

# ECO FRIENDLY AND SUSTAINABLE GOLF COURSES







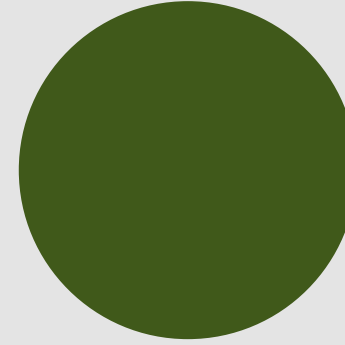
# **THE ISSUES WITH GOLF COURSES**

ISSUE 1

# LOSS OF NATURAL FEATURES

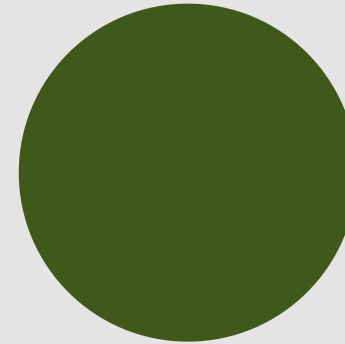
Loss of wetlands, woodlands and other natural features also means loss of habitats for countless wildlife species.

To improve sustainability we must ensure that biodiversity is restored and maintained



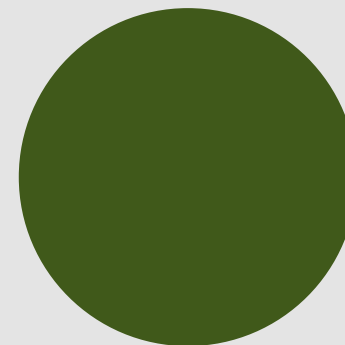
## **SOLUTION 1**

Grow plants of various species that are native to the area



## **SOLUTION 2**

Create nesting boxes for birds and selecting flowers that provide nectar for bees and butterflies



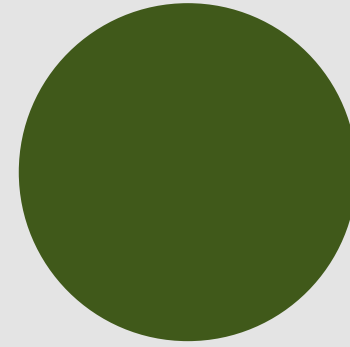
## **SOLUTION 3**

Connect all the natural areas (woods, meadows, rivers) to improve wildlife movement and integration

ISSUE 2

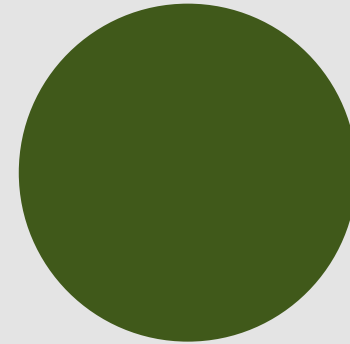
# INTENSIVE USE OF CHEMICALS

Courses use fertilisers and pesticides on their greenways to keep the grass looking green. The fertilisers runoff into bodies of water causing eutrophication which results in algal blooms that destroy ecosystems and can also contaminate groundwater stores.



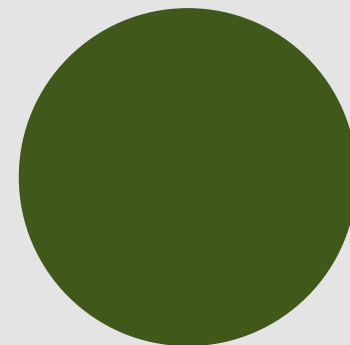
## **SOLUTION 1**

Consider the use of zoysiagrass which is a species that tends to be pest resistant, using this species will reduce the need for pesticides.



## **SOLUTION 2**

Introduce animals such as microscopic worms that can help eliminate grubs that are responsible for ruining turfs.



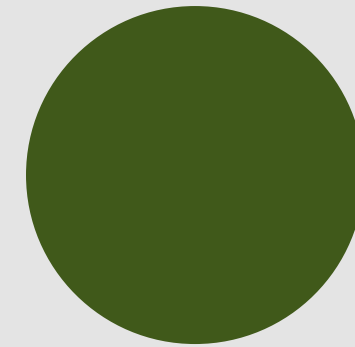
## **SOLUTION 3**

Use alternatives to chemicals such as boiling hot water or natural foam cocktail which can remove weeds.

ISSUE 3

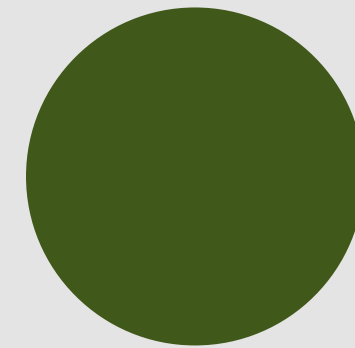
# INTENSIVE USE OF FRESH WATER

“Depending on the location of the golf course and the climate, an 18-hole course can use on average 2.08 billion gallons of water per day.” - TWL Irrigation



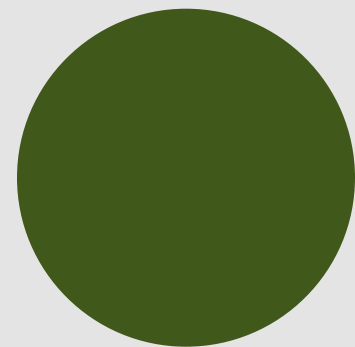
## **SOLUTION 1**

Use an alternative to fresh water such as municipal water or saline water.



## **SOLUTION 2**

Consider the inclusion of Buffalograss species; it requires less water than average. Seashore paspalum tolerates salt water, making seawater a possible source of water for irrigation.



## **SOLUTION 3**

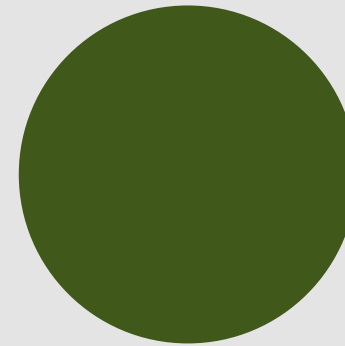
Remove the turf from areas that do not require it and replaces it with trees that have bird boxes. This provides a habitat for birds whilst bringing in more useful greenery.

Keep the number of water hazards to a minimum

ISSUE 4

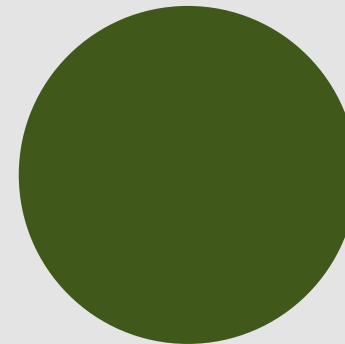
# INVOLVES COMPLEX MAINTENANCE

Mowing, irrigating, and fertilising are top priorities to keep a golf course healthy and functional. These frequent activities make it challenging for the original ecosystems to recover.



## SOLUTION 1

Designate areas near water hazards and irrigation lakes where synthetic fertilisers are not permitted to stop eutrophication.



## SOLUTION 2

Grass Carp (algae eating fish), raise them in the water hazards or irrigation lakes incase eutrophication occurs



# NATURAL CAPITAL

AND ITS EFFECT ON NATURE BASED SOLUTIONS



**NATURAL CAPITAL  
AND  
ECOSYSTEM  
SERVICES**



# NATURAL CAPITAL

Natural capital can be defined as the world's stocks of natural assets which include geology, soil, air, water and all living things.

With natural capital, when we take too much stock from our natural environment we also run up a debt which needs to be paid back otherwise there can be severe lasting and irreversible impacts like climate change. Furthermore we rely on natural capital to provide ecosystem services.

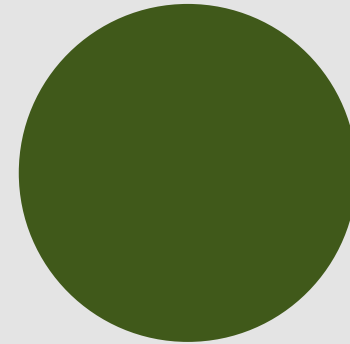
# ECOSYSTEM SERVICES

Ecosystem services are the benefits people obtain from ecosystems/natural capital for example trees absorb CO<sub>2</sub> and make the surrounding area cooler.

The total value of the World's ecosystem services amounted to twice as much as the global aggregate GDP – as much as \$124.8 trillion per year.

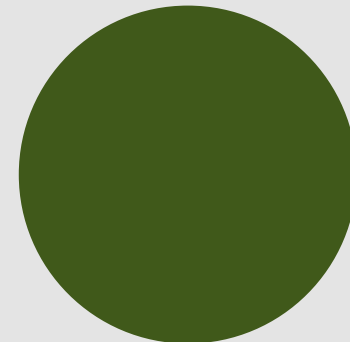
# PROBLEMS WITH NBS ON GOLF COURSES

A lot more damage is generated by golf courses to the environment than there are ecosystem services generated creating a net loss of ecosystem services which will result in the Natural Capital becoming not only an ecological liability but a social and economic liability too. For example:



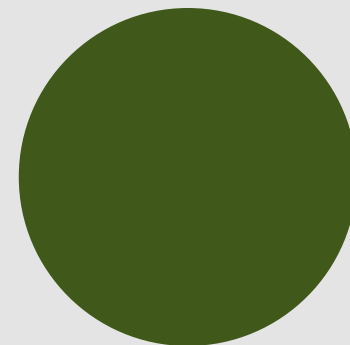
## PROBLEM 1

The deforestation for the creation of the course results in a release of carbon sinks which cause environmental trouble globally\_like global warming which has negative economic impacts and social impacts as well



## PROBLEM 2

The high water consumption can cause water scarcity regionally which could result in people struggling to afford water as the price would rise



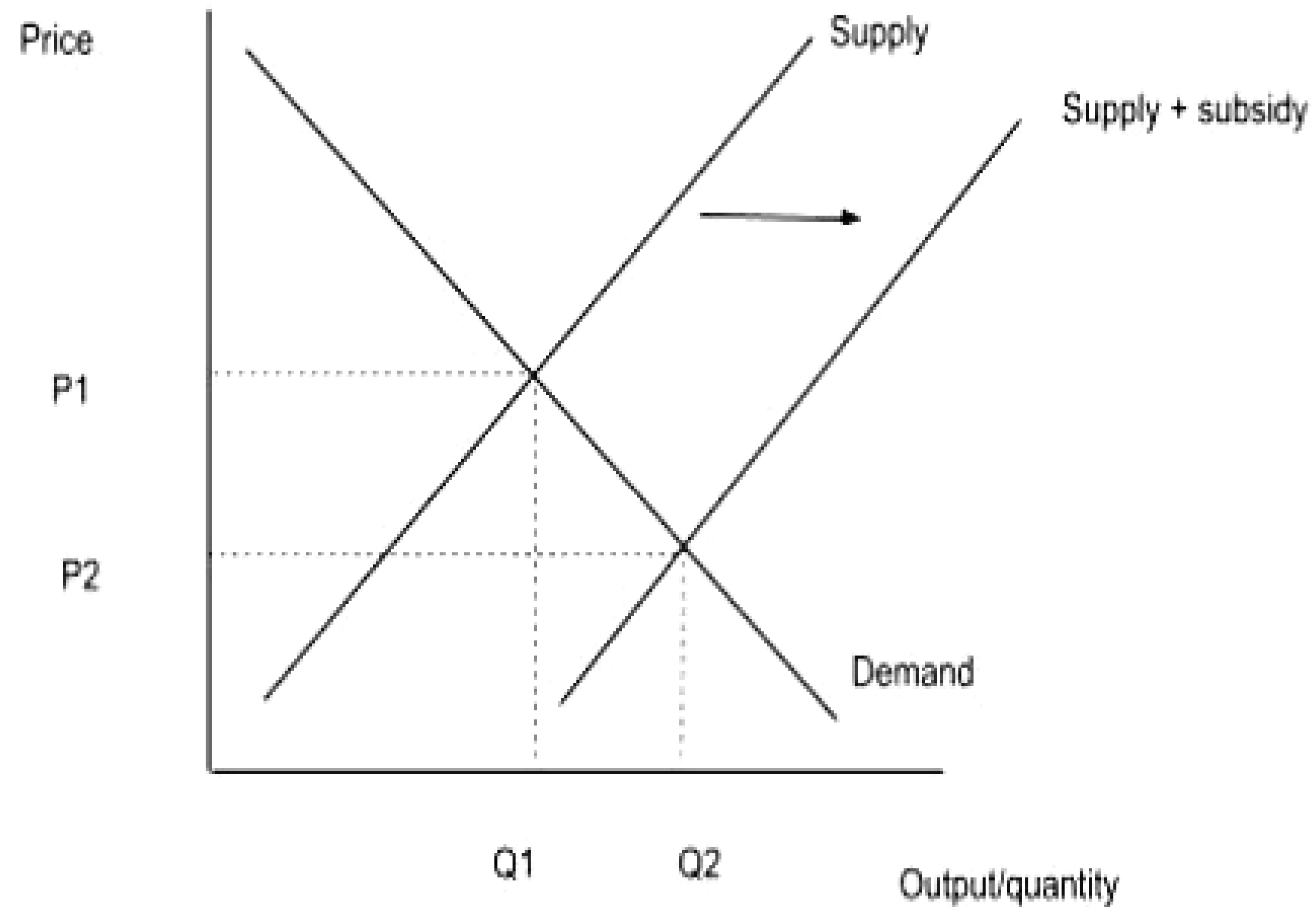
## PROBLEM 3

The use of pesticides can cause water pollution locally which could cause health issues



# GOVERNMENT SCHEMES





# SUBSIDISING

A subsidy is an amount of money given directly to a firm (in this case golf clubs) by the government to incentives the production/consumption of a good/service. They work by reducing the cost of the good/service so that more people are likely to use it.

As seen in the graph following the introduction of the subsidy the price for NBS has fallen and the output has risen in the market which would solve the issue of NBS not being used enough.

# INDIRECT TAXATION

An indirect tax is a tax on consumption rather than income e.g. VAT. Using this you could tax products that golf courses use that are not NBS like pesticides and fertilisers which would encourage the use of NBS instead which would also gradually cancel out the use of chemicals

As seen in the graph the price has risen and the output has fallen. Furthermore as this is a tax it generates revenue for the government which could be used to fix the damage caused by the chemicals used.

