

# Golf

## Benefits to the Environment

An aerial photograph of a golf course, likely the DLF Golf & Country Club, showing a large green fairway with several sand traps. The course is surrounded by lush green trees and vegetation. In the foreground, there are some dry, brownish bushes and a few green plants. The sky is clear and blue. The text 'Golf' is written in a large, white, sans-serif font at the top, and 'Benefits to the Environment' is written in a smaller, white, sans-serif font below it.

DLF GOLF & COUNTRY CLUB

The conservation and management of our natural resources is of vital importance - and golf has a significant role to play in this important endeavor. Golf can benefit the environment and the social wellbeing of its participants. This document serves to highlight the environmental benefits of well-designed, maintained golf courses and promote golf as a leader in sustainable sport and business.

Well-designed & maintained golf courses can:

- Preserve open space and remnant vegetation within both rural and urban environments
- Promote indigenous flora and fauna and the Indian landscape experience
- Protect and act as wildlife sanctuaries
- Utilize, treat, and enhance water resources
- Rehabilitate degraded landscapes
- Improve air quality, generate Oxygen, and moderate heat
- Protect topsoil from degradation
- Beautify and greatly enhance the environment

## 1. THE BIRDS AND THE BEES

In a Biodiversity study undertaken by \*Melbourne University (Australia) in 2015, golf courses stood out above all other green spaces for their contribution to habitats to flora and fauna. When compared to residential areas and nearby nature reserves, golf courses on average supported a greater number of different bee species, and consistently supported a greater diversity of bird species than nearby residential areas or urban parks.

In fact, the study found that golf courses supported almost twice the bird breeding activity of any residential and small park areas!

\*2015 Bio-diversity Study, Dr Caragh Threlfall, School of Ecosystem and Forest Sciences, University of Melbourne.

### Focus: Karma Lakelands Golf Resort

BEE-lieve this:

The Karma Golf Course has 118 bee boxes and the team started this program mainly to assist in pollination but got the honey as a byproduct. The honey generated has proved extremely popular and sales of the organic product generates funds for a local child-care facility on site used by regional day labor & caddies. Some of the honey is also used in the restaurant for Karma's signature drink along with Oranges produced on site.

Karma has invested in solar panels over the car parking which generates enough power to run the resort and a multi crore investment in an on-site effluent treatment plant produces water to irrigate the golf course. Water harvesting in Monsoon times directs all rainfall through an extensive drainage / lake system into old and new wells on site which directs the water back into the ground water table. All vegetable and garden waste is recycled through compost and grass clippings are returned to the soil. The varied bird life on site must be seen to be believed and since its creation by the Khurana family over 28,000 trees have been planted.



THE BEES OF KARMA LAELANDS RESORT



KARMA LAELANDS GOLF RESORT - THE LUNGS OF THE CITY

## 2. BIODIVERSITY

**WELL MAINTAINED TURF, ENVIRONMENTAL AND LAND MANAGEMENT PRACTICES MEANS THAT GOLF COURSES ARE HIGHLY IMPORTANT ECOLOGICALLY, RICH IN BIODIVERSITY OF PLANT AND ANIMAL SPECIES, AND ACT AS WILDLIFE SANCTUARIES PROTECTING FLORA AND FAUNA.**

Golf Courses provide a unique opportunity to create wildlife sanctuaries within their corridors and boundaries. These land masses preserve and enhance a rich variety of; native birds, native animals, fish, insects and plant life thereby enriching the ecology of the entire region. Amongst the fairways golf courses house significant areas of natural landscape consisting of natural grasses, trees, shrubs, wetlands and waterbodies. Careful management actively promotes desirable habitat via sound practices such as weed and pest control to eliminate competition on the more delicate endemic species. In broader terms golf courses act as important 'links' of green space across a region, particularly in an urban context, thereby providing vital wildlife corridors.

As urban spread continues future Indian generations really need such havens.

### 3. UTILISE, TREAT & ENHANCE WATER RESOURCES

*ALL ACROSS INDIA THE WATER TABLE IS DROPPING, GOLF COURSES PLAY A SIGNIFICANT ROLE IN THE CONSERVATION OF WATER, THROUGH EFFICIENT USE OF TREATED WASTE-WATER AND GREY WATER, AND ACTING AS A NATURAL FILTER OF STORMWATER AND GROUND WATER RECHARGE*

Turfgrass, together with the natural landscape trap sediment and pollutants before they enter common waterways. The containment of water on site helps in flood control and filtration whilst contributing to the recharge of aquifers and ground water which may otherwise pollute nearby waterways. DLF Golf, Karma Lakelands Resort, Delhi GC, Bangalore Golf Club, Clover Greens Golf Resort, Eagleton Golf Village, Prestige Golfshire, KGA Golf, Vooty Golf County, Hyderabad Golf Club, BPGC, Wellington GC, Kharghar Valley Golf are all just some of the Golf Courses that are utilizing treated effluent or grey water to irrigate their golf courses. Filtering effluent and stormwater through a golf course ultimately reduces the pollution and sedimentation of our oceans and waterways. The use of secondary treated effluent has the added advantage of supplying much of the nutrient requirement needed to maintain high quality turfgrass which in turn generates so many positives for the environment.

#### Focus: DLF Golf & Country Club

Bringing a new meaning to the golf term birdie:

Two world class golf courses have been established at the site employing the best International practices in environmental conservation embracing habitat enhancement, soil conservation, water conservation and increased well maintained green cover. DLF Golf is home to 40 resident Indian native bird species and 10 migratory bird species

Instead of tree cutting during the recent redevelopment of the golf course DLF transplanted over 5,000 mature trees, planted large swathes of native grasses and thousands of new trees / plants. DLF have invested in a complete in-house treatment plant for re-using regional effluent water (14 million litres per day capacity) and an elaborate network of drains and lakes to catch / harvest rainwater and after cleansing through the grass, recycling same into the ground, enhancing the water table for all of the regional community. Using integrated pest management practices and high levels of staff training DLF provides inspiration to many other facilities around India.



## 4. ENVIRONMENTAL REHABILITATION

**GOLF COURSES CAN FACILITATE THE REHABILITATION OF DEGRADED LAND PROVIDING A VIABLE AND SUSTAINABLE LAND USE WITH WIDE ENVIRONMENTAL AND COMMUNITY BENEFIT.**

Regularly occupying poor or degraded landscapes, golf courses assist in reversing degradation and providing management resources to the land for rehabilitation. Often economic limitations make it difficult to rehabilitate scarred and degraded landscapes such as landfill, quarries, Urban rubbish sites and barren / tree-less rural land. Golf courses provide a viable and sustainable use for land degraded over time by intensive use or mismanagement. Golf courses can contribute to the reinstatement of the natural process of a healthy environment by reconditioning degraded sites and restoring natural systems, significantly benefiting communities in providing a new use for this land with wide environmental, biodiversity and educational benefit.

Well maintained Indian Golf Courses use natural products like Soap Nut (controls Insects), Neem / Mysomeal / Sterilized Chicken manure (natural / organic) and gain needed nutrients through the use of treated effluent water (the grass cleaning out / using the nutrients from the water so clean water can return to the water table)



### Golf Courses

Home to the big and the small



## 5. IMPROVE AIR QUALITY / GENERATE OXYGEN & MODERATE HEAT

**THE AVERAGE GOLF COURSE GENERATES ENOUGH OXYGEN FOR AROUND 85,000 PEOPLE. TURFGRASS AND VEGETATION ALSO HAVE THE EFFECT OF REDUCING THE HEAT OF AN AREA – CRITICAL IN URBAN ENVIRONMENTS.**

Vegetation (Grass leaves & Tree / Plant leaves) have the unique capability of improving the quality of air we breathe as well as producing it. Grass produces oxygen we breathe through a complex process called photosynthesis which occurs in every type of plant. The amount of oxygen produced varies depending on how much “green leaf area / surface area” the plant has. Plants and certain bacteria produce oxygen with sunlight through photosynthesis. Plants absorb light through the pigment chlorophyll, which then sends that energy into the storage parts in the plant. Carbon dioxide, readily available in our atmosphere, is taken in through small openings called stomata. The result of the mix between carbon dioxide, water and sunlight is sugar and oxygen. The more stomata a blade of grass contains, the more carbon dioxide and sunlight it takes in, and the greater the amount of oxygen is produced. So well maintained grass like golf courses produce more Oxygen than unmaintained sparse grass areas

Turfgrass and trees also have the effect of reducing the heat of an area. Planting around buildings and carparks provide the dual benefits of a more comfortable environment, whilst reducing cooling costs.

### BREATHE EASY

Did you know that a 15m<sup>2</sup> (50' x 50') area of Turfgrass, produces enough oxygen in a year to sustain a family of four. This means that the average golf course green (1,800m<sup>2</sup>) produces enough oxygen annually to sustain 480 people.

Or to put it another way, the average golf course (80 Acres, or 323,749m<sup>2</sup>) produces enough oxygen annually to sustain over 85,000 people!

University of Maryland, Environmental Science and Technology, October 2018



### Golf Courses Around India

Are proud of their native bird populations



## 6. PROTECTING LAND DEGRADATION & ENVIRONMENTAL BENEFITS

*WITHOUT GROUND COVER SUCH AS TURFGRASS UP TO 85% OF RAINFALL FROM STORMS WILL ERODE VALUABLE TOPSOIL, CAUSING RUNOFF INTO NULLAS, RIVERS OR LAKES. IN INDIA WITH OFTEN HEAVY MONSOON RAINS WE SHOULD PREVENT THIS WHERE POSSIBLE.*

The degradation of soil appears in many forms such as acidification, salinity and erosion. Topsoil is vital in not only maintaining an environmental equilibrium but also in practical and economic terms for building materials and farming. However, as with all natural resources it must be managed in a sustainable manner. Vegetation plays a significant role in the sustainable management of soil. Vegetation, particularly turfgrass, successfully controls water's erosive power. A dense root and shoot system creates an organic thatch layer that filters and slows surface water runoff allowing more of this valuable resource to reach the ground water table. By feeding the ground water table golf courses are assisting the wider community whom depend on the ground water to live.

Native Indian Doob grass (Indigenous Bermuda Grass) is widely used around India for Golf Courses, creates a wonderful playing surface for sports and is superbly adapted to the wide variations of India climate with excellent drought tolerance (much lower water use) and lower maintenance requirements over imported grasses.



### Golf Courses

Creating oxygen and cleaning the air



### TURF PROTECTION

Research shows that without ground cover such as turfgrass, up to 85% of rainfall from storms will erode soil, causing run off into creeks and streams rather than soak into the soil and be available for plant growth.

An added benefit of turfgrass, assisting to control water's erosive power.

"Saving Soil", NSW Department of Primary Industries

This Brochure developed by the Indian Golf Industry Association

[www.igia.co.in](http://www.igia.co.in)

Special thanks to the Australian Golf Industry Council for reference text

