

Opportunities and threats to the local economy from environmental dependencies

Final Report of the application of the LEED toolkit for New Anglia Local Enterprise Partnership

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1. Executive Summary

Purpose of report

This report identifies the key *opportunities from and threats* to the *economic plans of New Anglia Local Enterprise Partnership (LEP)* which stem from the *economy's dependence on the environment*. These are significant, but until now have had insufficient consideration in economic development planning, partly because the complexity of the evidence base makes them hard to assess. The evidence in this report is based on a thorough and systematic process, which draws on economic and environmental expertise and data as well as the experience of key partners in the local area. This process is called the Local Environment and Economic Development (LEED) process and is available to other LEPs.

Key partners

The key partners who have contributed to the project were:

- New Anglia LEP (information on the LEP's future plan/vision);
- Wild Anglia Local Nature Partnership (information/views on tourism and recreation, biodiversity and development);
- Norfolk and Suffolk County Councils (information on economic development, infrastructure, green infrastructure, disease and pest regulation);
- Norfolk Biodiversity Information Centre (data on County Wildlife Sites, BAP habitats, species of conservation concern);
- Suffolk Biological Records Centre (data on County Wildlife Sites, BAP habitats and species of conservation concern);
- The Forestry Commission (for timber production in the East of England);
- Natural England (for land cover information and National Character Areas); and
- The Environment Agency (for information on properties at risk of flooding, and water abstraction licences and quantities licensed and actually abstracted).

Economic context and plans

New Anglia's economic indicators suggest that the LEP area (Norfolk and Suffolk) falls behind that of the rest of the East of England and national economy. In the period 1998 to 2008, average annual economic growth in the area was around 4.8% compared to 5.4% in England. GVA per capita relative to all LEPs did not change significantly and the area's productivity levels continued to decline against UK indicators. The area's low-value oriented economic structure plays a significant role in determining this comparatively low economic performance. To some extent, geographical inequalities and poor connectivity also influence inward investment in key sectors, such as manufacturing and distribution, for example.

In order to achieve growth in the long term, promoting the expansion of high-value sectors has been identified as the main priority. In the short-run, the LEP area is focusing on moving on from the recent economic downturn. The Sector Growth Strategy for the LEP (2013) identifies nine key growth sectors. These are: Advanced Manufacturing; Energy; ICT; Ports and Logistics; Life Science and Biotechnology; Digital and Cultural Creative Industries; Food Drink and Agriculture; Financial Services; and Tourism.

The top ten opportunities identified

The top ten opportunities identified were:

- OA: Develop new markets for locally grown produce;
- OB: Enable investment in renewable energy and carbon capture and storage;
- OC: Establish a LEP wide defence system against invasive species and diseases;
- OD: Help manage flood risk through Green Infrastructure;
- OE: Improve broadband speed;
- OF: Improve water quality;
- OG: Increase public transport and routes for walking and cycling;
- OH: Increase water efficiency, recycling, management and awareness ;
- OI: Make new housing and industrial development more attractive and sustainable through inclusion of green spaces and corridors; and
- OJ: Promote sustainable farm management.

The top ten threats identified

The top ten threats identified were:

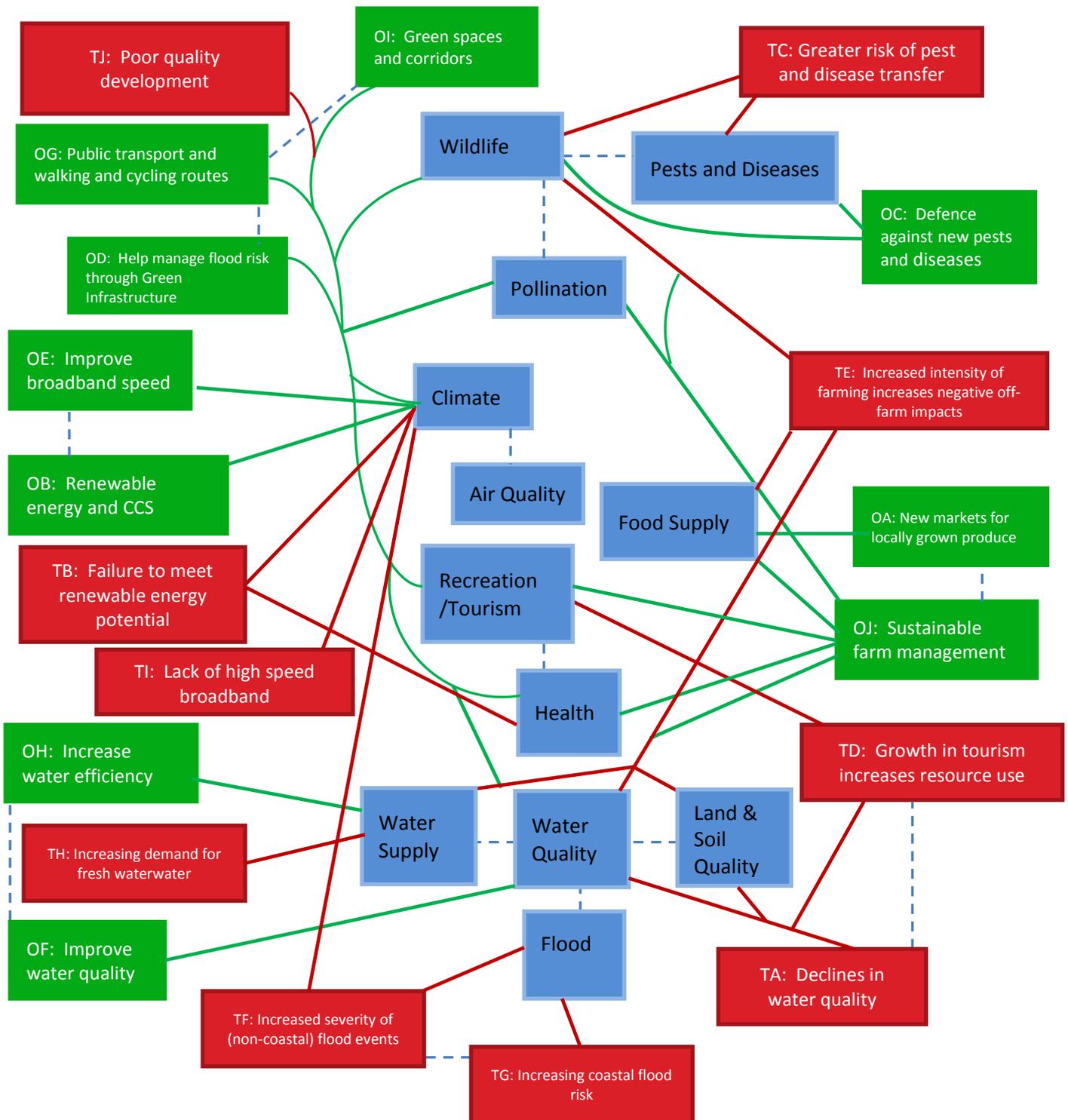
- TA: Declines in water quality;
- TB: Failure to realize renewable energy potential;
- TC: Greater risk of introduced pest and disease transfer/spread;
- TD: Growth in tourism increases resource use and increases pressure on environmental assets;
- TE: Increased intensity of farming increases off-farm negative impacts;
- TF: Increasing severity of (non-coastal) flood events;
- TG: Increasing coastal flood risk;
- TH: Increasing demand for freshwater;
- TI: Lack of high speed broadband; and
- TJ: Poor quality development reduces the attractiveness of the area and the quality of life it offers

What's in the rest of the report

This report now continues as follows:

- A mind map showing the relationships between the main opportunities and threats identified (page 5)
- A two page spread expanding on the opportunities identified above (pages 6 & 7)
- A two page spread expanding on the threats identified above (pages 8 & 9)
- One page for each opportunity and threat, offering more evidence, links with other opportunities and threats and potential solutions (pages 10 – 29)
- A brief explanation of the methodology behind the report, with a link to the underpinning evidence base (page 30).
- Information about how you could undertake a similar process in your area, including a staged process offering lower levels of commitment (page 31)

Overview of Opportunities and Threats



Opportunities Summary

The opportunities on this page are the top ten identified by the research, but are not ranked. Accordingly they are offered in alphabetical order.



OA: Develop new markets for locally grown produce

Increasing interest in local foods and foods with a specific provenance and/or tradition is an opportunity for the region to gain much more of the value added in the agriculture to retail supply-chain.



OB: Enable investment in renewable energy and carbon capture and storage

Renewable energy and carbon capture and storage are big economic opportunities for the area, but investment in transport infrastructure and grid capacity will be required to seize them.



OC: Establish a LEP wide defence system against invasive species and diseases

The LEP is an opportunity to join up work in the two counties on monitoring invasive species and diseases, allowing for early warning and eradication of threats to the local economy.



OD: Help manage flood risk through Green Infrastructure

A planned approach to green spaces and corridors in and around development can greatly reduce flood risk to properties, reducing insurance premiums and increasing the attractiveness of the development. This approach is cheaper and more resilient than hard flood defences alone.



OE: Improve broadband speed

Broadband has potential to encourage inward investment and promote business efficiency whilst reducing carbon emissions. Plans to roll out high-speed broad in the region are in place, and there is an opportunity to promote the region, and encourage businesses to explore tele-commuting.



OF: Improve water quality

Water quality is under pressure in the region, raising water treatment costs and negatively affecting recreation and tourism. There are a cluster of opportunities to improve water quality, working particularly with farmers and also with measures to reduce urban diffuse pollution.



OG: Increase public transport and routes for walking and cycling

New development and transport planning allow the opportunity for public transport and routes for active travel to be planned in. These reduce congestion on trunk routes, help to maintain a healthy workforce and form part of the areas work/life balance offer to potential investors.



OH: Increase water efficiency, recycling, management and awareness

Water availability is a major economic issue for the area, there is however significant scope for increased efficiency in the use of water, through better planning, the deployment of new technology and behaviour change.



OI: Make new housing and industrial development more attractive and sustainable through inclusion of green spaces and corridors

The area has an opportunity to undertake new development in a way which explicitly considers and plans for benefits offered by nature, protecting or enhancing them to produce attractive and resilient developments.



OJ: Promote sustainable farm management

Sustainable farm management is an umbrella term which incorporates a range of practices which ensure that the farm is not depleting its natural assets (such as soil), and reduce or eliminate negative off-farm impact. This may include diversification. There are benefits to farmers and the wider rural economy as well as for water companies.

Threats Summary

The threats on this page are the top ten identified by the research, but are not ranked compared to each other. Accordingly they are offered in alphabetical order.



TA: Declines in water quality

Water quality is already an issue in the region and added pressure from development and agriculture could lead to further declines. Significant negative impacts on the cost of treated water and on recreation and tourism are possible.



TB: Failure to realise renewable energy potential

The area has significant potential in renewable energy, but in order to realise this potential needs the appropriate accompanying infrastructure and the availability of funding and skills.



TC: Greater risk of introduced pest and disease transfer/spread

Climate change, and international trade and tourism, increase the risk of new pests and diseases entering the area. New Anglia's close proximity to Europe also increases the risk. Significant economic damage is possible where introductions are not detected and eradicated early.



TD: Growth in tourism increases resource use and increases pressure on environmental assets

Tranquillity and wildlife are major draws for the local tourism industry, and these features could be damaged if increasing tourism is not carefully managed. Any negative impacts of tourism on other sectors need to be managed, particularly traffic congestion and water use.



TE: Increased intensity of farming increases off-farm negative impacts

Movement towards more intensive high value crops could lead to greater use of chemical fertilisers, herbicides, pesticides and water which would damage the critical assets and sustainability of farms and increase off-farm negative impacts. This could also damage the attractiveness of the area to inward investment and tourism.



TF: Increased severity of (non-coastal) flood events

It is projected that summers may become up to 50% drier and winters up to 30% wetter with increasing unpredictability of rainfall. Flood risk may also be increased through development. Flooded communities suffer substantial losses in material assets, livelihood disruptions and psychological trauma. Raised insurance premiums could also restrain economic growth.



TG: Increasing coastal flood risk

Climate Change is leading to sea-level rise and increasing intensity of storms. At the same time there are significant changes to funding for flood defences in coastal areas. This places a significant proportion of the local area and increased risk from flooding.



TH: Increasing demand for freshwater

Increased demand for freshwater resources, which are already stressed in the region, and the impacts of climate change, could potentially lead to supply being unable to match demand. Water rationing would be detrimental to agricultural irrigation and tourism where demand is greatest in the summer months. It would also impact on the area's image.



TI: Lack of high speed broadband

High speed broadband infrastructure is increasingly becoming a requirement for businesses in the high-value-added creative and knowledge economies. For many other businesses it offers efficiency savings. High speed broadband is essential to the area's competitiveness, but also its transition to a low carbon economy, due to its facilitation of tele-commuting.

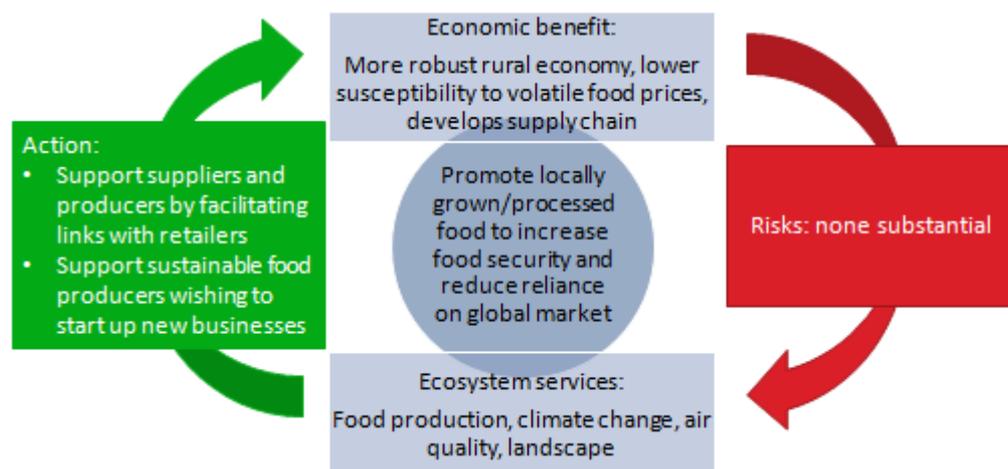


TJ: Poor quality development reduces the attractiveness of the area and the quality of life it offers

There is a danger that rapid development does not allow time for the benefits provided by nature be considered and built in. This could lead to poor quality development, which negatively impacts on image of the region, its quality of life offer, the resilience of its settlements and trading estates.

5. Opportunities in Detail

OA: Support for locally grown produce



The opportunity

There is increased demand in the UK for high-quality foods with a specific local provenance and tradition. This is relevant to the market that would like to buy local food, but also for exports across the country and beyond. There are also strong linkages with the tourist industry. For the local economy, catering to the market allows it capture much more of the value added in the agriculture to food production chain and increases the local density of commercial relationships. The following actions have been suggested in order to seize this opportunity:

- Support suppliers and producers of local produce by facilitating links with supermarkets and other retailers;
- Support sustainable food producers wishing to start up new businesses with a view to supplying the local market; and
- Promotion of food festivals which offer opportunities to sell out of season produce.

The consumption of locally grown food also reduces carbon emissions from transportation, and can be seen as part of the transition to a low carbon economy.

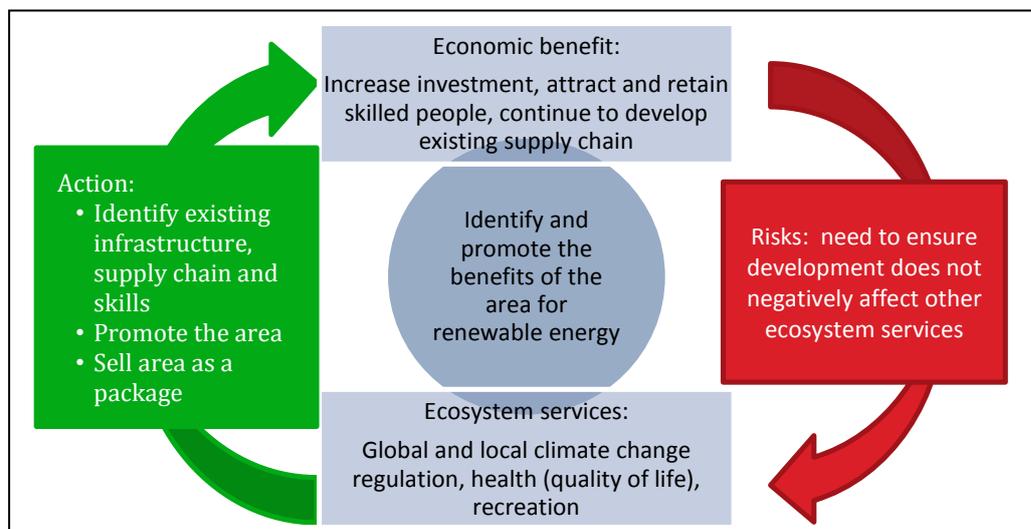
Importance and urgency

According to the Food and Agriculture Organisation (FAO), global population growth estimates suggest that 70% more food will need to be produced globally by 2050 in order to sustain current consumption patterns (based on 34% increase in population). This is likely to increase the price of food, which will have a significant impact on UK agriculture.

Associated costs and risks

No substantial costs or risks.

OB: Enable investment in renewable energy and carbon capture and storage



The opportunity

The renewable energy industry is expected to grow significantly in the next 20 years; the government has set a target for 15% of energy to be produced renewably by 2020. The region's coastal location and its current mix of renewable and traditional energy infrastructure put it in a good position to play a significant role in this market. For example, Government have designated sites in Great Yarmouth and Lowestoft as one of their Enterprise Zones with a focus on economic growth associated with the offshore renewable sector. Carbon Capture and Storage (CCS) is a developing technology which could use current oil and gas infrastructure. Anaerobic digestion for bioenergy has the opportunity for increased capacity within Norfolk and Suffolk using vegetable waste, livestock manure and fen products. The presence of current biofuel generators within the area will act as examples for new companies to invest in the area.

Suggested actions to seize this opportunity include:

- Identification of existing infrastructure and planned development, supply chain, skills, etc.;
- Promotion of what the area offers; and
- Sell area as a 'package' (covering assets and quality of life), backing up specific promotion.

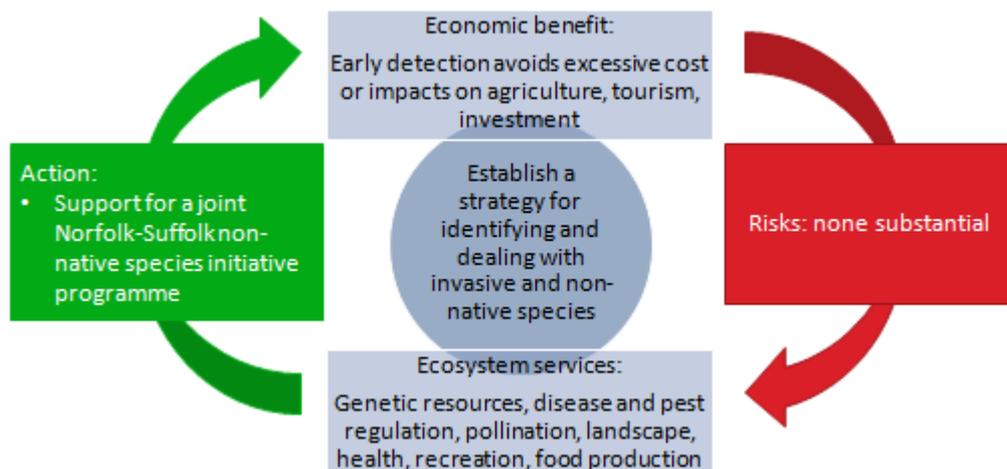
Importance and urgency

Renewable energy could be a significant part of the economy in twenty years time. The UK 2020 forecast suggests that the renewable energy sector total capital value will be over £150 billion. This sector is developing quickly so engagement is urgent.

Associated costs and risks

Renewable energy and carbon sequestration makes a significant contribution to reducing greenhouse gases in the atmosphere, which is essential to protect many essential environmental benefits, from flood control to food production. However there are local environmental impacts which need to be considered and managed, and any negative impact on the attractiveness of the area also needs to be considered.

OC: Establish a LEP wide defence system against invasive species and diseases



The opportunity

Climate Change and international trade are increasing the number of foreign species and diseases present in the UK. Many of these introductions are harmless, and some may be beneficial, but some have the potential to do significant economic damage. For example, invasive aquatic plants can block out light and clog waterways, which kills native wildlife, makes navigation difficult and may increase the flood risk from rivers. This sort of impact could be hugely detrimental to the tourist industry.

Norfolk already has a programme to promote a strategic approach to the early identification and eradication of pests and diseases. The extensive connections between the two counties make collaboration to increase the area's 'biosecurity' an important opportunity.

Importance and urgency

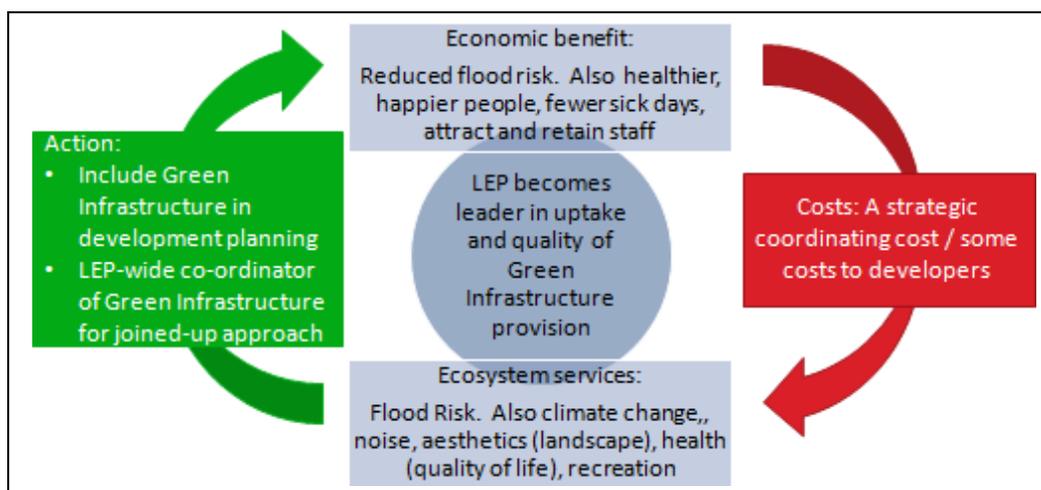
The effects of invasive species and new diseases can be severe, and impact a wide range of sectors. For example, In Britain alone invasive species already cost the economy around £2 billion per year. It is not possible to quantify the cost of new invasive species and diseases should they become entirely out of control, but there is the potential for it be significantly larger. Early detection and prevention is by the far the cheapest approach.

Due to the extensive coastline and proximity to Europe, coupled with the well-connected water environment of the region, the threat of invasive species and diseases is high. The area was the first to record Ash die back, and has had the highest number of reported cases. Projections of climate change and increases in recreation and tourism in the next 20 years represent severe risks to the invasion and spread of non-native invasive species and diseases.

Associated costs and risks

A successful preventative programme would be relatively low cost (estimated at potentially £10,000 – 15,000 per year) . There are no significant risks to pursuing this opportunity.

OD: Help manage flood risk through Green Infrastructure



The opportunity

Opportunity OI focuses on the benefits of a planned approach to green spaces and corridors within development to the attractiveness of the area, and to active travel. This approach can also offer important benefits in terms of managing flood risk, by providing somewhere to hold, or divert water away from valuable assets and easing the pressure on hard flood defences. Working with nature in this way can provide much more resilient settlements and commercial accommodation. This approach would also deliver the benefits identified in OI.

The following actions have been identified to seize this opportunity:

- Ensure that high quality Green Infrastructure is included in development planning; and
- Support for an LEP wide coordinator of Green Infrastructure to ensure a joined-up approach to the design and inclusion of Green Infrastructure in new developments which aims at a more strategic approach (working with local Councils and Wild Anglia LNP).

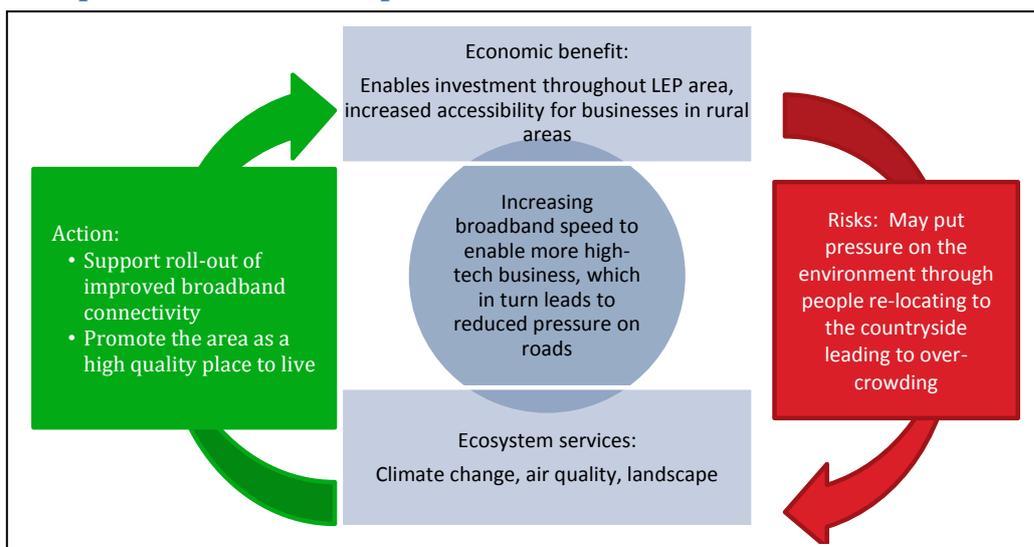
Importance and urgency

One of the key functions that natural green spaces and Green Infrastructure are expected to fulfil is managing flood risk. Around 20% of the Anglian Region is classed as flood zones, with most of this area lying below sea level. This includes 30% of the most productive agricultural land, around 400,000 properties (125,000 residential and 257,000 non-residential) or 11% of total properties in the area and 18,000 other assets such as electricity transmission assets and water infrastructure in the Anglian region. Climate Change is expected to increase flood risk through rising sea-levels and increased frequency of high-intensity rain events. If new development is not carefully planned it can suffer from flood risks and increase the risks to other properties downstream.

Associated costs and risks

This approach requires effective land use planning, and the support of developers for the onsite elements of Green Infrastructure. This may involve some opportunity cost in terms of land not developed, and some landscape costs, but will increase the attractiveness and resilience of the development.

OE: Improve broadband speed



The opportunity

Broadband speed is variable across the region, and roll out of high-speed broadband will have benefits for the economy and knock-on potential benefits for the environment. The following actions have been identified to seize this opportunity:

- Support the roll out of improved broadband speed;
- Promote the area as a quality place to live with improving broadband speed; and
- Encourage businesses to consider whether telecommuting works for them.

Importance and urgency

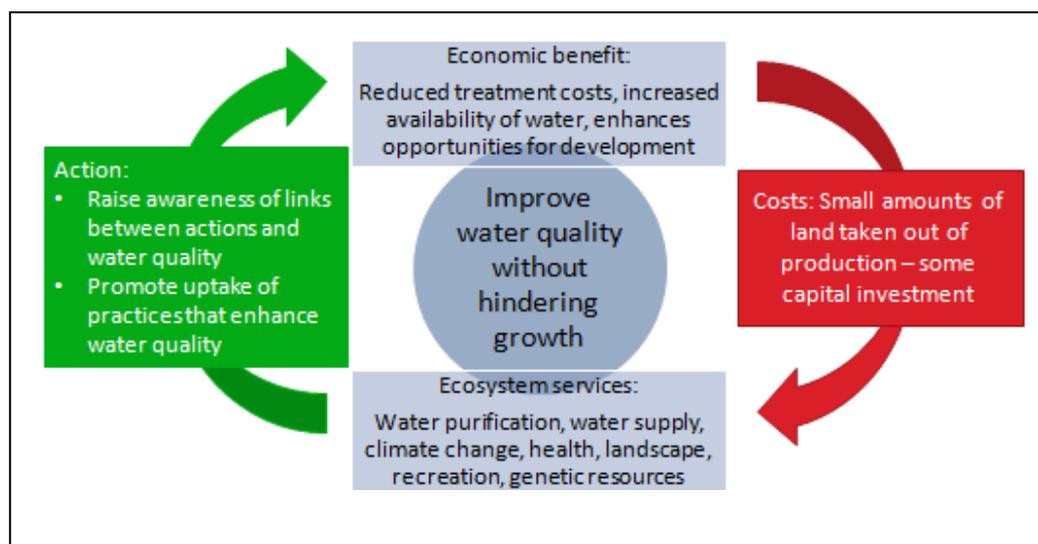
Connection to high-speed broadband can overcome many of the economic disadvantages of rurality, allowing high-value added creative and knowledge economy businesses to start in, or move to, attractive rural areas like New Anglia. The economic urgency is driven by the desire not to be left behind as digital communications speed up.

High speed broadband also has other economic benefits. It makes tele-commuting viable which can reduce congestion, increase the attractiveness of the area as somewhere to live and reduce carbon emissions. It should therefore be viewed as urgent from this perspective as well.

Associated costs and risks

There is a cost associated with rolling out high-speed broadband, and costs are higher per unit in rural settings. In terms of risks there is the potential that the new infrastructure could impact negatively on perception of the landscape. Increasing broadband speed may encourage more people to relocate to the countryside, putting added pressure on the rural environment.

OF: Improve water quality



The opportunity

Water quality refers to the extent to which a water body is free from pollution. It is important because poor water quality increases the treatment costs of supplying clean water to businesses and the public. Water quality is also important to the biological health of rivers, lakes and broads with important implications to support recreation and tourism. Suggested actions to seize this opportunity are;

- Work with the agricultural sector to raise awareness of nutrient and pesticide pollution, support the take-up of technologies and practices which minimize pollution and work with the sector to maximize the take-up of funding to support this transition.
- Work with businesses and home owners to raise awareness of urban diffuse pollution and support take up of technologies and practices which reduce it. For example, natural processes such as swales, detention pools and sand and soil based filters are a cost-effective way of reducing pollutants entering water courses. These processes are used as part of Green Infrastructure and Sustainable Urban Drainage (SUDS) approaches.

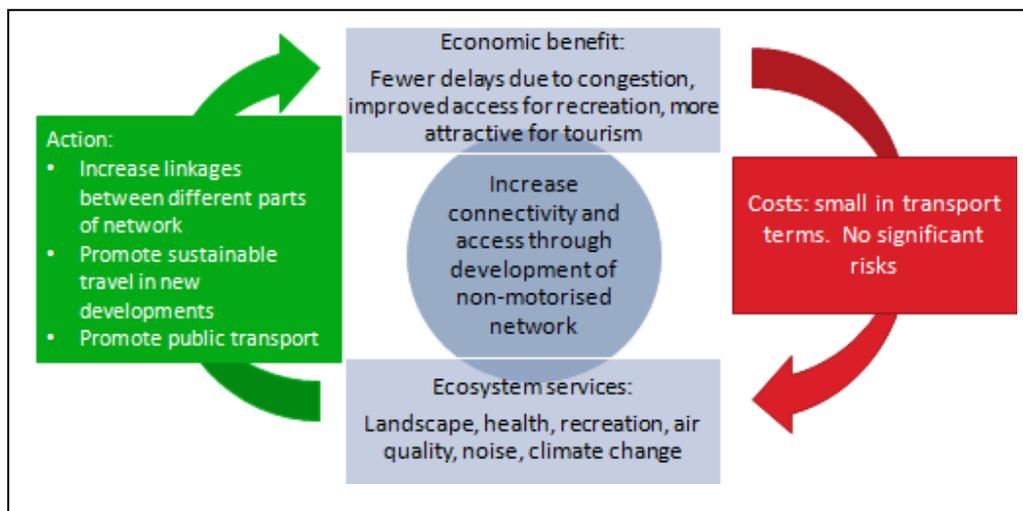
Importance and urgency

Water quality is already an issue within the area. Under the Water Framework Directive, 95% of our local river catchments are under pressure from diffuse pollution, while 40% are specifically 'at risk' of diffuse nitrate pollution. Climate change is projected to lead to an increase of low-flow events in water bodies, which will exacerbate pollution problems due to reduced dilution. Economic growth and population growth are both project to increase demand for water. Water quality is critical to the area's image for investment and tourism.

Associated costs and risks

There is an upfront investment costs to taking on the latest technologies in this area and some small areas of land need to taken out of production. For example farms might need to put in buffer strips next to rivers, and in urban areas some land would be needed for swales (often a verge between the pavement and road). The costs are justified by the benefits of cleaner water and reduced treatment costs. For farms less wastage of nutrients and pesticides is likely to be good for their medium-term profitability.

OG: Increase public transport and routes for walking and cycling



The opportunity

Convenient and pleasant travel options are essential to the economic functioning of the area, its attractiveness for migration and inward investment, and its attractiveness as a tourist destination. The car is the dominant transport mode, and the quality of road network is clearly important. However, there is an opportunity to take a strategic approach to developing the infrastructure for public transport and active travel. This will reduce pressure on the road network, reduce the risk of traffic congestion damaging the attractiveness of tourist sites, be part of the area's 'lifestyle offer' and reduce carbon emissions. Cycle/walking routes such as the Marriott's Way have been shown to reduce car usage by commuters.

Suggested actions to seize this opportunity are:

- Improve public transport and walking and cycling links to the countryside and coast; and
- Ensure new developments plan in public transport and walking and cycling.

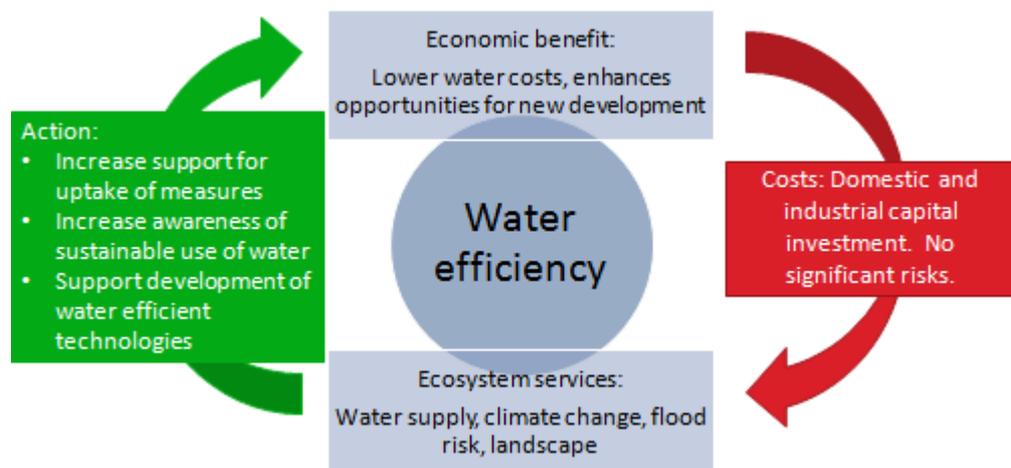
Importance and urgency

A strategic approach to development of the next 20 years is required to deliver on this opportunity and therefore consideration is urgent. This consideration can build on already existing plans. Meeting climate change targets and the health burden caused by a largely sedentary population are major strategic drivers.

Associated costs and risks

Walk/cycle routes require planning and developing, but are relatively cheap compared to other forms of transport infrastructure, to build, use and maintain. Improvements in public transport vary in cost according to scale, but the cost-benefit analysis should include climate and health impacts. There are no significant risks in seizing this opportunity.

OH: Increase water efficiency, management and awareness



The opportunity

Water supply is a central issue in the region, affecting development and environmental quality. Improving the efficient use of water is crucial to sustainable use and a continued supply. A more joined up approach to water management between planners, developers, water companies, environmental groups and councils may encourage knowledge transfer and increase the likelihood of measures being successful. Actions identified to seize this opportunity are:

- Increase support for the uptake of water saving devices in new developments. Examples include water butts, low flow tap attachments, and ponds which hold water near where it falls to filter it and reduce flash-flooding;
- Increase awareness of the sustainable use of water by working with water companies and others to increase awareness raising; and
- Support the development of water efficiency technologies. For example state-of-the-art commercial laundries clean and reuse water, significantly reducing their water footprint.

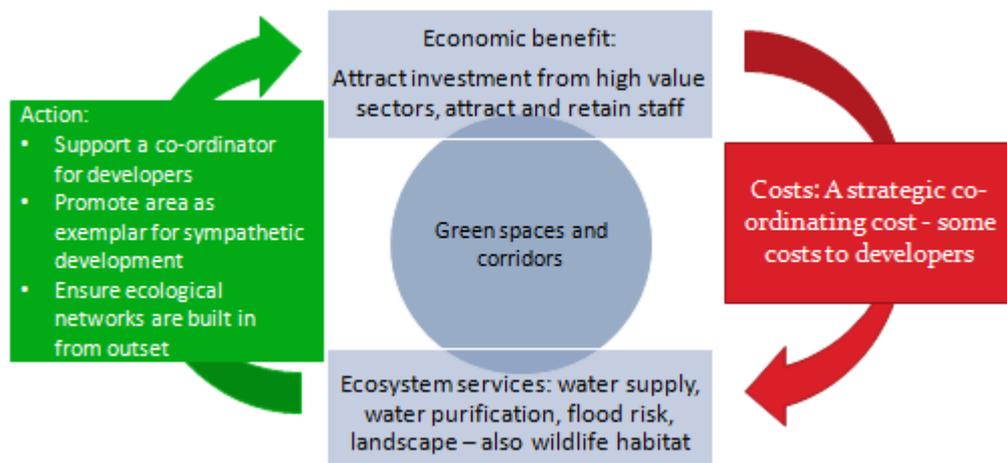
Importance and urgency

Despite being one of the driest regions in England, daily domestic water consumption averaged 153 litres per person across the East of England in 2008-09; slightly above the national average of 150 litres per person. Climate change and increasing demand are the biggest risks to water supply over the next 20 years. Increasing efficiency will reduce the need for expensive alternatives such as water transfers and desalination plants. Water supply underlies all aspects of the economy and in order to ensure adequate water supply action to increase efficiency is needed now.

Associated costs and risks

Water efficiency measures have upfront costs, but are very likely to pay for themselves over the medium-term. There is also the possibility of selling expertise in water efficiency other places. The alternatives, such as desalination or water transfer are expensive and environmentally damaging. Possible future significant increases to water pricing would be likely to reduce the area's attractiveness for inward investment.

OI: Make new housing and industrial development more and sustainable through inclusion of green spaces and corridors



The opportunity

The high-quality natural environment is a significant attractant to inward investment and in-migration. Realizing the benefit to the economy will require development and this benefit will be maximised if the new housing and industrial development is built with the relationship with the natural environment in mind. A Green Infrastructure (GI) approach considers the benefits offered by the nature and designs new development so that these are retained, where possible, or sometimes even enhanced.

For example, deliberately retaining green spaces and green corridors increases the attractiveness of the site. It also provides opportunities for recreation and active travel, which have significant health benefits. They can also contain wildlife habitat, further increasing the attractiveness of the location.

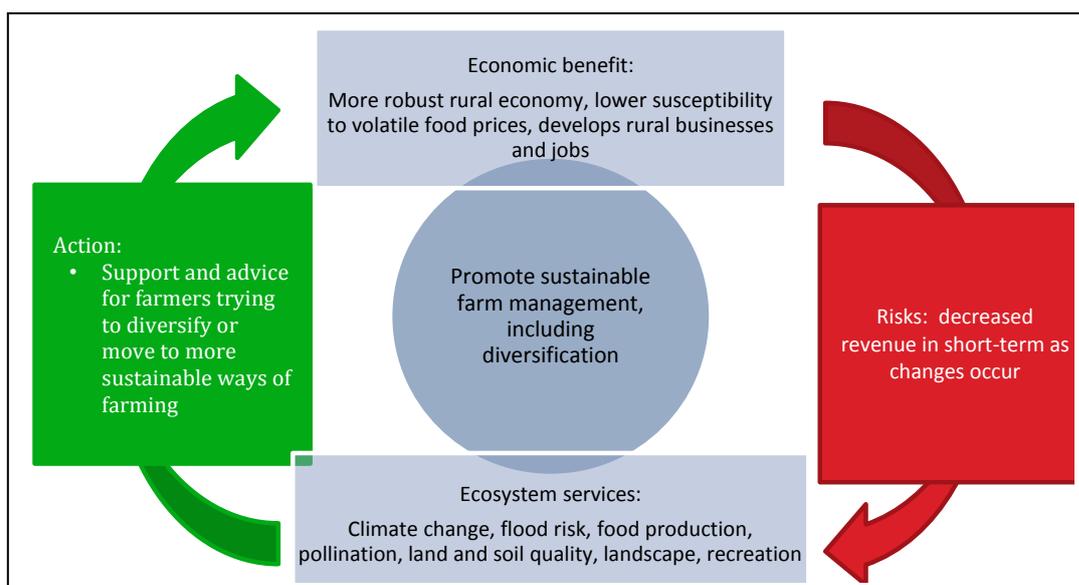
Importance and urgency

The quality of new development is significant to the future attractiveness of the area, and current perceptions of whether the area will remain attractive in future. Significant development is planned over the next 20 years, starting immediately, and environmental design must be built in at an early planning stage.

Associated costs and risks

Delivering on this opportunity would require developers to have access to the necessary information and support. This could be delivered through the provision of a support coordinator, who would work with Wild Anglia and the DEFRA network to support developers. To be successful, developers would need to be convinced of the commercial as well as public benefits, and to maximize both the health and wildlife benefits and strategic, connected approach between development sites would be required.

OJ: Promote sustainable farm management



The opportunity

Sustainable farm management is an approach which allows farms to produce goods in a manner which protects their core assets (e.g. soil) from depletion thus ensuring the farm is sustainable. It also reduces negative impacts of farming on the surrounding environment and allows ‘space for nature’ within the farmed environment. Sometimes it may include diversification into tourism or other commercial activities. New technologies such as precision agriculture (which could maximise output while minimising inputs) and satellite technology (to increase crop per drop) are increasingly being implemented and offer new possibilities for agriculture in New Anglia.

The following actions are suggested for seizing this opportunity:

- Support for farmers wishing to embark on business ventures which improve environmental quality and biodiversity, such as farm tourism, or wetland agriculture; and
- Promotion of agri-environment schemes and other management such as the use of natural systems for water storage.

Importance and urgency

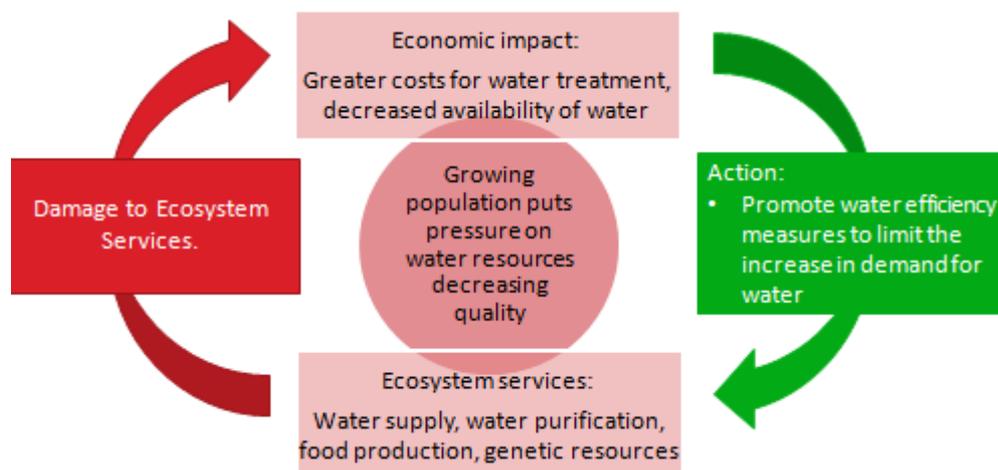
Farming is an important sector within the region, and important employer and the custodian of the landscape on which the attractiveness of the region is based. Therefore it is essential that agriculture is competitive, using the latest technology and sustainable. Increased demand for food may encourage unsustainable intensification of agriculture, and climate change may also put production under more pressure.

Associated costs and risks

There are no significant risks to more sustainable practices such as more efficient use of water, pesticide and fertiliser; although some new technologies may carry unknown risks. It is difficult to know in what direction the market will take agriculture, but food prices could drive greater intensification, leading to the reversal of some diversification.

Threats in Detail

TA: Declines in water quality



The threat

Water quality is already under pressure in the region. Diffuse pollution from agriculture and urban sources reduces water quality, increasing the cost of treatment and reducing the value of local water bodies for fishing and recreation. Increased agricultural and business development is likely to increase pressure on water quality through increased pollution.

Natural filtration processes play a key role in maintaining water quality and therefore reduces treatment costs.

Suggested actions to deal with this threat are:

- Promote water efficiency in businesses and homes; and
- Support the inclusion of natural systems in new developments which increase water quality.

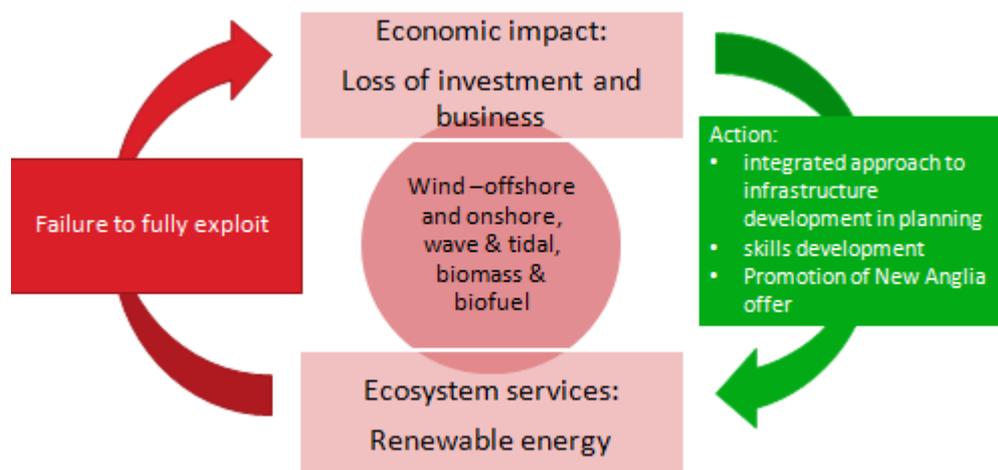
Importance and urgency

Water is a scarce resource under increasing pressure in the region, and business as usual can be expected to lead to poorer quality water and higher water tariffs. Climate change is expected to reduce the capacity of the environment to purify water through an increase in low-flow events, which affect water quality due to reduced dilution of pollutants.

Spin off benefits

Water efficient businesses and homes will be resilient to future shocks. Additionally water and energy are closely connected, and therefore there will be energy and material efficiency savings as well. New Anglia may be able to sell its expertise in water efficiency to other areas. Restoring natural systems to their full capacity in terms of water filtration will have spin-off benefits in terms of increased resilience in other areas (flood risk for example) and in terms of recreation.

TB: Failure to realise renewable energy potential



The threat

Renewable energy is a significant growth sector in the UK economy. The EU Renewable Energy Directive requires the UK to source 15% of its overall energy demand from renewable sources by 2020. The area's geography and current strengths in renewable and traditional technologies put it in a strong position. However there is a danger that this opportunity is missed or not fully grasped and the new infrastructure is developed elsewhere. Successful development will require the availability of supporting infrastructure, the right skills base and political agreement about the landscape impact of developments.

The following actions have been suggested to deal with this threat:

- Promote a more integrated approach to infrastructure development when looking at plans for individual roads and energy related developments, etc.;
- Support investment into new technologies; and
- Facilitate apprentice schemes and promote the renewables industry in education centres to increase the skill base.

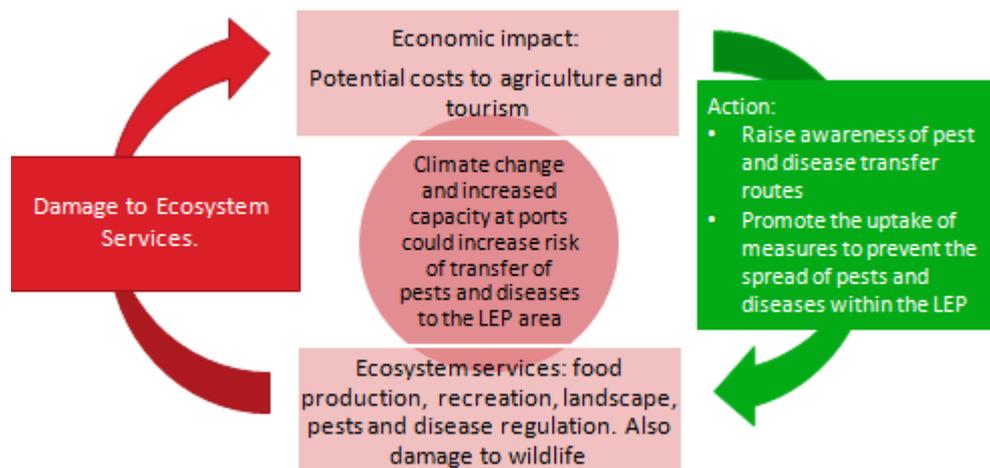
Importance and urgency

The UK 2020 forecast suggests that the offshore wind total capital value will be £138 billion, onshore wind will be £8.4 billion, biomass/biofuel generation will be £5.4 million and wave and tidal generation will be £6 billion. Based on the national forecast the renewable energy industry within the UK will increase mainly via offshore wind, and the East of England is likely to be a major centre for this growth. The Government's target of 15% of primary energy demand coming from renewable resources should help to provide an opportunity for investment in renewable generation.

Spin off benefits

Renewable energy will contribute to climate change mitigation and resilience to fossil fuel price rises. Involvement with the sector will develop a skills/knowledge base which can be sold to others.

TC: Greater risk of introduced pest and disease transfer/spread



The threat

High-levels of international mobility of goods and products, together with the changing climate could have a severe impact on the risk of pest and disease transfer and spread.

Suggested actions to deal with this threat are:

- Raise awareness of pest and disease transfer routes at appropriate forums, for example, during discussions about port expansion and maintenance, etc.; and
- Promote the uptake of measures to combat the spread of pests and diseases throughout the LEP (i.e. in agricultural businesses, recreation areas and ports).

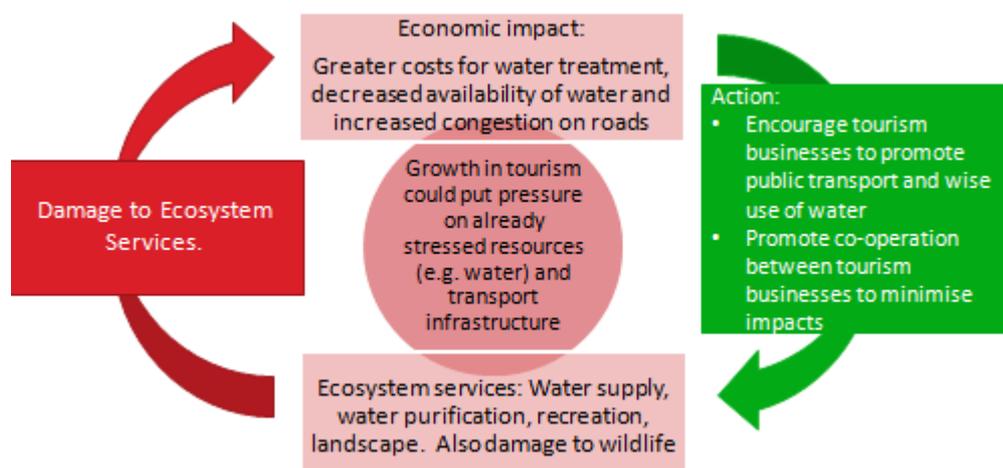
Importance and urgency

In Britain alone, invasive species cost the economy around £2 billion per year. This is expected to increase in coming decades. Early detection and eradication of invasive species is the most cost effective approach. The planned expansion of ports and logistics together with the tourism sector could increase the spread of certain invasive species. A current example is the ‘killer shrimp’ (*Dikerogammarus villosus* and *Dikerogammarus haemobaphesoats*) in the Broads area which does significant damage to local wildlife and is spread by chartered and recreational equipment, such as fishing gear.

Spin off benefits

Greater awareness of monitoring of environmental change may provide an early warning system for other significant environmental changes with potential negative consequences. Raising awareness of the importance of avoiding transferring disease and species between sites (known as bio-security) would have a beneficial impact on the spread of well-established as well as novel diseases.

TD: Growth in tourism increases resource use and pressure on environmental assets



The threat

Growth in tourism could put pressure on already stressed resources (e.g. water) and transport infrastructure. Tourism in the region is already concentrated on several ‘hotspots’, and increases through promotion and growth are likely to place added burden on these sites if careful planning is not considered. The danger is that increased tourism destroys its own market because the areas feels congested – this is particularly problematic if higher spending tourists then stay away. There is also a danger that resource use for tourism impacts negatively on other sectors.

Suggested actions to deal with this threat are:

- Encourage tourism businesses to promote wise use of resources (e.g. in accommodation) and use of public transport (e.g. Coasthopper) when visiting the area; and
- Promote cooperation between tourism businesses to minimise impacts without limiting tourism (e.g. a coach firm could have an arrangement with a rural tourism attraction to take visitors from a set point (in a town) to the attraction to avoid large numbers of cars).

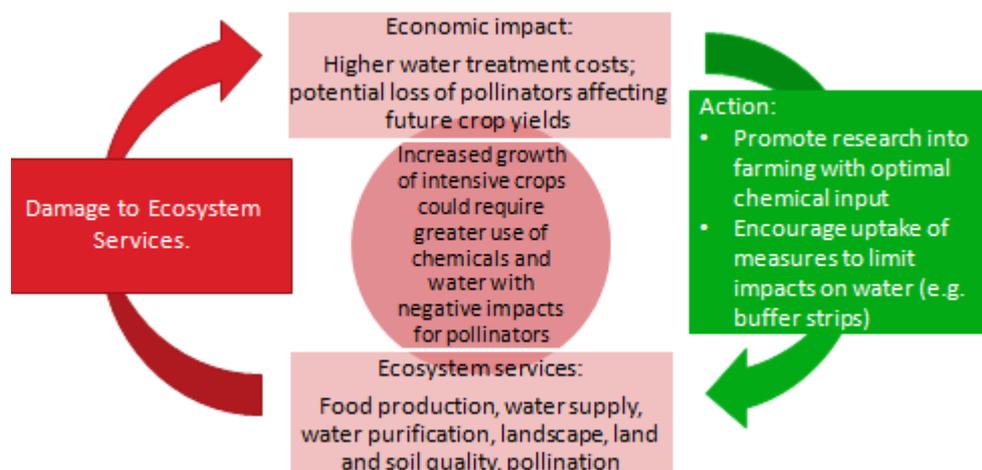
Importance and urgency

Tourism is important to the economies of Norfolk and Suffolk and many tourists value the area for its tranquillity and for high-quality wildlife watching experiences. Large increases in visitors, if not properly managed could negatively impact on these experiences, through congestion, inappropriate development or disturbing wildlife habitat.

Spin off benefits

Public transport provision to manage tourist activity would also benefit local people and help them to access the natural environment. This is particularly relevant to households whose mobility is limited through lack of access to a car.

TE: Increased intensity of farming increases off-farm negative impacts



The threat

Movement towards more intensive high value crops could lead to greater use of chemical fertilisers, herbicides, pesticides and water with negative impacts on pollution, water quality, pollinators and other wildlife. This could be intensified by changes to the current Common Agricultural Policy (CAP) through funding cuts to agri-environment schemes.

Suggested actions to mitigate this threat are:

- Promote agricultural research into ways of farming without the use of large quantities of chemicals; and
- Encourage the uptake of agri-environment schemes, where appropriate, to minimise the impacts on water (e.g. through using buffer strips) and pollinators (through provision of field margins).

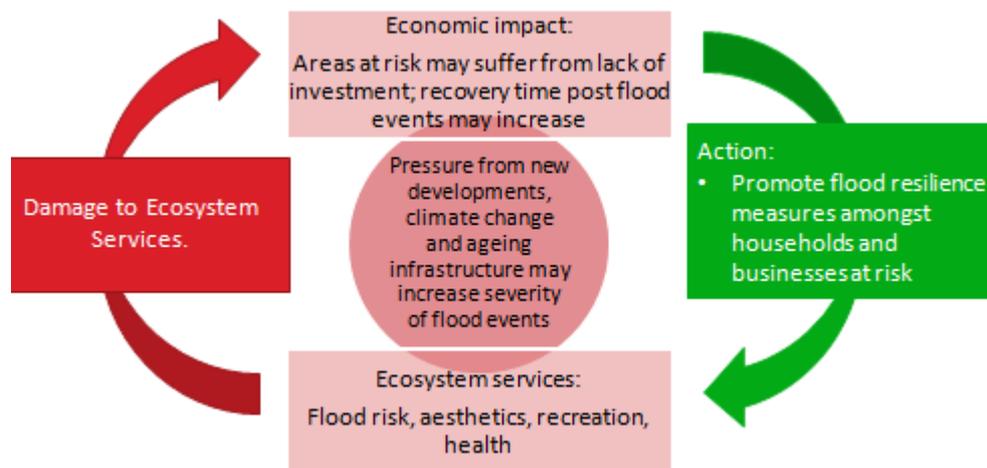
Importance and urgency

Farming is the custodian of the vast majority of the land in Norfolk and Suffolk and so the type of farming has important impacts on the other benefits provided by the landscape. Agri-environment funding currently plays an important role in supporting farming which is more sustainable – i.e. through protecting soil or leaving field margins for pollinators, and less damaging to the wider environment – i.e. through reduced diffuse pollution. Funding for agri-environment is expected to diminish which means that finding innovative ways to deliver the same, or better, outcomes is urgent.

Spin off benefits

Sustainable intensification is the aim of producing more food with less environmental impact. If it can be achieved it has positive impacts across most of the opportunities and threats identified in this report. The area has the potential to use its agri-technology cluster in this area to pioneer and sell solutions to other areas.

TF: Increased severity of (non-coastal) flood events



The threat

Greater pressure from new developments, climate change and ageing flood defence infrastructure are likely to increase the severity of flood events.

The following action is suggested for dealing with this threat;

- Promote flood resilience measures amongst businesses and households at risk;
- Promoting household water capture methods such as water butts, permeable driveways and gardens which promote rain to infiltrate into the ground (rain gardens);
- Educate householders to not put cement, fats, oils, paints, etc. down the drains and reduce the capacity of pipes; and
- A planned approach to managing surface water so that it is retained and infiltrates the ground on new developments and in settlements (part of a Green Infrastructure approach).

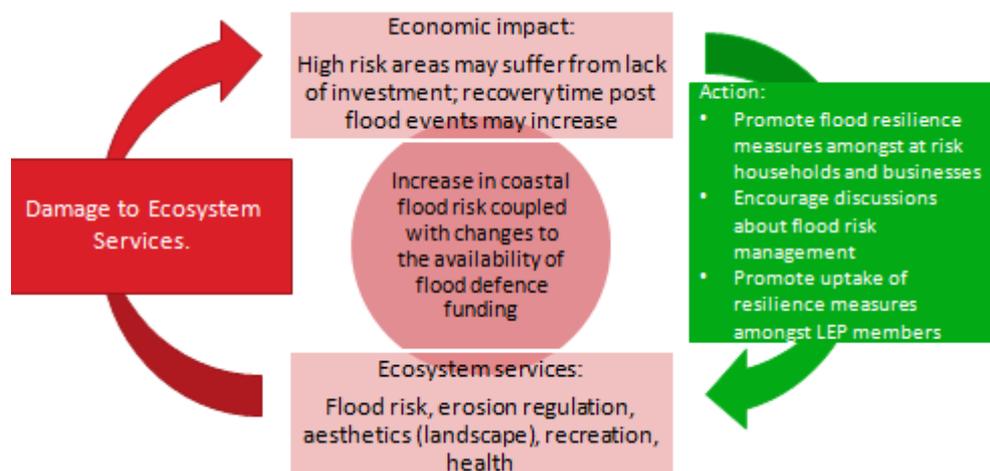
Importance and urgency

Flooded communities are likely to suffer substantial economic losses in terms of material assets, livelihood disruptions and as well as psychological trauma. It is predicted that summers will become up to 50% drier and winters up to 30% wetter with increasing unpredictability of rainfall. It is likely that an increase in the volume of surface water runoff and rainwater will take place as a consequence of the replacement of vegetation (and its services) by impervious built surfaces.

Spin off benefits

The approaches outlined here would increase household resilience and flooding, reduce demand for water in the summer, reduce the maintenance cost for the public sewer system and make urban areas greener, more natural and attractive.

TG: Increasing coastal flood risk



The threat

Climate Change is already leading to sea-level rise and increases in storm intensity and this is projected to get worse. At the same time there are changes to the availability of funding for flood defences. This could lead to more severe impacts from flooding and decreased inward investment for high risk areas. Suggested actions to deal with this threat are:

- Promote flood resilience measures amongst businesses and households at risk;
- Encourage discussions in at risk areas about the way in which flood risk can be managed; and
- Consider the mixture of 'hard' and 'soft' flood defences that will best meet the area's needs

Hard defences are engineering solutions, typically concrete walls. Soft defences involve allowing room for natural inter-tidal habitats to move inland as the sea advances. The inter-tidal habitat acts as the first line of defence, taking power from the storm surge before it reaches the flood walls, thus reducing required size and strength of the walls.

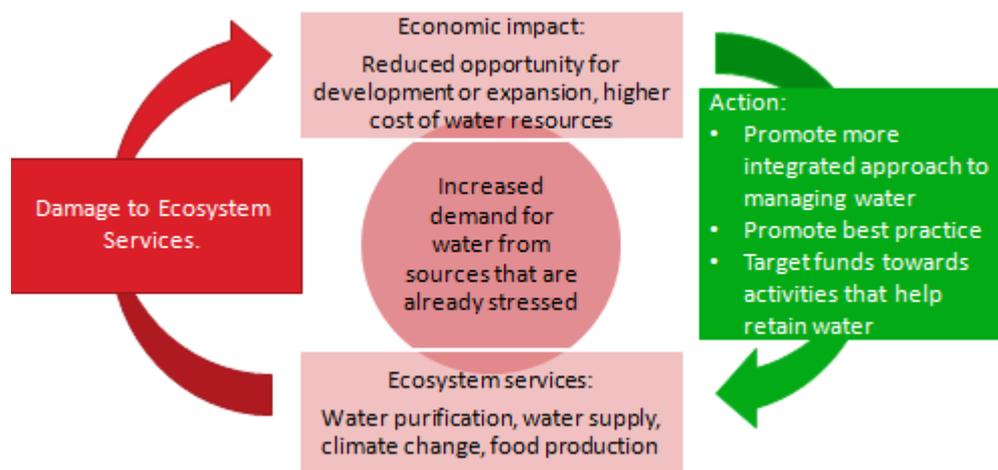
Importance and urgency

The Norfolk and Suffolk coastline is sensitive to processes of erosion and accretion, with areas of the coast particularly vulnerable to long-term erosion. Erosion affects 54% of Suffolk's coastline and 49% of Norfolk's. Some parts of the area are losing about 1 metre of coast line per year. At the same time, large lengths of the coast will require replacement or refurbishment of defences to prevent the risk of coastal flooding increasing. In some areas, money for continuing management and maintenance of coastal defences will run out in the next few years potentially placing many homes and businesses (especially caravan parks, tourism businesses and farms) at significant risk of flooding.

Spin off benefits

Inter-tidal areas reduce the cost of managing flood risk by reducing the power of the surge before it reaches the hard defences. Additionally they provide an attractive visitor destination, habitat for bird species and nursery ground for commercial fish species.

TH: Increasing demand for freshwater



The threat

Increased demand for freshwater resources and the impacts of climate change could lead to a deficit at some times of the year. Suggested actions for dealing with this threat include:

- Promote more integrated approach to managing water through planning;
- Promote best practice in organisations with responsibility for planning and economic development; and
- Targeting funds (e.g. Community Infrastructure Levy) towards activities that help to retain water (e.g. wetlands, lakes).

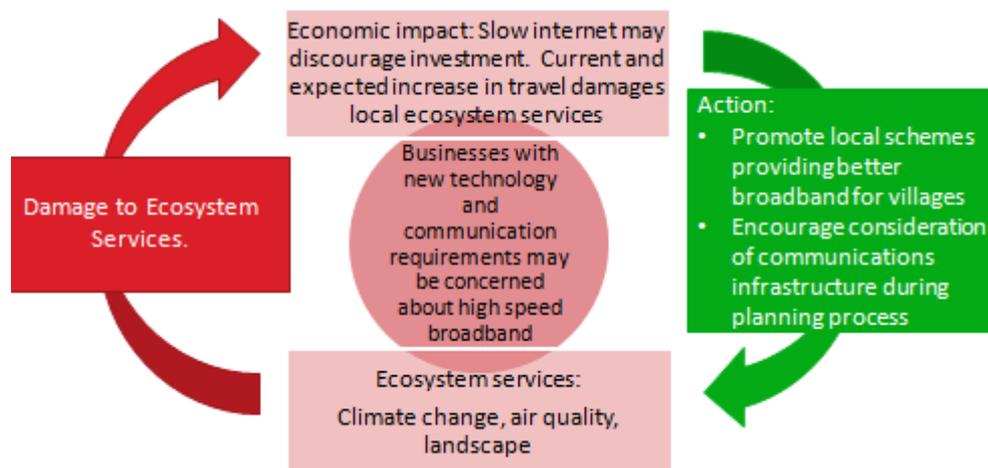
Importance and urgency

Freshwater availability is already stressed in the region. The projections for climate change, economic growth and population growth suggest that this pressure will get worse. Water supply is essential to all sectors of the economy. Technological solutions to increase water supply, such as water transfer and desalination, are expensive and come with significant environmental impacts. Additionally, urgency is injected by the extent to which future water use of 'programmed in' at development and land use planning stage. Each new development or retrofit opportunity is therefore important.

Spin off benefits

Managing water effectively, close to where it falls, can provide attractive natural places for recreation. It increases local resilience to drought, and reduces problems with flooding and diffuse pollution. It is also connected with efficiency in material and energy use. Potentially, innovative approaches or technologies can be sold to other areas.

TI: Lack of high speed broadband



The threat

The threat is that part of New Anglia lack access to high-speed broadband, disadvantaging it compared to areas which have it.

Suggested actions to deal with this threat are:

- Promote local schemes providing better broadband for villages; and
- Encourage consideration of communications infrastructure during the planning process for new developments.

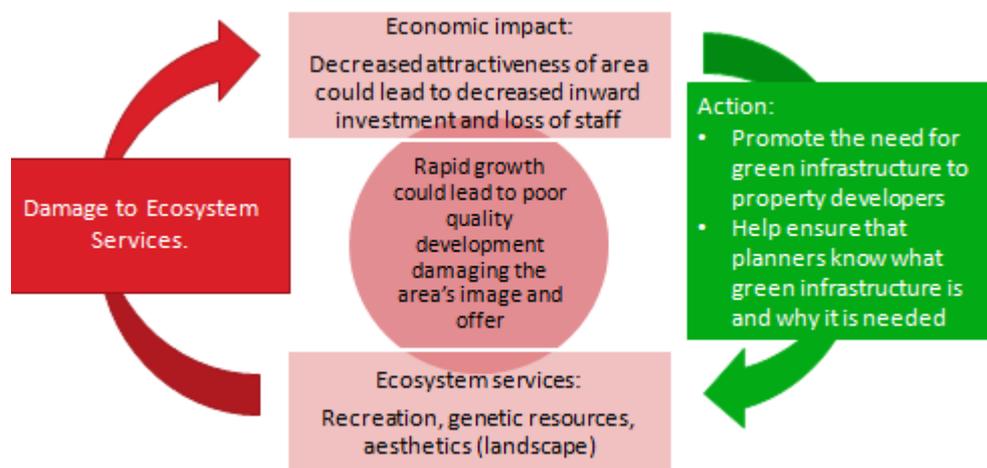
Importance and urgency

Access to high-speed broadband is a requirement for many creative and knowledge industries and its availability affects the attractiveness of the area for inward investment and start-ups in these sectors. The quality of the internet connection is also increasingly important for a wide range of businesses. The urgency is driven by the need to compete for business with other parts of the UK, and the world.

Spin off benefits

High speed broadband creates the option of tele-commuting all or part of the time. This has significant benefits in terms of the transition to a low carbon economy. It also reduces transport congestion, which increases the efficiency of the rest of the economy. The option to tele-commute can help with work-life balance, and also make rural locations more attractive places to live and work. High speed broadband also has potential in terms of the delivery of skills training to more remote locations.

TJ: Poor quality development reduces the attractiveness of the area and the quality of life it offers



The threat

New Anglia offers an attractive destination to those relocating. There is however a danger that rapid and inappropriate development in order to accommodate an increase in population could damage this attractiveness and the area's quality of life.

Possible actions to deal with this threat are:

- Ensure that planners explicitly and specifically consider the benefits offered by the natural environment and ensure these are maintained or enhanced in developments; and
- Encourage developers to allow for green space with development sites as a major selling point of the site and part of a contribution to a wider strategic green network.

Importance and urgency

Significant development is expected in the next twenty years to accommodate inward investment and a growth in population. The Green Infrastructure approach, which consciously builds nature and its benefits into development needs to be considered from the outset: some retrofitting of green infrastructure is possible, but the outcomes are considerably better if considered at the beginning.

Getting this approach right could lead to new development which are attractive, energy efficient, resilient to flooding and heat extremes and which promote outdoor recreation and active travel.

Spin off benefits

Well designed Green Infrastructure also provides habitats and habitat connections for wildlife. This increases its value to residents but also contributes to the region's wildlife targets – possibly helping to displace losses of habitat elsewhere.

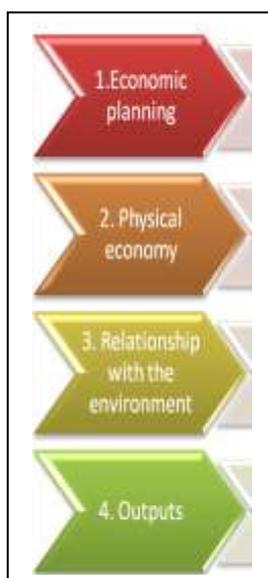
State of the art Green Infrastructure would have benefits for the area's image as a forward thinking green area with a high-quality of life.

Study Methodology

Aim

The aim of this study was to support strategic economic planning, through the identification of opportunities and threats to the local economy, which stem from the economy's dependence on the environment. To do this the LEED process is designed to help LEPs make sense of the mass of complex environmental information and distil it into key points demanding action.

Process



The process starts with standard economic planning. For this study we considered the current situation and the LEP's strategic growth plan from today. This is available from economic planning documents.

In section 2 we consider what this means in physical terms, particularly in terms of energy and material inputs, and waste and emissions.

This puts us in a position to consider how the economy relates to the environment and the trajectory of these relationships in future. We do this using the Ecosystem Services Framework (explained below).

Finally we are able to list and evidence the top opportunities and threats to the economy, and consider strategic and tactical solutions.

Ecosystem Services

This study makes use of the Ecosystem Services Framework, which is recognised as best practice in scientific and policy terms for considering the environment/economy relationship. The Ecosystem Services Framework considers the dependence of the economy on the environment in four categories;

- Provisioning services - material such as timber, water and crops.
- Regulating services - the ways in which the environment provides order and structure, such as flood control. Regulating services are normally taken for granted until damaged.
- Cultural services – non-material dependencies, such as the dependence of tourism on the attractiveness of a destination.
- Supporting services – the natural cycles that the other services depend upon, such as the water cycle.

This approach ensures that the work is systematic and rigorous, and allows it to be compared to other work in this area.

Full details of the methodology and the supporting evidence base are available from tom.butterworth@naturalengland.org.uk

Options for engaging with the LEED toolkit

The authors of the LEED toolkit recognise that circumstances vary significantly between Local Enterprise Partnership areas and so have designed three levels of engaging with the toolkit. Level 1 is a commitment of only 3 days. It involves running a workshop with key staff from organizations with responsibility for environment and economy in your area, to think through environment/economy relationship and what this mean for economic planning. Piloting has shown that this develops fresh insight, supports strategic thinking and acts as a platform for increased partnership working in the area. A ready-made workshop structure is also available. If this initial exploration raises the need for further work then areas can engage with Level 2, and then if necessary 2 and 3 depending on needs and capacity (this is a report from Stage3). More details about the three levels is available from the table below, which gives indicative time requirements for the research, and an approximation of the financial cost of buying this time from expert consultants.



The toolkit can be used in two modes, either with a consultancy supporting a local partnership or with lead researchers from different members of the partnership collaborating. In either mode meaningful results and efficient use of time will require researchers with good environmental and economic understanding, and an effective dialogue between them. If using the ‘in-house’ approach steering groups will need to ensure that someone has the responsibility to drive the project forward.



If you are interested in running Level 1, or more of the LEED toolkit, in your area please contact tombutterworth@naturalengland.org.uk