The importance of data in credit risk … and beyond

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**d-fine
analytical.
quantitative.
tech.**

1000+
Employees with strong business and technical expertise

>90%
of employees have a degree in a STEM subject

200+

- Banks
- Govt.
- Industry
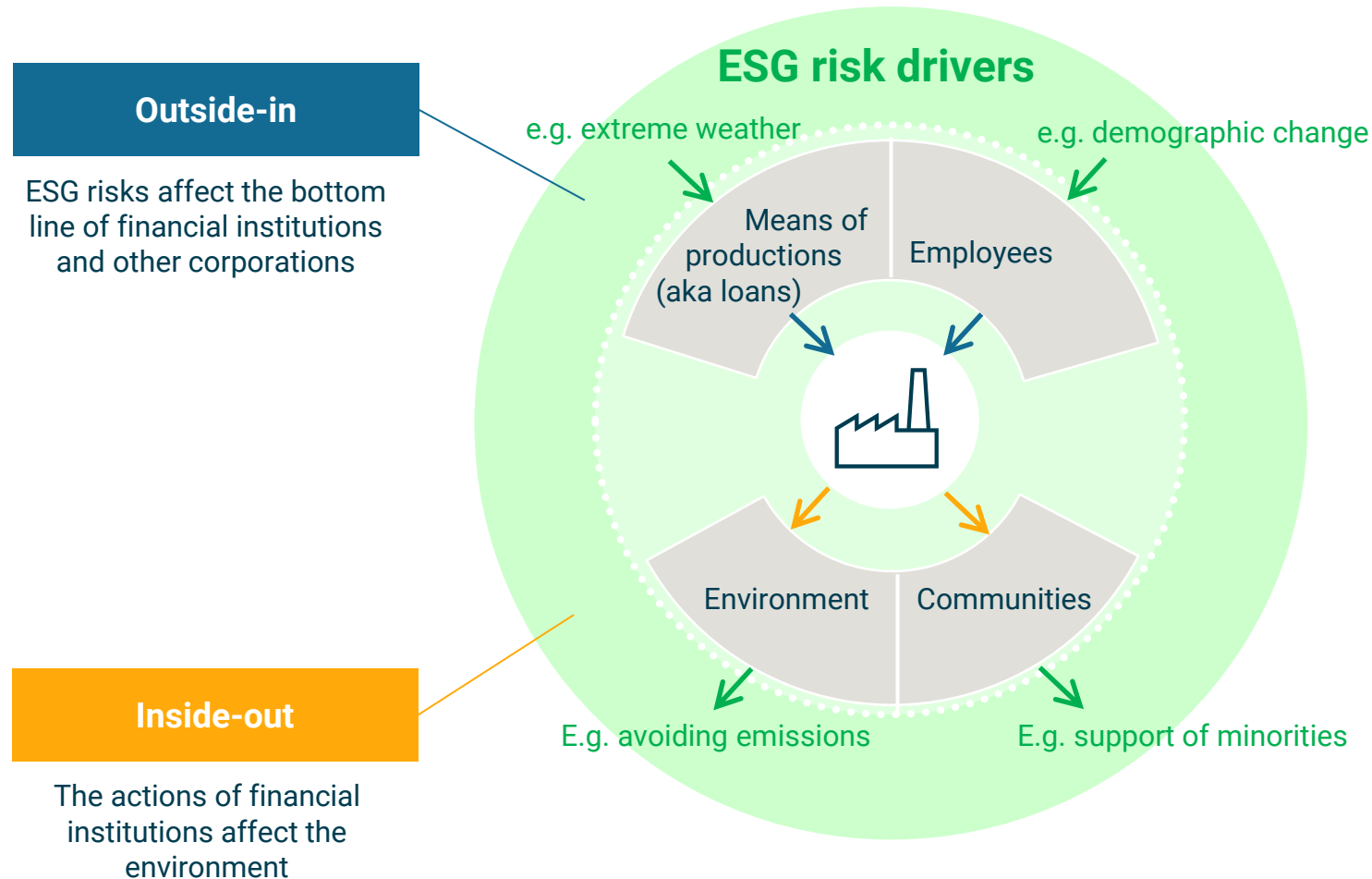- Insurance & Asset Mgmt
- Others

20
Years of experience in consulting on Risk, Finance, and Markets

Hands-on
Approach: We deliver business analysis and IT implementation

Holistic perspective | Inside-out as well as outside-in aspects need to be measured based on objective information to avoid greenwashing claims

Impact

Outside-in

ESG risks affect the bottom line of financial institutions and other corporations

ESG risk drivers

e.g. extreme weather

e.g. demographic change

Means of productions (aka loans)

Employees

Environment

Communities

E.g. avoiding emissions

E.g. support of minorities

Inside-out

The actions of financial institutions affect the environment

Both external events as well as internal actions must be considered in a comprehensive framework, a notion introduced by EBA as "double materiality"

Identified material effects need to be aligned with the internal taxonomy and documented properly in an (ESG) risk inventory.

Scenario analyses must complement the risk identification to define the materiality of events that have not yet occurred.

We need data and methods to really measure the impact.

Risk Assessment | The EEFIG Working Group and its Member Banks performed new primary data analyses to reveal the impact on credit risk

3 case studies with real data on defaults & arrears…

…and controlling for the effects of e.g.

Household income

Loan term

Valuation

LTV

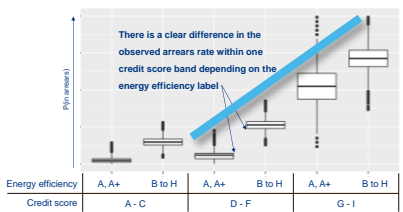Year of construction

Recession, unemployment

Credit score, IRB score
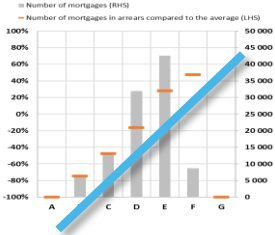
Borrower age

results in

Allianz Baufinanzierung – better energy efficiency leads to lower likelihood of being in arrears

There is a clear difference in the observed arrears rate within one credit score band depending on the energy efficiency label

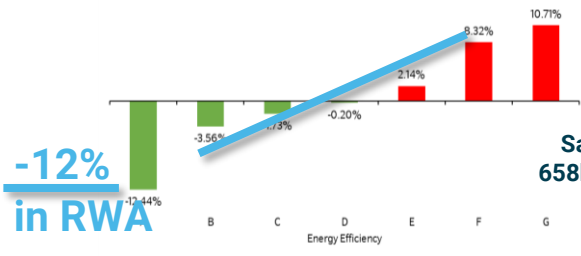**Sample size 35k mortgages**

OP Financial better energy efficiency leads to a lower likelihood of being in arrears for retail mortgages

Sample size 102k mortgages

Nationwide Building Society successfully tested the inclusion of EE in IRB capital models

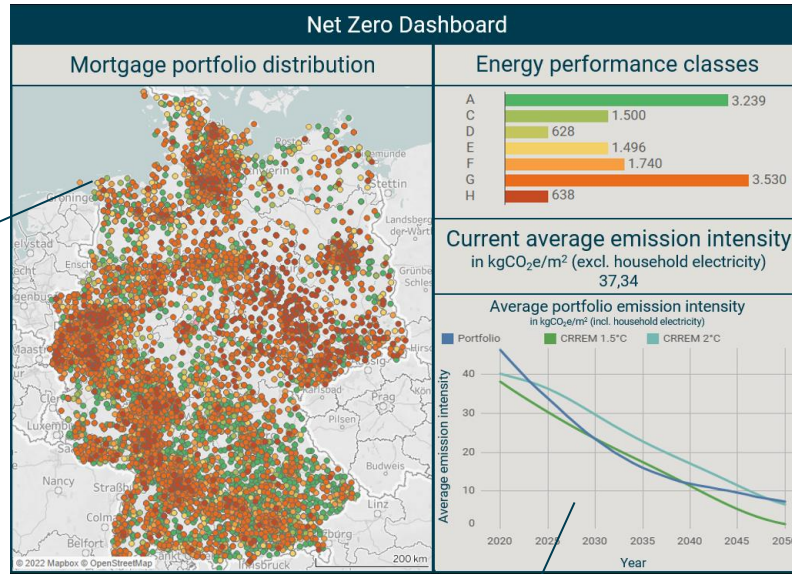**-12% in RWA**

Sample size 658k mortgages

Impact

Clear statistical relationship between energy performance of the collateral and credit risk of the associated loan.

Financial institutions should tag loan collateral and underlying assets based on their energy performance.

Financial institutions should analyze their own portfolios to better manage credit risks and capital allocations.

Mortgage lenders running IRB models should consider including energy efficiency as a risk factor.

Steering ESG risks on portfolio level | Despite all complexities, the required information for portfolio risk control can be summarized in suitable dashboards

Impact

Net Zero Dashboard — Mortgage portfolio distribution | Energy performance classes

Energy performance classes:
- A: 3.239
- C: 1.500
- D: 628
- E: 1.496
- F: 1.740
- G: 3.530
- H: 638

Current average emission intensity
in kgCO$_2$e/m^2 (excl. household electricity)
37,34

Average portfolio emission intensity
in kgCO$_2$e/m^2 (incl. household electricity)
Portfolio — CRREM 1.5°C — CRREM 2°C

- The display of geographical distributions helps to identify hotspots of e.g. required renovations, and supports the communication with regional offices.
- Zooming in to the individual mortgage / building directly supports the business lines when prioritizing customers.
- All physical risks can also be mapped into the display.

- The simulation of management actions on the trajectory of the portfolio is crucial to focus on the most effective measures.
- Various assumptions and mgmt. actions can be integrated in this simulation of total CO$_2$ emissions from the portfolio.
- The comparison with suitable target trajectories allow for continuous monitoring and improvement of CO$_2$ emissions.
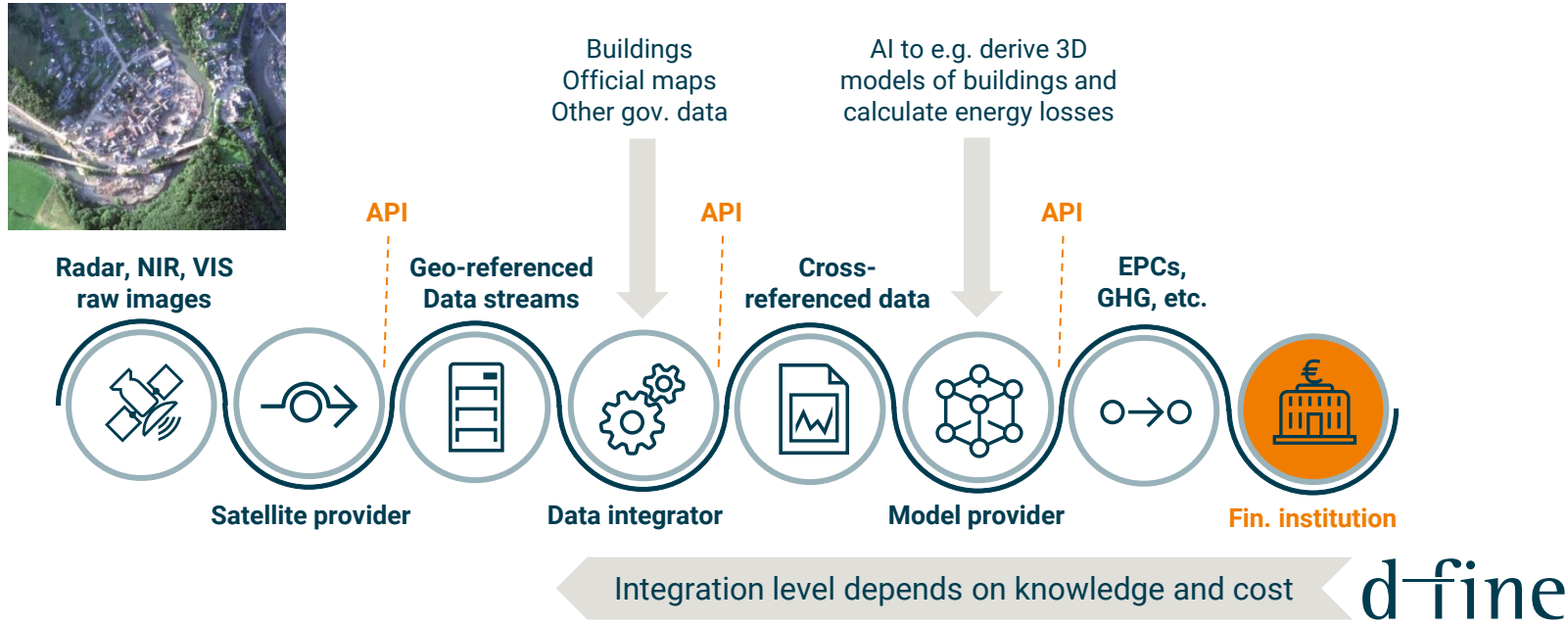
- Energy efficiency of buildings is one major factors for achieving net zero as soon as possible.
- A drill-down functionality based on energy efficiency classes allows to identify the most effective renovation candidates in the portfolio.

A consistent visualization of the current portfolio trajectories and their comparison with target trajectories throughout the organization supports the communication of e.g. climate actions.

Suitable simulation tools help to support decision making, even when long time horizons are involved.

ESG in the credit process | Tackling the ESG data challenge in the lending business by using new scalable data sources, avoiding extensive customer surveys

Buildings
Official maps
Other gov. data

AI to e.g. derive 3D
models of buildings and
calculate energy losses

API

API

API

**Radar, NIR, VIS
raw images**

**Geo-referenced
Data streams**

**Cross-
referenced data**

**EPCs,
GHG, etc.**

Satellite provider

Data integrator

Model provider

Fin. institution

Integration level depends on knowledge and cost

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Use cases:

- Buildings: Calculation and updating of energy performance classes for buildings, updating building valuations, tracking flooding risk

- SME / corp: implement checks on local and global supply chain partners

Impact

Scaling up data access for environmental assessments can be achieved by using AI models e.g. based on satellite images. Effectively global data access is possible.
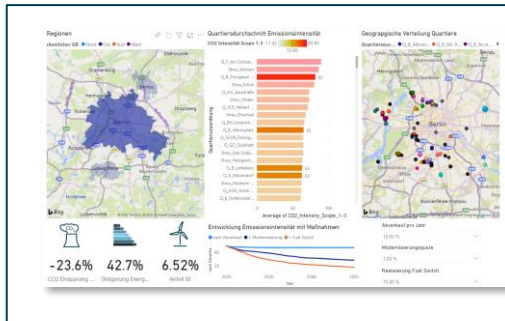
These approaches, though technically demanding, are typically more cost effective than low level data collection.

Selecting matching service providers helps to avoid high upfront investment costs. Depending on business criticality, the integration can be more or less deep.
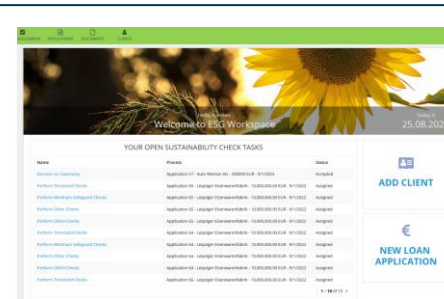
SkenData
Value. Risk. Energy.

d-fine as a partner

d-fine | Your ESG implementation partner

Impact

Sustainability Strategy Cockpit

- Analyses of the most relevant sustainability key figures for all company hierarchies
- Company/portfolio comparison with different scenarios for various corporate strategies

ESG Dashboard

- Reporting ESG portfolio score with comprehensive analyses and benchmarking capabilities
- Performance analysis at portfolio and individual stock level with selected benchmarks as well as in comparison to other industries

ESG Loan App

- Digital platform implementing the assessment of EU taxonomy compliance of loans
- Platforms encompasses rule set, workflow management, communication and integration

Efficient and effective ESG implementation requires a partner that can bridge the gap from theoretical concepts to practical business applications

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