Collecting data to develop indicators of climate change adaptation in London

1. Aim

The aim of the project is to support monitoring of the progress of London's climate resilience, and ultimately to determine whether adaptation actions are effective. This is in line with Objective 8.1 of the London Environment Strategy to 'Understand and manage the risks and impacts of severe weather and future climate change in London on critical infrastructure, public services, buildings and people.'

2. Why indicators?

Monitoring is intended to help London policy makers, and others with an interest in the city's climate resilience, understand how well London is adapting to climate change and where to focus adaptation efforts. At present, there is no systematic collection of data and information to illustrate how well the city is adapting to the impacts of severe weather and future climate change.

Such data collection would capture evidence of good and poor performance, help identify adaptation priorities and highlight knowledge gaps. Where possible, it would include assessing the financial costs of severe weather to support the business case for climate resilience.

3. Who is this work for?

Climate change adaptation indicators for London will help us develop London's strategic adaptation policies. Because adaptation requires action and understanding across the range of sectors, and because the Mayor's powers to prepare London for climate change are limited, indicators and monitoring would also be of interest to decision-makers in sectors and organizations responsible for adaptation planning. This includes boroughs, utilities and infrastructure providers, social service providers, the private sector and those outside of London where decisions may affect or be affected by London.

4. Methodology

Indicator data collection is being developed in consultation through the London Climate Change Partnership (LCCP) with stakeholders from sectors that have key roles to play in improving resilience. These include transport, energy, water, health, and the built environment. This collaboration helps us understand what data is needed to build an understanding of weather and climate resilience and what data is available through existing monitoring regimes. Where possible, we intend to use data that is already being collected. However, it is also helpful to understand where new data collection may be needed, or where existing monitoring regimes could be adapted to accommodate adaptation monitoring.

Selection of potential indicators and data

The IPCC risk framework illustrates that climate change risk is a function of physical hazards, exposure, and vulnerability (see Fig. 1). Measuring London's progress in adapting to climate change risk will depend on collecting data relevant to each of these elements. It will also be helpful to record and look for trends in observed impacts and actual adaptation measures implemented.

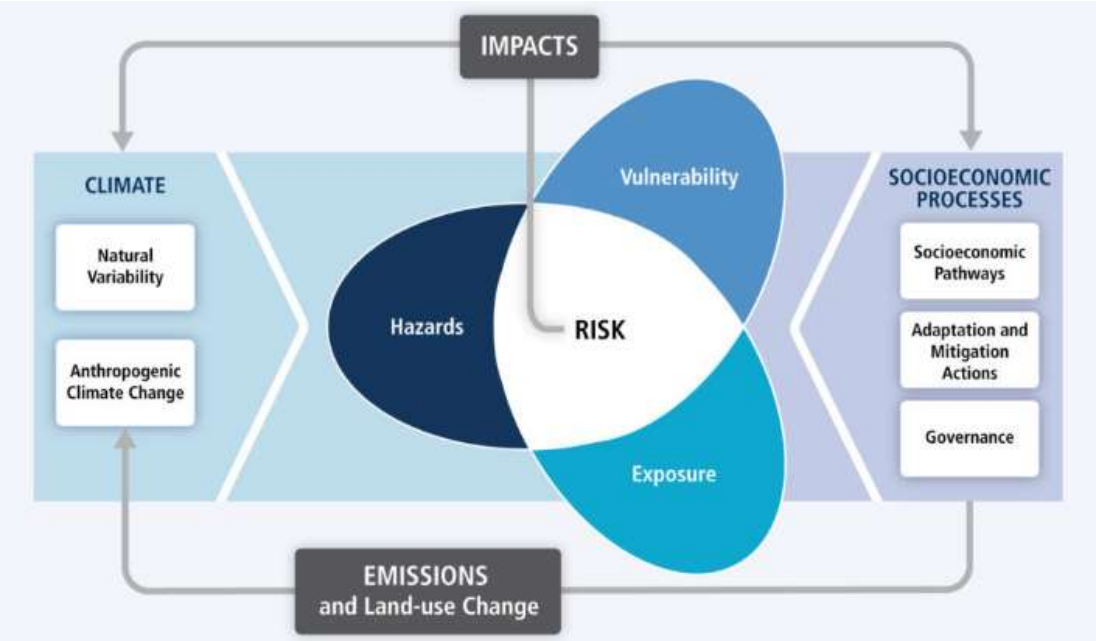

Figure 1: IPCC's risk framework. IPCC 2014 (WG2) Summary for Policymakers

While hazards are determined by weather and climate, exposure and vulnerability are largely determined by human decision-making and activity, for example, building in flood-prone areas. Some aspects of risk are easy to measure quantitatively, for example, temperature, rainfall, or the number of properties in the flood plain. Some risk factors, including aspects of vulnerability, lend themselves to a more qualitative assessment, which can include narrative about continuity processes and adaptive capacity.

Type of indicator	Definition	Example
Hazard	Occurrence of extreme weather events or climate-related trends	Number of extreme rainfall events per year
Exposure	The presence of systems - human, environmental, economic - in places that could be adversely affected	Number of infrastructure assets in the flood plain
Vulnerability	The propensity or predisposition to be adversely affected. Vulnerability is made up of exposure and capacity to adapt, and may include physical and social aspects	Proportion of Londoners who are socially isolated
Impact	Experienced effects on natural and human systems	Number of transport disruptions due to flooding
Adaptation	Measures taken to reduce vulnerability or exposure, or to increase adaptive capacity	Implementation of property level flood protection

5. Compatibility with other adaptation activities and monitoring

An indicator framework for London should accommodate and align with the monitoring of the relevant objectives in the London Environment Strategy. For example, any monitoring associated with policies and proposals related to adaptation or green infrastructure could be included here.

It is also intended to be compatible with the approach taken by the Adaptation Sub-Committee (ASC) to develop indicators and evaluate adaptation progress across sectors. This will allow for London's work to inform future UK Climate Change Risk Assessments and the monitoring reports that the ASC produces to evaluate the UK's preparedness for climate change.

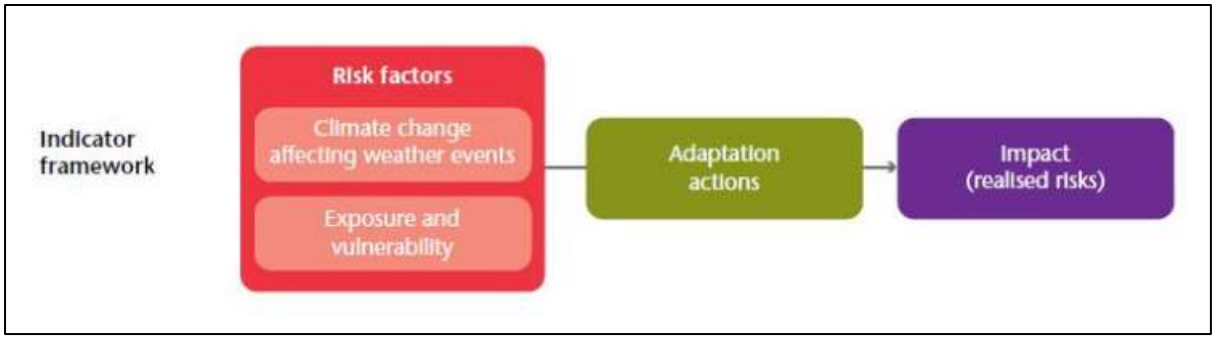

Figure 2: Adaptation assessment toolkit, ASC https://www.theccc.org.uk/tackling-climate-change/preparing-for-climate-change/how-the-uk-is-preparing/

6. Limitations of the current project

The difficulties involved in drawing reliable conclusions about adaptation progress from data are well known. These are related mainly to difficulties in attribution (establishing a causal relationship between adaptation actions and outcomes) and in measuring avoided impacts. They are further complicated by the long-term and uncertain nature of climate change. In some cases, data collection has not been happening long enough to determine trends, but may point to trends over time.

This project will not initially draw conclusions from the collected data to assess London's climate resilience. It is meant only to create a mechanism for bringing relevant data together in one place, addressing the current lack of systematic data collection related to adaptation.

This current project also will not collect qualitative or narrative assessment of climate change risk. A qualitative assessment of adaptation in organizations and sectors will be part of a separate piece of work.

7. Next steps

The next steps for this project will include:

- Ongoing work to add to the data sets – continuing engagement with sectors and covering the range of climate hazards.

- Qualitative review of adaptation progress. We envision this review being conducted using the Adaptation Sub-Committee's methodology for sectors, which includes four questions:

    - Is there an understanding of current vulnerability to extreme weather?
    - Is there an understanding of how the risks will change over time?
    - Is there action to address the risks?
    - Is the policy/regulatory framework helping or hindering?

    As part of the qualitative review, we will also explore the possibility of adaptive capacity assessments in sectors.

- A review/assessment of data trends to provide ongoing monitoring of London's adaptation progress against the baseline.