Executive Summary

- ESG investment is booming around the planet.
- But ESG is still confusing in terms of data and objectives.
- So clarity is needed and proper data will help.
- While recognizing that the links between society forces are key.
- In the meantime, already a growing use of existing ESG data with:
  - Low Carbon Indexes
  - Green Bonds
- Amundi:
  - Is the leading European Asset manager;
  - Has integrated ESG in its core strategy since its creation;
  - Has developed some innovative partnerships with clients, corporates, to develop some solutions helping clients align their portfolios with a low carbon economy.
Massive Increase but Still Confusing
A Global $30tn Market

$30.7tn Global Responsible Investment

~ 40%* of Global Assets under management

+34% Growth in 2 years

Source: Global Sustainable Investment Review 2018. AuM as of December 2017, Global Sustainable Investment Alliance (GSIA)

* Calculated using the Global AUM $79.2tn. BCG. Global Asset Management 2018 The Digital Metamorphosis.

CANADA $1.7tn
42% growth in 2 years

USA $12.7tn
38% growth in 2 years

EUROPE $14.1tn
11% growth in 2 years

JAPAN $2.2tn
307% growth in 2 years

AUSTRALIA / NZ $734bn
46% growth in 2 years
And Expected to Continue to Grow

ESG market could keep on growing:
- From $30tn (about one third of total AUM now)...
- ...towards $45tn (50% of total AUM) in 2021
- ...and even $125tn (95% of total AUM) in 2030
Lack of Consensus on ESG Data

GPIF has compared ESG scores provided by FTSE and MSCI on the Top 450 Japanese companies

Absolute lack of correlation
Data is key but for which Objective?
ESG Mapping: Multiple Possible Objectives

VALUES

SIGNALS

LT RISK MANAGEMENT & OPPORTUNITIES

Norms
Ex: Gambling, Sharia, etc.

Engagement
Ex: Green Bonds, SDGs, etc.

Reports

360° Analysis
Ex: Governance, Controversies

Environment Shift
Ex: Long-term risks (regulation, etc.) Changes of social norms (taxes, etc.).

Licence to Operate at Risk
Ex: Climate Change, Inequalities,

Source: Amundi
Climate Change: Unprecedented Challenge

2100 Emission Projections

Global Greenhouse gas Emissions (GtCO2e/a)

Source: Climate Action Tracker Database, Global emissions time series, updated November 2017. Time series data for INDCs, 2C consistent, 1.5C consistent time series are computed as medians of highest and lowest potential global emission level results.
Impacts of Temperatures on Where to Live

Human beings must regulate their internal heat, and so they are exposed to the mix of:
- External temperatures and
- Humidity

In 2000*, this was already a severe risk:
- 13.2% of the planet’s land area where 30.6% of the population resides…
- was exposed to 20 or more days when temperatures and humidity surpassed the threshold beyond which such conditions become deadly.

By the end of the century, in a BAU scenario, entire regions of the world would be inhabitable.

* Source: Global Risk of Deadly Heat (Science 2017)
03

Links Between Forces
Multiple Forces Related to Climate Change Impacting Asset Prices

- **Society**
  - Millennials
  - Technological Changes
  - Migration
  - Health Changes

- **Nature**
  - Extr. Weather Events
  - Sea Level
  - Water Scarcity
  - Agriculture

- **Asset Prices**

- **“Regulations”**
  - Countries
    - NDCs / COP 21 commitments

- **Impacts**
  - Increases likelihood & Possible disruptive moments

- **Carbon Market/Tax**
  - Command & Control

- **Competitors Subsidies**
  - Industry
  - Self Regulation

  - Capital Markets

- Increases likelihood & Possible disruptive moments
Sharp rise in EU carbon prices: expectation for supply squeeze

Regulation in the automobile industry
Efforts to reduce CO₂ emissions from cars will impact oil demand globally

GLOBAL IMPACT
— In 2015, 18% of global CO₂ emissions were attributed to road transportation¹
— Efforts to reduce emission from road transport has emerged across the world
— By 2040, oil demand will decrease by 8m barrels/day according to estimates by Bloomberg²

COUNTRY SPECIFIC REGULATION OF THE AUTOMOBILE INDUSTRY

<table>
<thead>
<tr>
<th></th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ban on new vehicle sales</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Norway</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Spain</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Italy</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>China</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ban on all vehicles</th>
<th>2025</th>
<th>2030</th>
<th>2040</th>
</tr>
</thead>
<tbody>
<tr>
<td>Spain</td>
<td>Madrid</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Greece</td>
<td>Athens</td>
<td></td>
<td></td>
</tr>
<tr>
<td>France</td>
<td>Paris</td>
<td></td>
<td></td>
</tr>
<tr>
<td>California</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Note: (1) Source: CO₂ emissions from fuel combustion p.39, International Energy Agency, 2017
(2) Source: Electric Vehicle Outlook 2017, Bloomberg New Energy Finance

Ban applies to:
Petrol & Diesel
Diesel only

Not confirmed
Migration risks of climate change

Changes in the global environment cause an increasing number of human displacements

“By 2050, climate change could force more than 143 million people in just 3 regions to move within their countries”

– World Bank Group¹

LATIN AMERICA  SUB SAHARAN AFRICA  SOUTH ASIA

Core threat to the stability of a country’s economic sector

+24 million people² were newly displaced by sudden-onset climate-related hazards worldwide in 2016

2.8% of the population of these 3 regions is at risk

3 largest displacement events in 2016 were climate-related:

- Typhoon Nock-Ten
  2.6m people

- Typhoon Haima
  2.4m people

- Yangtze River floods
  1.9m people

Sources: (1) Groundswell, Preparing for internal climate migration, World Bank Group, 2018
(2) Internal displacement monitoring centre database 2017
Physical risks of climate change

- Natural catastrophes have increased significantly worldwide since 1980

**FREQUENCY**
- Frequency of natural catastrophe loss events has increased worldwide (see table 1 below)
- This increase is mainly due to weather related disasters

**LOSS**
- Substantial increase of normalized and inflation adjusted losses
- Socioeconomic factors are the most relevant drivers of this increase

**HIGH EXPOSURE**
- Natural Catastrophe insurance gap remains very large in all regions of the world (see table 2 below)

---

**Table 1: NatCat events worldwide 1980-2016: Number of events**

<table>
<thead>
<tr>
<th>Year</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>200</td>
</tr>
<tr>
<td>1981</td>
<td>300</td>
</tr>
<tr>
<td>1982</td>
<td>400</td>
</tr>
<tr>
<td>...</td>
<td>...</td>
</tr>
<tr>
<td>2016</td>
<td>800</td>
</tr>
</tbody>
</table>

---

**Table 2: Insurance gap**

<table>
<thead>
<tr>
<th>Region</th>
<th>Insurance gap</th>
</tr>
</thead>
<tbody>
<tr>
<td>North America</td>
<td>50%</td>
</tr>
<tr>
<td>South America</td>
<td>88%</td>
</tr>
<tr>
<td>Europe</td>
<td>71%</td>
</tr>
<tr>
<td>Africa</td>
<td>97%</td>
</tr>
<tr>
<td>Asia</td>
<td>92%</td>
</tr>
<tr>
<td>Australia/Oceania</td>
<td>59%</td>
</tr>
</tbody>
</table>

---

Source: 2016 Münchener Rückversicherungs-Gesellschaft, Geo Risks Research, NatCatSERVICE – As at January 2016
Use of Data
Methodology 1.0: low carbon indices

<table>
<thead>
<tr>
<th>PROVIDER’S SELECTION</th>
<th>CLIMATE RISK REDUCTION</th>
<th>TE REDUCTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Index Provider (MSCI)*</td>
<td>- Carbon footprint: X% reduction of Emission Intensity¹</td>
<td>- Optimization of weights</td>
</tr>
<tr>
<td>- Carbon Data Provider (MSCI)*</td>
<td>- Stranded assets: Z% reduction of reserves intensity²</td>
<td>- Regular rebalancing</td>
</tr>
</tbody>
</table>

¹ Carbon emissions divided by sales
² Potential cumulative emissions from reserves divided by market cap

* As an example
Free option on climate change risk pricing

« Free Option »:
- Either no climate change impact: same performance
- Or a climate change impact: outperformance

Without re-pricing: same performance

With re-pricing: Outperformance

Source: Amundi Investment Solutions / Random simulations with annual volatility at 20%, annual expected return 7% and a 0.5% TE. Past market trends are not a reliable indicator of future ones. Past performance does not prejudge future results, nor is it a guarantee of future returns.
## Low carbon leaders Europe

<table>
<thead>
<tr>
<th>Key Metrics</th>
<th>MSCI</th>
<th>MSCI Europe Low Carbon Leaders</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Return* (%)</td>
<td>7.50</td>
<td>8.05</td>
</tr>
<tr>
<td>Total Risk* (%)</td>
<td>11.61</td>
<td>11.73</td>
</tr>
<tr>
<td>Sharpe Ratio</td>
<td>0.65</td>
<td>0.69</td>
</tr>
<tr>
<td>Active Return* (%)</td>
<td>NA</td>
<td>0.55</td>
</tr>
<tr>
<td>Tracking Error* (%)</td>
<td>0</td>
<td>0.76</td>
</tr>
<tr>
<td>Information Ratio</td>
<td>NA</td>
<td>0.72</td>
</tr>
<tr>
<td>Turnover** (%)</td>
<td>2.40</td>
<td>11.86</td>
</tr>
<tr>
<td>Securities excluded</td>
<td>NA</td>
<td>96</td>
</tr>
<tr>
<td>Market cap excluded (%)</td>
<td>NA</td>
<td>23.4</td>
</tr>
<tr>
<td>Carbon Emission intensity reduction (tCO2/mm USD) (%)</td>
<td>NA</td>
<td>50</td>
</tr>
<tr>
<td>Carbon Reserves intensity reduction (tCO2/mm USD) (%)</td>
<td>NA</td>
<td>68</td>
</tr>
</tbody>
</table>

- Excludes:
  - Largest 20% emitters with a maximum 30% by weigh from any sector
  - Largest owners’ reserves up to 50%

- Major reduction of:
  - Carbon Emissions Intensity (-50%)
  - Carbon Reserves Intensity (-68%)

- Low tracking error: 0.76 %

Past market trends are not a reliable indicator of future ones. Past performance does not prejudge future results, nor is it a guarantee of future returns. Source: MSCI, Net total return annualized in EUR for the 11/30/2010 to 03/31/2018 period. The cumulative index performance is from MSCI

1 Over 5 years. 2 Last 12 months. 3 As of end February 2018.
Performances

Annualized outperformance (2010-2019):
- World: +31 bp (1)
- North America: +36 bp
- Europe: +32 bp

Even if supposed to be forward-looking

Performance of concrete investments:
- Nov 2014 – Jun 2019
- Annualized outperformance: +24 (2) bp
- Information ratio(3): 0.56

Past market trends are not a reliable indicator of future ones. Past performance does not prejudge future results, nor is it a guarantee of future returns. Source: MSCI
(1) Net monthly returns annualized in USD for the 11/30/2010 to 06/28/2019 period. Data prior to the launch date (Sep 16, 2014) is back-tested data. (2) Net weekly returns annualized in USD for the 11/07/2014 to 06/28/2019 period. Outperformance in basis points. The cumulative index performance is from MSCI. (3) A ratio of portfolio returns above the returns of a benchmark (usually an index) to the volatility of those returns.
Green Infrastructures’ Financing Gap

- Costly for both parties
- 2 main obstacles:
  - Emerging Markets being considered as too risky by many investors
  - Lack of knowledge on infrastructures financing (even locally)
Green Infrastructures Financing Gap: Elegant Solution

- **Financial Institutions in EM** (Tackles problem #2)
- **Green Activities (including Green Projects)**
  - Channeling of the financing
  - Green Bonds (Tackles problem #2)
- **Green Bonds Fund in EM**
- **Risk Sharing Mechanism** (Tackles problem #1)
- **Asset Owners**
  - Investment
  - Fund Management

_Images: IFC, Amundi_
EM Green Bonds strategy
Financing the energy transition in Emerging Markets

**Structure**

<table>
<thead>
<tr>
<th>Tranche Type</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Senior tranche</td>
<td>90%</td>
</tr>
<tr>
<td>Mezzanine tranche</td>
<td>3.75%</td>
</tr>
<tr>
<td>Junior tranche</td>
<td>6.25%</td>
</tr>
</tbody>
</table>

**Portfolio**

- EM Sovereign Bonds
- EM FI Bonds
- EM FI Green Bonds

**Investment period**

- From 100% EM bonds (with systematic ESG screening)
- To target 100% FI green bond\(^{(1)}\)
- Capture yield premiums
- Finance the energy transition

**Run-off period**

- FI green bond portfolio matures
- Other bonds—if any—to be divested\(^{(2)}\)
- Distributions of proceeds to investors

For professional investors only. \(^{(1)}\)There is no assurance that the portfolio will reach the green bonds investment targets as indicated in the chart above. \(^{(2)}\)Within a period of 6 months subject to normal market conditions.
2018 Impact Highlights

$1.42 billion at closing to deploy more than $2 billion over seven years

77% of capital leveraged from private sector sources

14 green bonds in portfolio

16.5% of the portfolio allocated to green bonds

233 tCO2e avoided emissions per €1mn invested per year

7 emerging countries with green projects financed
Breakdown of Use of Proceeds by Country/Sector (in %)

233 tCO2e in avoided emissions for 2018
Alignment with Sustainable Development Goals

**PUBLIC-PRIVATE PARTNERSHIP**

- Financial Innovation
- Asset Manager
- Institutional Investors
- DFIs

**GREEN CORNERSTONE BOND PROGRAMME**

1. Build the future green bond market in EM countries
2. Address the urgent financing need for climate projects in EM countries

**GREEN BONDS**

- Project financing
  - EM FI GBs with high sustainability and environmental standards
- Stimulating Demand
- Fostering Supply

**ESG policy developed alongside DFIs**

**Education training provided to EM FIs**

**Technical assistance**
- Help EM FIs issue new or next generation green bonds

*Amundi ASSET MANAGEMENT*
High Recognition
From partnership inception to fund launch

**Partnership launch**

FINANCIAL TIMES
IFC invests $325m in green bond fund for emerging markets
Arm of World Bank to support environmentally friendly projects in developing markets

**Fund closing**

FINANCIAL TIMES
Green investing generates returns, not just a warm glow
Sustainability is now seen as a way of looking at often ignored externalities

**G20 Report**

Presented by X. Musca, former Head of the French Treasury and President Sarkozy Chief of Staff.

Making the case of the IFC deal being a case study of a new business model for developing banks

Already won 6 Awards