

# resilience.io

A revolution in planning



the ecological  
sequestration trust



resilience.io

# Population, development and urbanisation

## Mounting pressure

For millennia, humanity has thrived on Earth's natural resources, but during the last century growth and consumption has accelerated to such an extent, that our current model for human development has been brought into question.

Global population growth and rapid urbanisation are increasing our demand on environmental assets and we have been reluctant to account for the cost of pollution, natural resource loss and social degradation.

Rising numbers of people are becoming vulnerable to stresses and shocks associated with climate change, resource scarcities, ecosystem degradation, limited investment and the disruption of key resource flows. These shocks damage economic growth potential and the ability to reduce social and environmental degradation in both developed and developing regions.

Financial investments are being made today that will determine our lives for over a hundred years, during which time we will be increasingly affected by global environmental and economic change. This gives us a closing window of opportunity to act before many regions will become locked into unsustainable and unsuitable development pathways.

## Facing the challenge - integration and collaboration

Competition for space and resources presents a huge challenge – but it is one that can be met with a coordinated, collaborative response. If regions across the globe act in an integrated way, economic benefits can be maximised, social concerns addressed and the environment restored so that development brings lasting benefit.

The Ecological Sequestration Trust was established in 2011, to accelerate and scale-up transformative rural-urban development towards a resilient, low-carbon, resource efficient way of living. We have brought together world-leading modellers and sector experts to design and create a tool that brings together information from public, private, community and knowledge sectors to make decisions on policies and investments.



**GLOBAL POPULATION  
GROWTH AND RAPID  
URBANISATION  
ARE INCREASING  
OUR DEMAND ON  
ENVIRONMENTAL ASSETS.**



# resilience.io

## Finding a new way

[resilience.io](https://resilience.io) is a computer-based platform; an analysis and decision-support tool, that allows us to accurately model resource flows, for example, energy, food and water, so that regions can manage both their economy and its critical supporting ecosystems. It is a tool that allows regions globally to assess their current development path and map out a more sustainable and resilient trajectory. It is intended for use for planning to embed resilience within regions in the long-term, as opposed to incident response management.

### Live data

The platform is provided with continuous up-to-date information from Earth observation satellites, government and private sector records, and data streams from local sensor networks, smart phones and tablets. This is processed and visualized to give an improved understanding of the complex human, economic and ecological systems within a region and how these are interlinked. It also shows how resources on a regional scale are connected with those at national and global scale, to see how the decisions we take interact and feed back to affect global economic, social and environmental systems.

### Design-led approach

Good planning decisions can only be made if the potential financial, environmental and social impacts of an initiative are properly understood before the initiative is undertaken. The resilience.io platform can be used to make informed decisions about how resources will be managed in a way that is best for the economy, environment, society and human wellbeing, and that will result in long-term resilience.

### Better choices – the use of scenarios

The resilience.io platform can be used to assess the impact of different social, ecological and economic options, for example a plan to build new houses within a sensitive river catchment. Projects become more quantifiable, so that lasting economic benefits can be achieved whilst minimising negative environmental and social impacts in the long-term. This is more sustainable for city-region planners, safer for investors, less threatening to the environment and more supportive for local communities.

**RESOURCES AT  
REGIONAL SCALE  
ARE CONNECTED  
WITH THOSE AT  
GLOBAL SCALE.**

# Collaborative intelligence with benefits for all

The resilience.io platform is managed, governed and used collaboratively by local people from different sectors, for example, community groups, government and businesses, who work together to ensure that everyone's views are heard. Economic, social and environmental factors are considered holistically and any gains made through an expanding regional economy are shared more widely with the population.

Our aim is to apply the resilience.io platform approach across the world to develop the modelling and analysis tools, information access and a network of world-leading global expertise and corporate and civil partnerships. These regions will become exemplars of sustainable development, boosting regional recognition and inward investment.

## 'Good' projects globally

Improved understanding leads to investment in projects that build on a region's strengths, providing the greatest combined benefits and the best insurance against extreme risks. Job creation, resource efficiency and re-use, ecosystem restoration, food productivity and human wellbeing are maximised whilst improved risk and investment analyses result in more sustainable and resilient investment from the financial sector.

The Ecological Sequestration Trust  
10 Queen Street Place, London EC4R 1BE

[www.ecosequestrust.org.uk](http://www.ecosequestrust.org.uk)  
[www.resilience.io](http://www.resilience.io)

*Photographs © Mike Cherrett*



**DECISION-MAKING  
AT REGIONAL  
SCALE ALLOWS  
THE AUTONOMY TO  
BUILD ON EXISTING  
STRENGTHS.**

# The resilience.io platform and the environment

Awareness about the Earth's natural planetary boundaries is growing. We know that we must take better account of the value of nature and ensure that decision-makers consider the finite resources we consume, their ecology and re-generation. Significant economic benefits can be secured through better valuation and management of natural systems.

## Valuing the environment at local scale

The resilience.io platform will integrate environmental value into systems thinking, bringing a number of benefits. For example, the effects of good air, water and soil quality and access to biodiversity on health and long-term economics become more visible, which increases local motivation to restore the environment. The benefits of a more circular economy where products are designed to be re-processed so that waste is reduced can also be ascertained.

## Environmentally conscious procurement

The platform can be used by businesses and public sector services, helping them to make more efficient use of scarce natural resources to deliver economic benefits, for example reductions in waste and increases in the reuse and recycling of products, or agriculture and aquaculture systems, which are both productive and contribute to health and attractive environment.

## Planning and policy

The resilience.io platform provides a solid evidence base for environmental impacts. The most beneficial and relevant net gain for the environment can then be picked from several different, unrelated development plans. Scenario testing allows the environmental consequences of different actions to be illustrated, for example, the effect of land use changes in the upper catchment of a river on flooding downstream.

Potential environmental policies can be more completely assessed, for example the impact and trade-offs of renewable energy options, enabling any harmful environmental impacts to be reduced.

## Pathway to decarbonisation

The outputs of the resilience.io platform will illustrate the case for low-carbon innovation in the long-term and thus encourage regional investment for research and development. The platform will be developed cooperatively, thus encouraging the vital collaboration required at regional and global levels if the global net carbon emissions are to be reduced. It will provide detail on how the apparently conflicting objectives of economic growth, development and decarbonisation can be best reconciled. By connecting to global models, the resilience.io platform allows stakeholders to develop mutually beneficial solutions that take into account the potential risks and threats to the resilience of both the environment and the communities, which depend on it.



**AN IMPROVED PUBLIC UNDERSTANDING OF THE ENVIRONMENT AS A SYSTEM, AND THE BENEFITS IT OFFERS, WILL ENCOURAGE GOOD STEWARDSHIP AND SUSTAINED FINANCIAL BENEFITS NOW AND IN THE FUTURE.**

# The resilience.io platform and finance

## Circular economy

Reprocessing of waste materials, driven by sustainable and resilient energy supplies, gives business models that sell services, for example repair and reprocessing services, instead of products. This service-led economy provides more reliable returns on long-term investments and drives a higher margin potential. Procurement costs are reduced over the lifetime of a product, which adds to the bottom line.

## Local investment

The financial system becomes locally focused, with strengthened investment that is more resilient to financial losses, and that has reduced collective risk. Investment decisions based on meaningful and reliable data, that meet the social and environmental objectives for a region, enhance value whilst achieving return on capital. Whole life analysis of the impact of lending decisions will work to diversify lending, making it more resilient.

## Clearer visibility at global and local level

Better visibility of the supply chain in a globalised world helps to identify all the stakeholders involved in an investment decision. Local stakeholders will become increasingly involved in lending decisions after any negative impacts are identified and understood.

The community can engage with investment through peer-to-peer equity and lending schemes. Local “ownership” of investments should lead to a virtuous circle of better quality investment decisions with profits being retained and re-invested locally.



**THE COMMUNITY  
CAN ENGAGE WITH  
INVESTMENT  
THROUGH PEER-TO-  
PEER EQUITY AND  
LENDING SCHEMES.**

# The resilience.io platform and urban planning

resilience.io provides computer-assisted modeling, simulation, monitoring, and assessment methods, allowing the performance of city developments to be measured. It supports investment in developments where there is collaboration between parties.

This kind of urban master planning integrates systems and communities, acknowledging their interdependence and the effects of global issues, such as climate change resilience and economic uncertainty, on the future of city regions. It builds insight into the way places influence wellbeing, work and lifestyle, as well as technical understanding of interconnected systems such as transport, energy, water, waste and information.

## 'Smart' cities, 'smart' citizens

resilience.io supports real-time models of human activity, including feedback loops. Monitoring, recording, and verification processes are used to track the successes and setbacks of implemented strategies. These include technologies that improve the measurement of physical characteristics of land use, water, energy, mobility, waste and ecology regimes, or software strategies, i.e. industry structuring, management, policies, standards, and regulations.

resilience.io draws in real-time data from earth observation satellites, global climate models, geology databases and local social and economic sources, with appropriate layers of security. Data protocols and specifications will be configured to allow alignment with National City performance indicators.



**RESILIENCE.IO ALLOWS  
'SMART' CITY DEVELOPMENT  
INVESTMENT AND HELPS  
THE POPULATION MAKE  
'SMART' LIFESTYLE  
DECISIONS**