

## Communicating the impact of global tree restoration

# Crowther Lab

### The Challenge

- Communicate the impact of ground-breaking climate change solutions

### The Benefits

- Greater public awareness of global tree restoration
- Complex data, powerfully visualised
- Maps can be created by non-GIS specialists
- Improved efficiency of decision-making



Esri UK | Millennium House  
65 Walton Street | Aylesbury  
Buckinghamshire HP21 7QG  
T 01296 745500 | F 01296 745544  
E [info@esriuk.com](mailto:info@esriuk.com) | [www.esriuk.com](http://www.esriuk.com)

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**The Crowther Lab is a network of leading global climate scientists, specialising in ecology, whose aim is to help identify nature-based climate change solutions. The Lab enhances climate predictions by pairing top-down satellite data with the world's largest set of ground-sourced data and uses ArcGIS, amongst other tools, to visualise the results and communicate ground-breaking climate change solutions.**

### The Challenge

The threat that climate change poses to mankind and the planet is a huge and complex topic. However, it is widely accepted that ecosystems act as the Earth's regulatory system and biodiversity has an intrinsic role in mitigating the impact of climate change. Crowther Lab has generated quantitative models of the Earth's ecology and revealed that it is possible to offset climate change by restoring plants and soils across the globe. It has identified that restoration of the Earth's forests is one of the most effective solutions to climate change available today and the location of where global tree restoration should be implemented without affecting existing cities or agriculture is fundamental to its work.

In arriving at its conclusions, the Lab has unrivalled access to spatial data sets and ground-sourced data from researchers, ecology bodies and labs across the globe. Ensuring that data is clean, consistent and accurate is vital to continuing interpretation and analysis and keeping on top of these data sets and making the best use of Big Data is one of its primary operational challenges.

The ability to successfully communicate its findings that global tree restoration is a tangible climate change solution is a further challenge. The Lab shares its findings with multiple audiences, from individuals to global scientific bodies, aiming to convey that there is a viable solution to help mitigate climate change without compromising cities or agriculture.

### The Solution

The scientists at Crowther Lab conduct Global Ecological Monitoring (GEM), classifying global ecological systems by pairing top-down satellite imagery with its ground-sourced data sets of forest tree and soil diversity – the largest in the world. GIS acts as a foundation for the Lab's data strategy, pulling the data together with geoprocessing tools filtering and converting data into layers of information, generating a richer understanding of the world's forests.

By using geoprocessing tools, the team can perform spatial analysis, manage GIS data and build custom tools to automate complex tasks and solve problems. ArcGIS and other tools are then used to create interactive maps to communicate the Lab's findings, including the essential identification of sustainable land where forests could be restored without affecting existing cities or agriculture. This information sharing is vital to the success of Crowther Lab's work to communicate a quantitative understanding of what's possible; different options for where and which ecosystems should be restored, thereby improving the efficiency of restoration projects.

These interactive maps are vital communication tools enabling users, from scientists to anyone interested in climate change, to interrogate the Lab's findings, learn something new about ecosystems and take decisions and act on quantitative information, beautifully presented.

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“Interactive maps enable us to communicate the Lab’s findings with a broad community, so they can learn something new and make the right decisions.”

Tom Crowther, Founder, The Crowther Lab



Crowther Lab work with hundreds of restoration organisations around the world.

### The Solution (cont.)

Access to the Lab’s maps and data visualisations has further been extended by their availability on the ArcGIS Living Atlas of the world, an evolving collection of authoritative, ready-to-use global geographic information. Content includes imagery, basemaps, demographics and lifestyle, landscape, boundaries and places, transportation, earth observations, urban systems, ocean and historical maps that can be combined with data to create new maps, scenes and apps and perform analysis.

### The Benefits

#### **User-friendly tools**

Both experienced and non-GIS specialists with no coding knowledge work with ArcGIS’s intuitive, user-friendly interface to rapidly bring together data from multiple sources to create powerful visualisations.

#### **Impactful data visualisation**

Complex data is presented in eloquent, stunningly-designed maps, enabling users to more easily grasp how global tree restoration presents a powerful and viable solution to mitigate climate change.

#### **Insightful Communications Tools**

Crowther Lab’s interactive maps are powerful communications tools enabling viewers from any background, from students to scientists, governments or commercial organisations, to query the data presented and help find the answers to questions they may have.

#### **More efficient decision-making**

The articulate presentation of quantitative data in map form makes it possible for decision-makers to develop more insightful strategies into restoration management. By identifying specific locations to restore trees, plants and soils the efficiency of restoration efforts can be improved.

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