Guidance 21a: High-level approach for stress testing physical risks

British International Investment

START

Agree key objectives

a. Define what the stress test aims to explore – e.g. short-term credit risk impact from severe flooding in exposed mortgage portfolio.

b. Establish scope in terms of scale (e.g. full portfolio / specific segment), geography (e.g. flood-prone regions), time horizon (e.g. 1-10 years) and risk focus (e.g. credit risk).

Design scenarios

a. Specify the nature of the shock (e.g. a one-in-100-year flood affecting specific districts).

b. Map scenario to portfolio by identifying concentrations (e.g. properties, sectors or regions most at risk).

c. Draw on authoritative hazard maps, regulatory guidance or scientific input (e.g. use NGFS reference events or consult national flood datasets)

d. Focus on narrative detail and hazard characteristics rather than numbers at this stage.

Select analytical approach

Choose between top-down, bottom-up or hybrid approach based on objectives, data availability and regulatory context.

a. **Top-down**: use aggregate exposure data, macro-level hazard impacts and standard impact multipliers.

b. **Bottom-up**: use granular transaction-level data, detailed hazard overlays and client-specific resilience indicators.

c. **Hybrid**: combine aggregate and granular elements for cross-validation.

Data collection and preparation

Assemble data tailored to scenario and approach:

a. Portfolio/segment data – e.g. loan amounts, location, property values, insurance cover

b. Geographic risk mapping – e.g. overlay loans with flood risk zones

c. Client adaptive capacity data – e.g. flood defences, insurance coverage

Segment exposures based on scenario relevance (e.g. all mortgages in high-risk flood zones).

Apply scenario shocks and model impacts

Translate hazard shock characteristics, such as flood depth, duration or irrecoverable asset damage, into financial outcomes.

a. Quantify impact on property values using hazard-to-damage functions.

b. Adjust probability of default (PD) and loss given default (LGD) based on new loan-to-value (LTV) ratios, insurance payouts and client characteristics.

c. Model expected credit losses (ECL) for each segment: ECL=PD x LGD x EAD

d. Identify non-performing loans (NPLs) post-shock and recalculate portfolio-level metrics (e.g. NPL ratio, total ECL).

Aggregate, analyse and report results

a. Sum expected losses and NPLs across the portfolio.

b. Compare with baseline (pre-shock) levels and regulatory thresholds.

c. Identify key risk concentrations by sector, geography or segment.

d. Document key drivers, assumptions and uncertainties.

REVIEW AND ITERATE