

Intensive hydrologic and ecosystem modelling to provide climate resilience, natural flood management, cleaner rivers and enhanced water resources

Summary

Profile type	Company's country	POD reference
Technology offer	United Kingdom	TOGB20230328020
Profile status	Type of partnership	Targeted countries
PUBLISHED	Commercial agreement with technical assistance	• World
Contact Person	Term of validity	Last update
Annamaria DI PATRIZIO	28 Mar 2023 27 Mar 2024	28 Mar 2023

General Information

Short summary

A UK company has developed complex algorithms that model ecosystem-aware water-flow solutions mathematically and provides optimal solutions for water utilities and landscape planners. The company's algorithms model catchments to identify nature-based solutions to problems such as flooding, erosion and drought. They seek agri-tech companies, consultancies, and regional organisations to adapt their innovation towards finding new solutions, via commercial agreement with technical assistance.

Full description

Ecosystem services can be split into two distinct categories: place-based services and water-flow services. Place based services can be assessed adequately using straight-forward GIS (geographic information system) data overlays and rule bases, as such benefits accrue where the habitats are located. Water-flow services, on the other hand, deliver benefits downstream from the habitats that provide them.

This means that GIS has to be integrated with complex, hydrological modelling to identify optimal solutions. Standard 'opportunity mapping' using GIS data and rules will give inefficient, misleading or possibly damaging outputs.

This UK company has developed a way of modelling ecosystem-aware, water-flow solutions mathematically, leading the sector in this innovation. The company have specific expertise in modelling and mapping ecosystem services,

especially those involving water. They use complex algorithms and state-of-the-art methods to show what interventions should be done and where to do them to meet client aspirations.

Applications include:

1. Understanding current landscape function. This allows risk-rating of fields, allowing reverse auctions or other agrienvironment payments to be weighted to ensure maximum ROI.
2. Prioritising new interventions. The algorithms rank all potential, natural interventions across entire regions for how effective they will be at solving local problems. This help target the right interventions in the right places to protect people and infrastructure against flooding, improve water resource supplies and enhance resilience of the landscape system.
3. Identify the most efficient places to create reservoirs or ponds. Identifying where capturing water for irrigation is likely to require least engineering, whilst also reducing flood and pollution risks.
4. Combining model outputs with other data to identify nature-based solutions to groundwater problems.
5. Qualifying or quantifying the benefits.

They are seeking a range of partners that might benefit from their modelling, including but not limited to, government rural departments, farmers, agri-tech, landscape planners, water supply boards and companies working in flood management, to adapt their technology towards new solutions via commercial agreement with technical assistance.

The company will support the partner in adapting their software to the client's specific eco-system and provide ongoing technical assistance.

Advantages and innovations

The UK company devise the most effective and efficient solutions, rather than offering simplistic 'opportunity' mapping. Compared to other solutions, the process offers bespoke:

- * Natural flood management
- * Natural catchment management and water resource enhancement
- * Landscape planning and policy, from local to regional scales
- * Agri-environment payments, reverse auctions and Payment for Ecosystem Services
- * Natural capital accounting and economic valuation
- * Agricultural resilience and risk reduction
- * Tailored biodiversity compensation * Infrastructure options appraisal
- * Urban green infrastructure

Technical specification or expertise sought

Stage of development

Already on the market

IPR Status

Secret know-how

Sustainable Development goals

• **Goal 2: Zero Hunger**

Partner Sought

Expected role of the partner

Type: Industry/Government

Activity: Agriculture/Flood management/planning

Specific role of partner: Adaption and adoption of the UK companies algorithms to provide new solutions regarding agricultural climate resilience, flood management planning and mitigation, agri-environment payments and wider revenues from land management.

Type of partnership

Commercial agreement with technical assistance

Type and size of the partner

- **R&D Institution**
- **Other**
- **SME <=10**
- **SME 50 - 249**
- **SME 11-49**

Dissemination

Technology keywords

- **10002004 - Climate Change mitigation**
- **10002005 - Biodiversity / Natural Heritage**
- **10004011 - Flood Management**
- **07001007 - Precision agriculture**
- **07001004 - Crop Production**

Targeted countries

- **World**

Market keywords

- **08005 - Other Industrial Products (not elsewhere classified)**
- **09005 - Agriculture, Forestry, Fishing, Animal Husbandry & Related Products**

Sector groups involved