year time horizon and are not significantly met by

2008. China is trying to correct these problems by projects as the Green Wall of China, which aims to replant a great deal of forests and halt the expansion of the Gobi desert. A law promulgated in 1981 requires that every citizen over the age of 11 plant at least one tree per year. As a result, China currently has the highest afforestation rate of any country or region in the world, with 47,000 square kilometers of afforestation in 2008.<sup>[6]</sup> However, the forest area per capita is still far lower than the international average.<sup>[7]</sup> An ambitious proposal for China is the Aerially Delivered Re-forestation and Erosion Control System

### North Africa

In North Africa, the sahara forest project coupled with the Seawater Greenhouse has been proposed. Some projects have also been launched in countries as Senegal to revert desertification. As of 2010, African leaders are discussing the combining of national countries in their continent to increase effectiveness.<sup>[8]</sup> In addition, other projects as the Keita project in Niger have been launched in the past, and have been able to locally revert damage done by desertification. See [Development\\_aid#Effectiveness](#)

### Europe

Europe has deforested the majority of its historical forests. The European Union (EU) has paid farmers for afforestation since 1990, offering grants to turn farmland back into forest and payments for the management of forest. Between 1993 and 1997, EU afforestation policies made possible the re-forestation of over 5,000 square kilometres of land. A second program, running between 2000 and 2006, afforested more than 1000 square kilometres of land (precise statistics not yet available). A third such program began in 2007.

In Poland, the National Program of Afforestation was introduced by the government after World War II, when total area of forests shrank to 20% of country's territory. Consequently, forested areas of Poland grew year by year, and on December 31, 2006, forests covered 29% of the country (see: Polish forests). It is planned that by 2050, forests will cover 33% of Poland.

According to FAO statistics, Spain had the third fastest afforestation rate in Europe in the 1990-2005 period, after Iceland and Ireland.<sup>[9][10]</sup> In those years, a total of 44,360 square kilometers were afforested, and the total forest cover rose from 13,5 to 17,9 million hectares. In 1990, forests covered 26,6% of the Spanish territory. As of 2007, that figure had risen to 36,6%. Spain today has the fifth largest forest area in the European Union.<sup>[11]</sup>

## Iran

Iran is considered a low forest cover region of the world with present cover approximating seven percent of the land area. This is a value reduced by an estimated six million hectares of virgin forest, which includes oak, almond and pistacio.<sup>[12]</sup> Due to soil substrates, it is difficult to achieve afforestation on a large scale compared to other temperate areas endowed with more fertile and less rocky and arid soil conditions.<sup>[12]</sup> Consequently, most of the afforestation is conducted with non-native species,<sup>[12]</sup> leading to habitat destruction for native flora and fauna, and resulting in an accelerated loss of biodiversity.<sup>[3]</sup>

## Line notes

- [1] "SAFnet Dictionary | Definition For [afforestation]" (<http://dictionaryofforestry.org/dict/term/afforestation>). Dictionaryofforestry.org. 2008-10-23. . Retrieved 2012-02-17.
- [2] "SAFnet Dictionary | Definition For [reforestation]" (<http://dictionaryofforestry.org/dict/term/reforestation>). Dictionaryofforestry.org. 2008-08-13. . Retrieved 2012-02-17.
- [3] E.O. Wilson, 2002
- [4] A.Cattaneo, 2002
- [5] G.A.McBeath, 2006
- [6] "China to plant more trees in 2009\_English\_Xinhua" ([http://news.xinhuanet.com/english/2009-01/09/content\\_10631987.htm](http://news.xinhuanet.com/english/2009-01/09/content_10631987.htm)). News.xinhuanet.com. 2009-01-09. . Retrieved 2012-02-17.
- [7] "51.54 billion trees planted by ordinary Chinese in 27 years - People's Daily Online" (<http://english.people.com.cn/90001/90776/90882/6371092.html>). English.people.com.cn. 2008-03-11. . Retrieved 2012-02-17.
- [8] "Combining of green walls" (<http://web.archive.org/web/20100718235403/http://www.afriqueavenir.org/en/2010/06/17/african-leaders-discuss-great-green-wall-project-in-chadian-capital/>). Afriqueavenir.org. Archived from the original (<http://www.afriqueavenir.org/en/2010/06/17/african-leaders-discuss-great-green-wall-project-in-chadian-capital/>) on 2010-07-18. . Retrieved 2012-08-26.
- [9] "FAO Data" ([http://www.blatantworld.com/feature/the\\_world/most\\_re\\_forested\\_countries.html](http://www.blatantworld.com/feature/the_world/most_re_forested_countries.html)). Blatantworld.com. . Retrieved 2012-08-26.
- [10] "Mongabay.com: Deforestation tables and charts for Spain" (<http://rainforests.mongabay.com/deforestation/spain.html>). Rainforests.mongabay.com. . Retrieved 2012-08-26.
- [11] "United Nations Statistics Division - Environment Statistics" (<http://unstats.un.org/unsd/environment/forestarea.htm>). Unstats.un.org. . Retrieved 2012-02-17.
- [12] J.A.Stanturf, 2004

## References

- Andrea Cattaneo (2002) *Balancing Agricultural Development and Deforestation in the Brazilian Amazon*, Int Food Policy Res Inst IFPRI, 146 pages ISBN 0-89629-130-8
- Gerrit W. Heil, Bart Muys and Karin Hansen (2007) *Environmental Effects of Afforestation in North-Western Europe*, Springer, 320 pages ISBN 1-4020-4567-0
- Gerald A. McBeath and Tse-Kang Leng (2006) *Governance of Biodiversity Conservation in China and Taiwan*, Edward Elgar Publishing, 242 pages ISBN 1-84376-810-0
- Halldorsson G., Oddsdottir, ES and Sigurdsson BD (2008) *AFFORNORD Effects of Afforestation on Ecosystems, Landscape and Rural Development*, TemaNord 2008:562, 120 pages ISBN 978-92-893-1718-4
- Halldorsson G., Oddsdottir, ES and Eggertsson O (2007) *Effects of Afforestation on Ecosystems, Landscape and Rural Development. Proceedings of the AFFORNORD conference, Reykholt, Iceland, June 18–22, 2005*, TemaNord 2007:508, 343pages ISBN 978-92-893-1443-5
- John A. Stanturf and Palle Madsen (2004) *Restoration of Boreal and Temperate Forests*, CRC Press, 569 pages ISBN 1-56670-635-1
- E. O. Wilson (2002) *The Future of Life*, Vintage ISBN 0-679-76811-4 :D

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