STORMS: Strategies and Tools for Resilience of Buried Infrastructure to Meteorological Shocks

Background and context

- Buried infrastructure networks, including water, gas, electricity, and telecommunications, are essential for society.
- They are vulnerable to extreme weather events like floods, droughts, and temperature extremes (e.g., a water company reported over half a billion litres of leakage a day in 2023-24, and an increase during summer 2022).
- The STORMS project has created a novel and comprehensive climate risk assessment framework for buried infrastructure.
- Data sharing barriers must be addressed to enable climate risk analysis.

Activities in the project

- ❖ 1.Development of an end-to-end demonstrator for climate risk assessment of buried infrastructure.
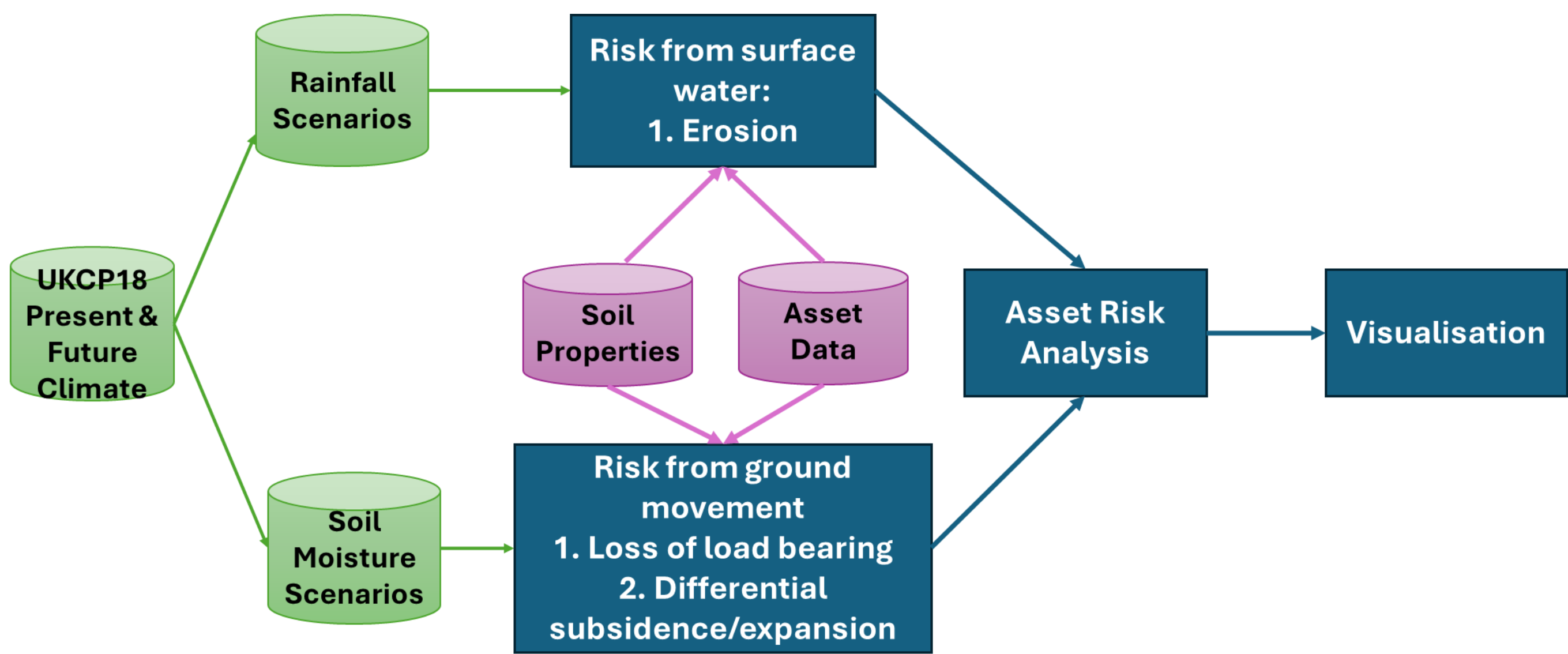

Figure 1 Overview of the methodology for climate risk assessment of buried infrastructure
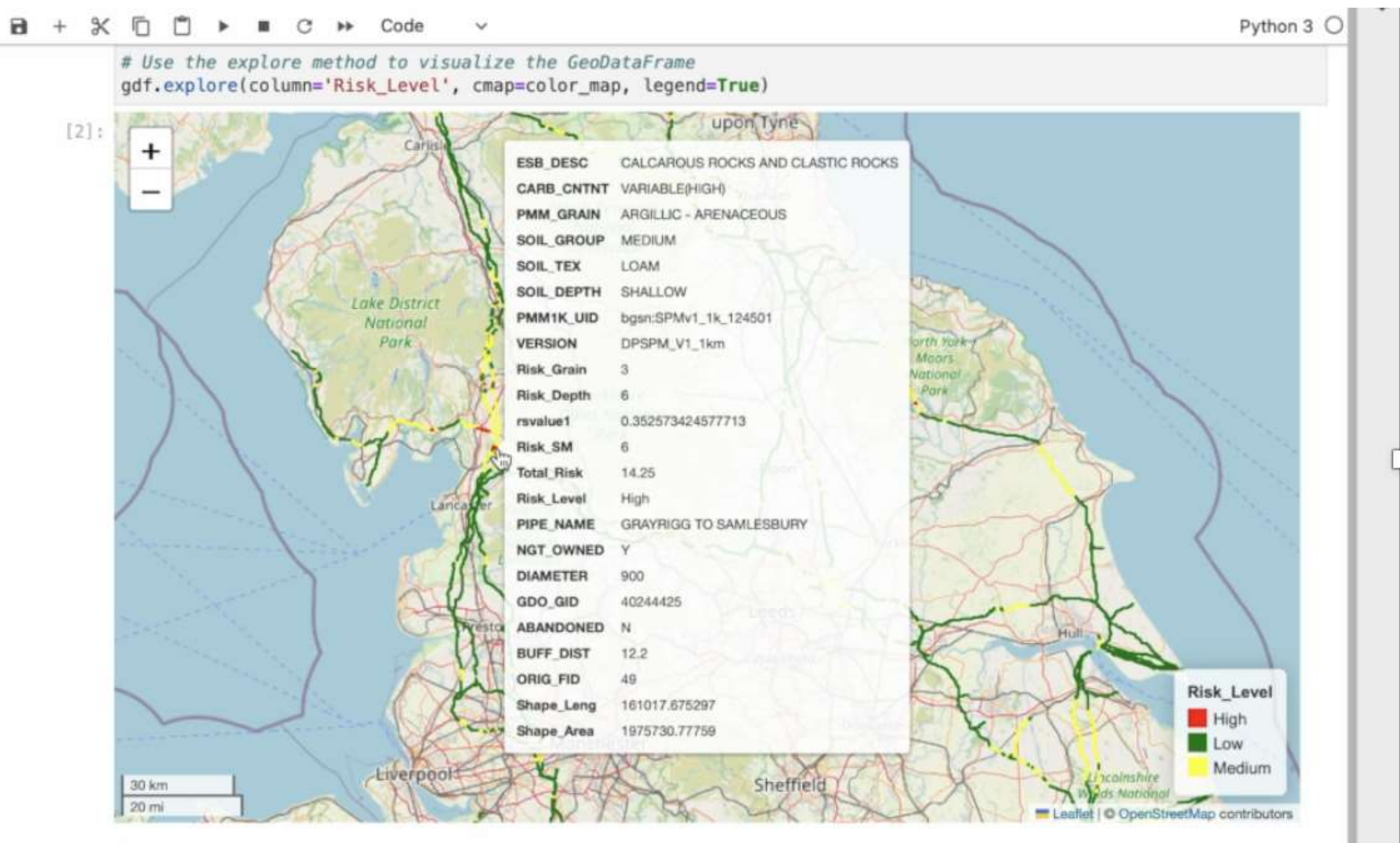

Figure 2 End-to-end demonstrator running on the DAFNI platform

- ❖ 2. Engagement with the utility sector, business and other initiatives.
  - Industry Engagement Workshops with Line Search Before You Dig (LSBUD), Cadent Gas, and National Grid.
  - Engagement with CReDo project and their data-sharing framework.
- ❖ 3. Engagement with other national data services including UKRI's JASMIN, the National Underground Asset Register (NUAR) and the UK Soil Observatory / British Geological Survey Managed.

Barriers of data sharing identified in the project

- ❖ **Security & Sensitivity Concerns** – Fear of exposing asset locations and safety records.
- ❖ **Operational Priorities** – Immediate infrastructure needs take precedence over long-term data-sharing benefits.
- ❖ **Confidentiality Requirements** – Need for aggregation and anonymisation increases complexity.
- ❖ **Liability & Governance Issues** – Risk of misuse, legal challenges, and compliance burdens.
- ❖ **Technical Barriers** – Data quality issues, resource constraints, and inconsistent standards.

Benefits of data sharing identified in the project

Enable Research and Support Decision making:

- Comprehensive climate risk assessment framework for utilities.
- Map climate risk across gas networks.
- Identify data gaps (e.g., gas leakage granularity) and improve data quality.

Enhance Collaboration:

- Build and strengthen partnerships across sectors.
- Understand best practices for cross-organisational data-sharing.

Inform Adaptation Strategy & Policy:

- Support utilities in assessing climate risks and shaping adaptation strategies.
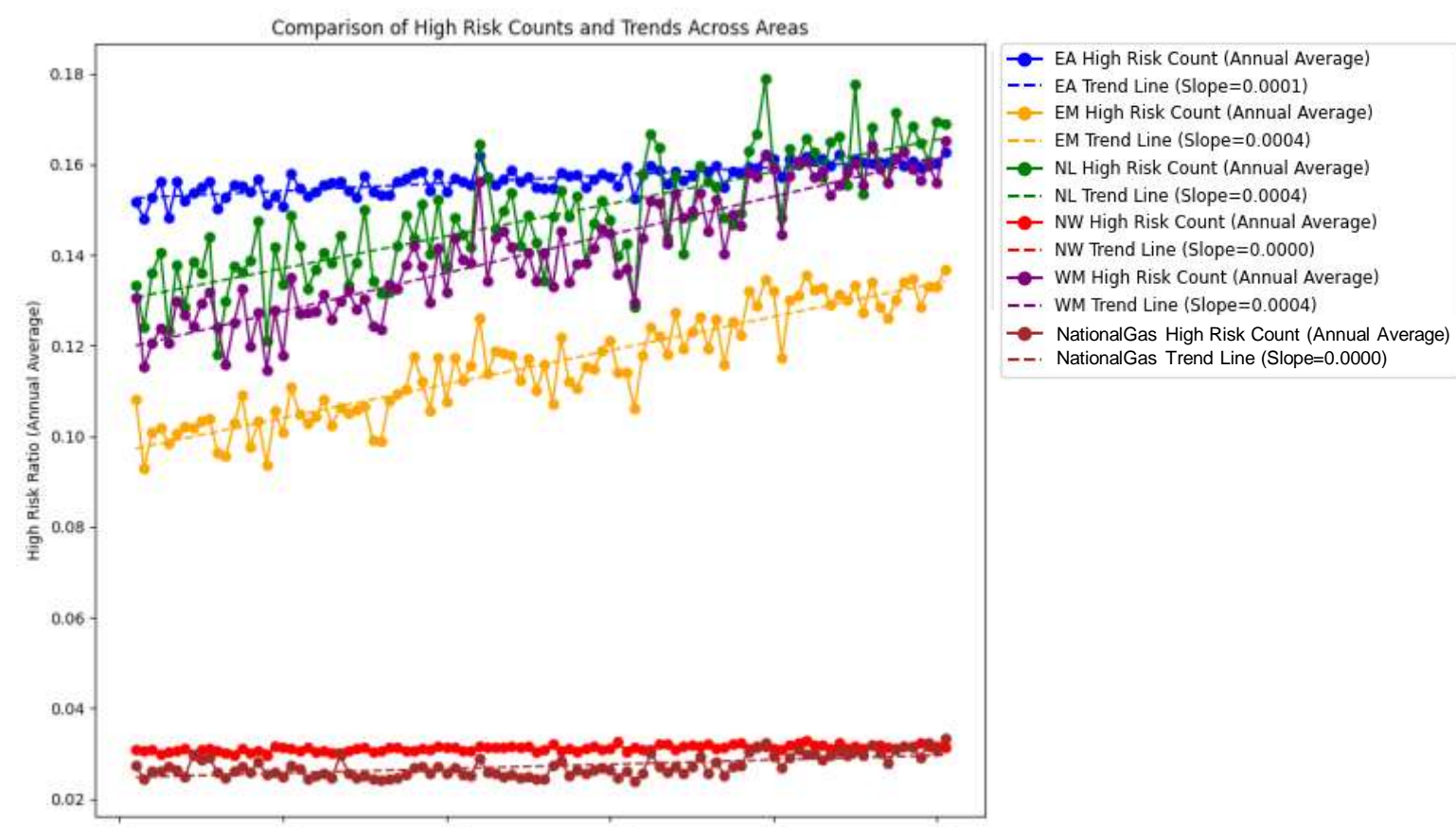- Contribute to Climate Change Risk Assessment and the National Adaptation Programme.

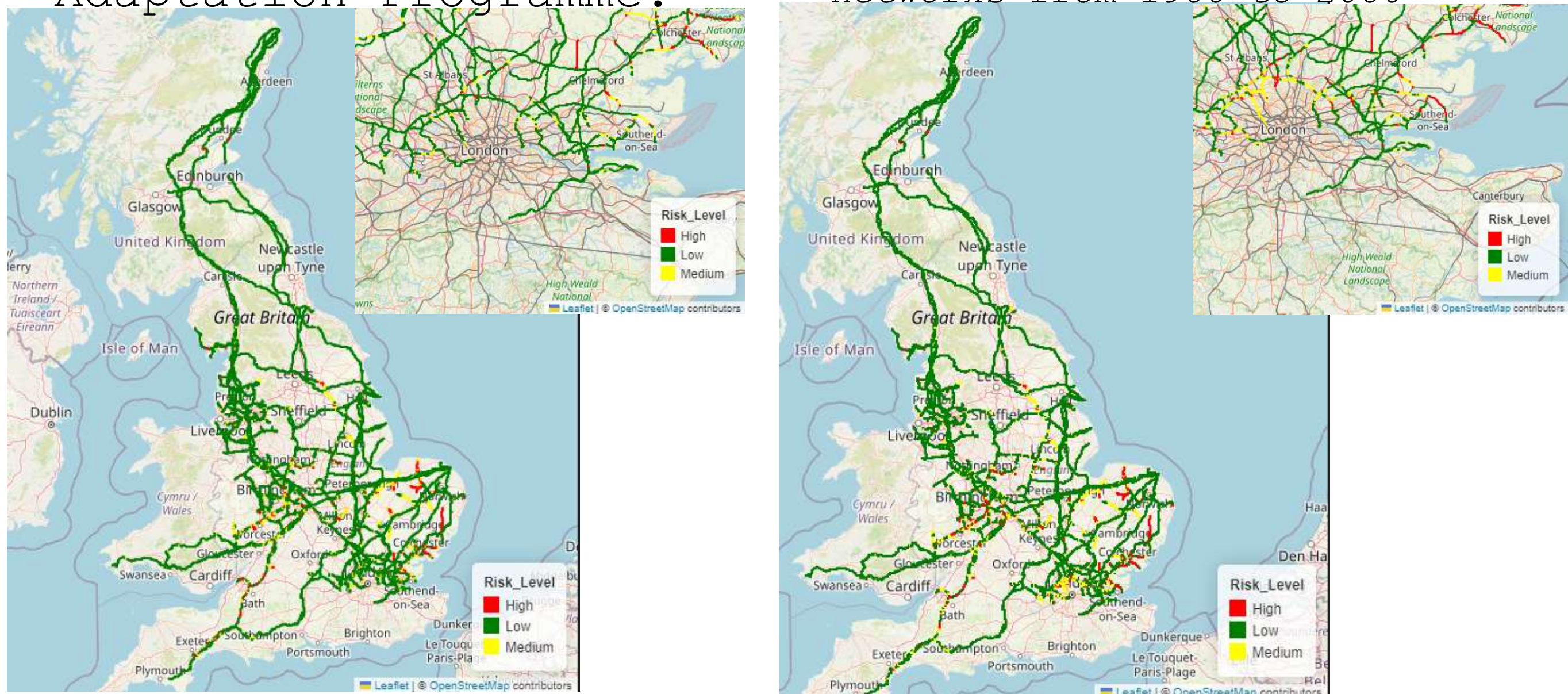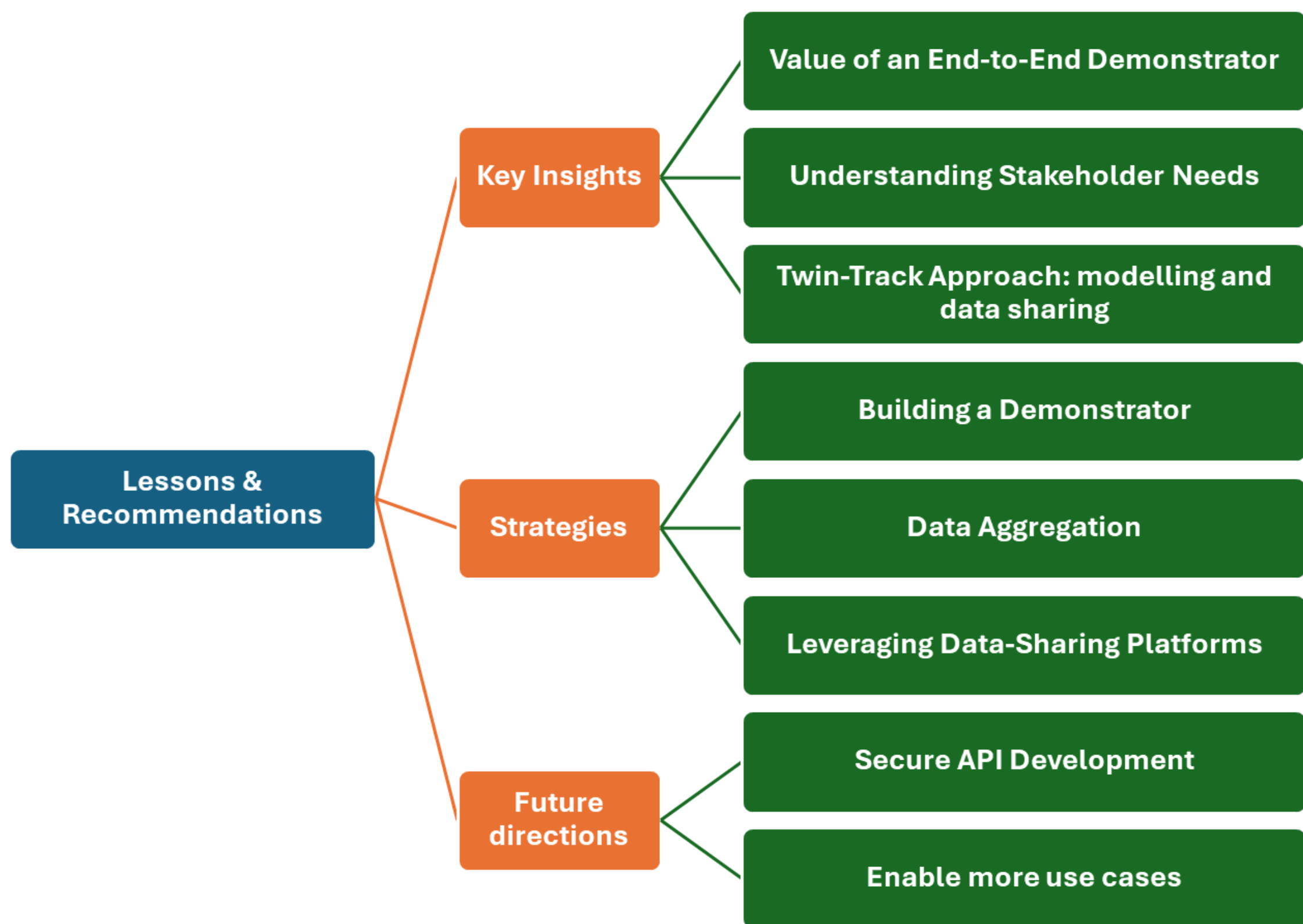*Figure 3 High Risk ratio for the National Gas and Cadent Gas networks from 1980 to 2080*

Figure 4 Risk level for the National Gas network and Cadent Gas network, Left: May 2020, Right: May 2080

Lessons learnt and recommendations

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