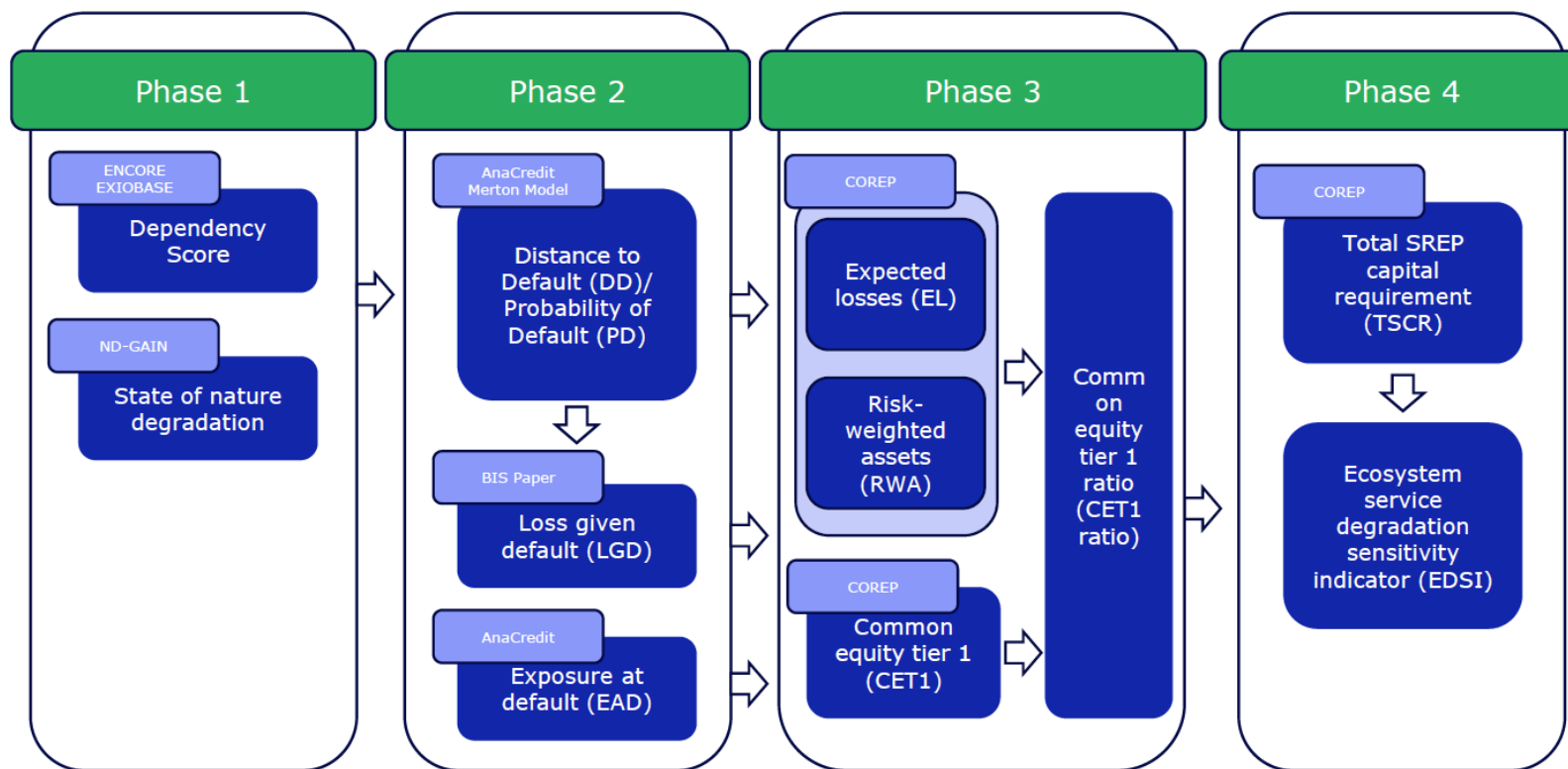**Discussion of**
Gallet, Hendricks & Prodani (2024) "The ecosystem service degradation sensitivity indicator (EDSI): a new framework for understanding the financial risk repercussions of nature degradation"

Jean Boissinot, ACPR

MPPG Workshop, Vilnius, 15 Oct. 2024

The EDSI approach in a nutshell

Figure 2: The four phases of the proposed framework

Note: The above phases show in a more detailed manner how we apply Step 2 (identifying exposure to nature) and 3 (estimating sensitivity to a shock on nature) of Figure 1, leaving out of scope Step 1 of Figure 1 (defining the shock on nature).

The EDSI approach in a nutshell

- Combining databases
  - ENCORE (direct dependency), EXIOBASE (indirect dependency)
  - ND-GAIN (state of nature degradation)
  - AnaCredit (firm level (?) impact)
  - COREP/FINREP (bank level impact)

- From identifying dependencies to assessing sensitivity
  - Moving beyond the exposure approach
  - Nature degradation induced firm level decline productivity (proxied as an asset depreciation) $\Rightarrow$ adjusted PD and LGD/EAD

- From firm level vulnerability to bank level impact
  - Portfolio level aggregation
  - CET1 depletion/EDSI

Toward a closed form approach...

- **Combining direct and indirect dependency & defining vulnerability**
  - ENCORE and EXIOBASE:
    - DS at ES x sector x region level
  - ND-GAIN:

  Vulnerability = $DS_{ES \times sector \times region} \times Degradation_{ES \times region}$
  - Firm level variable: $\alpha ES.Vulnerability$

- **Modifying the Merton model**
  - DTD with depreciating capital (as a linear function)
  - Calibration: uniform shock or given depreciation

- **Solving for PD and getting an LGD**
  - DTD to PD (Merton model)
  - PD to LGD (Basel standard formula)

- **From firms to banks**
  - PD & LGD to EL & RWA;
  - EL & RWA to CET1 depletion

- **Defining a single metric**
  - EDSI to sum up bank's sensitivity to a given ES degradation

… but (too?) many approximations

- **Firm level**
  - Is credit risk relevant dependency to ES well captured through asset depreciation?
    - Not all ES are similar
    - Acute physical risks & assets ? Chronic physical risks & productivity?
  - Is the firm level modeling too crude to be meaningful?
    - Are firm's asset well proxied by loans?
    - Are the databases really capturing the vulnerability? A firm geographical footprint is much more than the location of its HQ? How to account for firm specific characteristics in using ES?
  - The approach is applied to financial institutions and public sector but is it relevant beyond NFC ?

- **Bank level**
  - Is bank's sensitivity to nature related risks only a credit portfolio matter?
    - Better control for the varying size of the NFC loans portfolio?
    - Beyond NFC, how to deal with financial institutions and public (since proposed approach not appropriate)? What about households?
  - Is capital depletion the right metrics to focus on? What about the macro impact?

- **Two fundamental questions**
  - Can we abstract from seizing up nature related risks as shocks?
  - Maybe ES attrition is already playing a role ($\neq$ climate). What can we measure? How to account for this impact?