

MSCI ESG GOVERNMENT RATINGS

Sovereign Ratings

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CONTENT

- Market Drivers and Use Cases
- Materiality of ESG Factors
- Product Philosophy and Framework
- Research Process and Scoring Methodology

MARKET DRIVERS



ESG Integration in fixed income asset class

- DM/EM funds
- ESG FI indexes

Understand extra-financial risks & opportunities that may become material



Understand 'Country Risk'

Some specific triggers:

- ✓ 2008 financial crisis
- ✓ Arab spring
- ✓ Corruption & political instability
- ✓ Global commodity market crash

CLIENT USE CASES

Additional Data

- Country specific ESG data to inform strategy, country allocation
- Research, reports used by Sovereign analysts as supplementary data source

Bond Funds

- DM government bond fund – EU only, applies maximum allocations based on ESG rating
- EM government bond fund – Political governance scores establish eligibility
- Quantitative – optimization strategy using ESG scores

Fixed Income Indexes

- ESG ratings inform Barclays MSCI ESG Fixed Income Indices
 - Sustainability – ‘BBB’ rating minimum;
 - ESG weighted – tilt or weighting factor based on rating applied

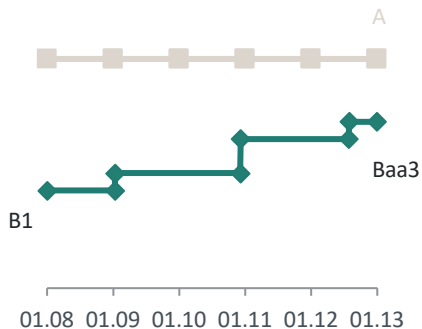
MATERIALITY OF ESG FACTORS

Comparison of ESG and Financial Ratings

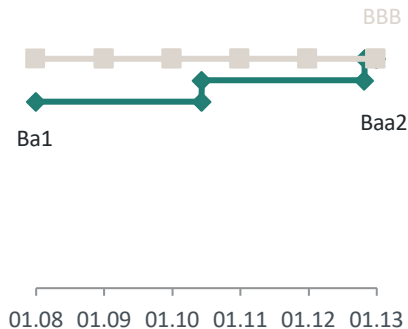
CONVERGENCE OF ESG & SOVEREIGN RATINGS

EM Credit Upgrades

Uruguay

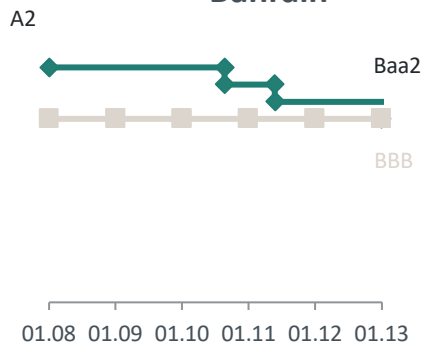


Panama

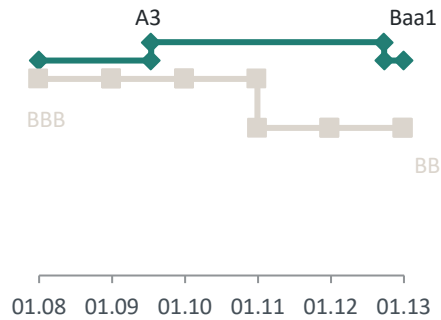


EM Credit Downgrades

Bahrain



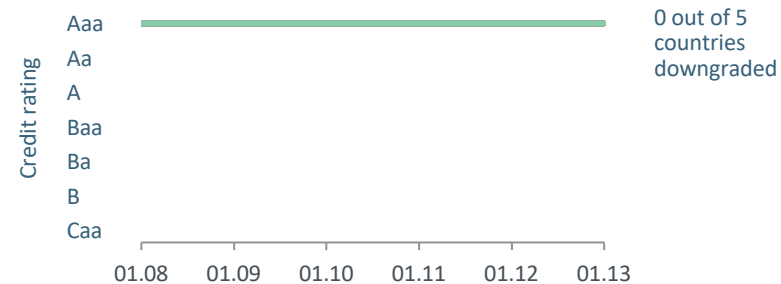
South Africa



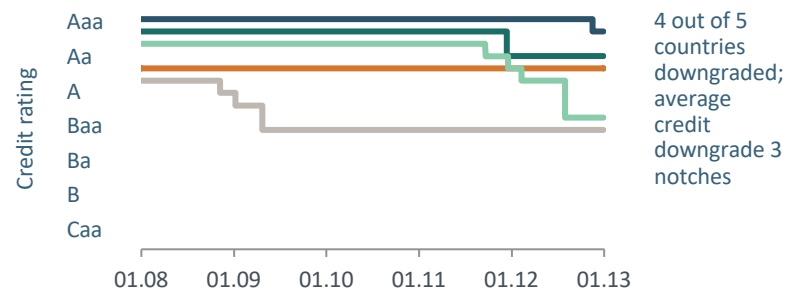
— Credit Rating (Moody's)
— ESG Rating (MSCI)

EUROZONE CREDIT DOWNGRADES

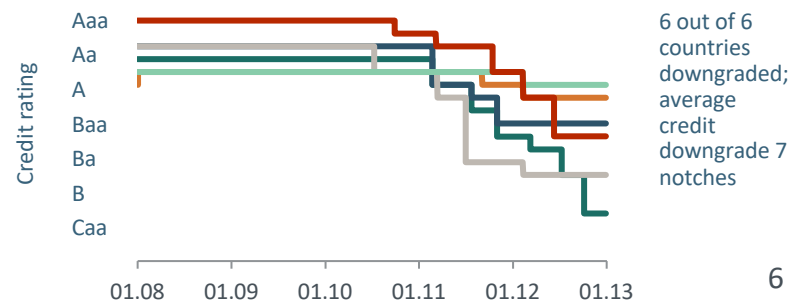
Eurozone - ESG = 'AA' +



Eurozone - ESG = 'A'

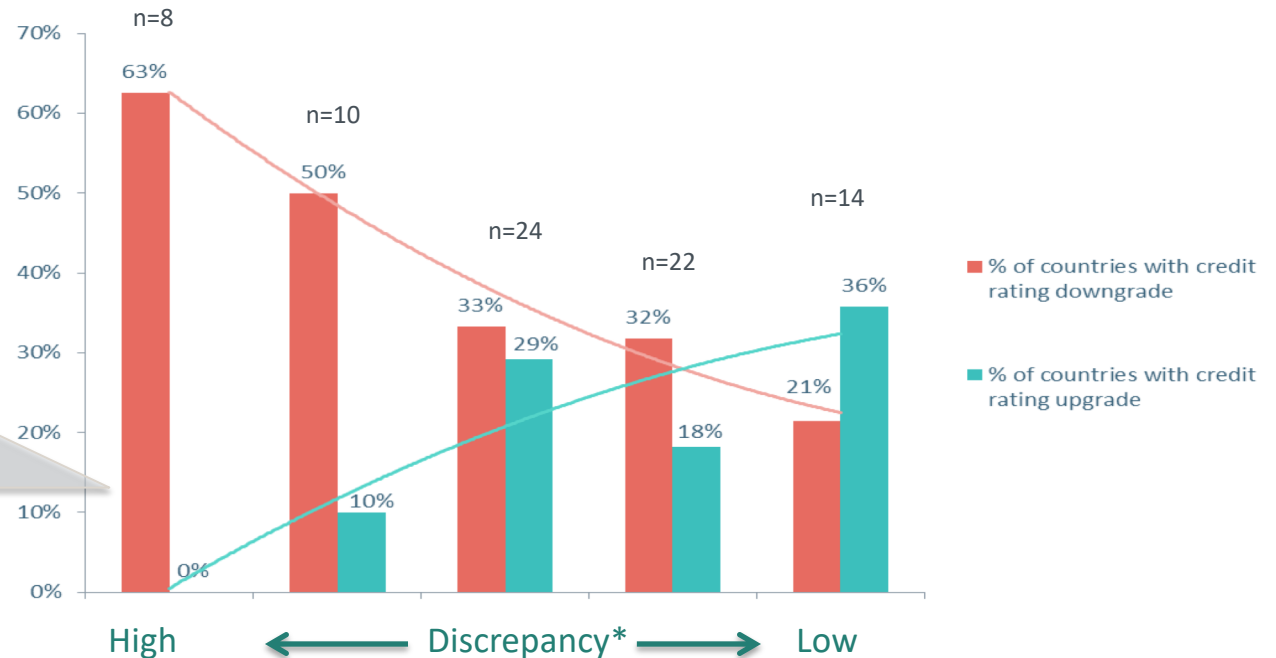


Eurozone - ESG = 'BBB'



EVIDENCE THAT ESG FACTORS IMPACT SOVEREIGN RISK IN THE LONG RUN

- In 2008, eight countries in this zone
- Five countries Egypt, Italy, Portugal, Spain and Tunisia received downgrade
- Three countries China, Morocco and Singapore retained their rating



X-axis: Difference between ESG score and Credit rating score at the beginning of year 2008.

Y-axis: % of the countries receiving credit rating downgrade / upgrade during 2008-2012 (i.e. in the span of five years)

*Calculated as the difference between ESG Rating and Credit Rating on a homogenized numeric scale.

Source: Credit Ratings from Fitch Sovereign Rating History (www.fitchratings.com)

PRODUCT PHILOSOPHY AND FRAMEWORK

MSCI ESG GOVERNMENT RATINGS

Our Government Ratings help investors assess the long-term competitiveness of national and sub-national economies

- Identifies **ESG risks** affecting a country's value creation process – long-term sustainability of output and growth
- Identifies **countries with strong ESG fundamentals** that are likely to outperform in the long run
- Differentiates** countries that are otherwise similar based on financial and fiscal characteristics
- Emphasizes **quantifiable benchmarking of performance** over qualitative assessment of policies, using a **transparent methodology**

ESG GOVERNMENT REPORT GERMANY (DE)

REGION: NORTHERN EUROPE
MARKET PEER GROUP: DEVELOPED MARKET

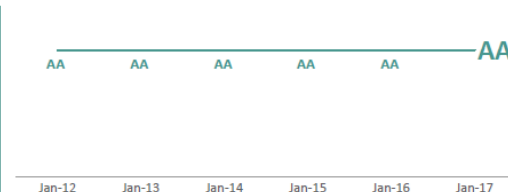
ESG RATING
RATING OUTLOOK: NEGATIVE **AA**

RATING DATE: January 24, 2017
LAST UPDATE: January 24, 2017

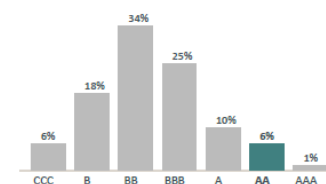
GOVERNANCE SNAPSHOT

Level of democracy	LOW RISK
Press freedom	LOW RISK
Rule of law	LOW RISK
Political rights	STRONG MGMT
Civil liberties	STRONG MGMT
Corruption perception	STRONG MGMT
UN Sanctions	NO
EU Sanctions	NO

RATING TREND



GLOBAL RATING DISTRIBUTION



TOP AND BOTTOM MARKET PEERS*

COUNTRY	RATING	OUTLOOK
TOP RATED PEERS		
Norway	AAA	Neutral
Sweden	AAA	Negative
New Zealand	AA	Neutral
BOTTOM RATED PEERS		
Israel	BBB	Neutral
Italy	BBB	Neutral
Spain	BBB	Neutral

ESG SCORE CARD

	WEIGHT	SCORE	GLOBAL MEDIAN**
Environment	25.0%	4.3	4.5
Natural Resources	18.0%	3.4	4.0
Env. Vulnerability	7.0%	6.5	5.6
Social	25.0%	8.5	5.0
Human Capital	15.0%	9.0	5.0
Econ. Environment	10.0%	7.6	4.9
Governance	50.0%	8.3	4.9
Financial Governance	20.0%	7.2	5.6
Political Governance	30.0%	9.0	4.5

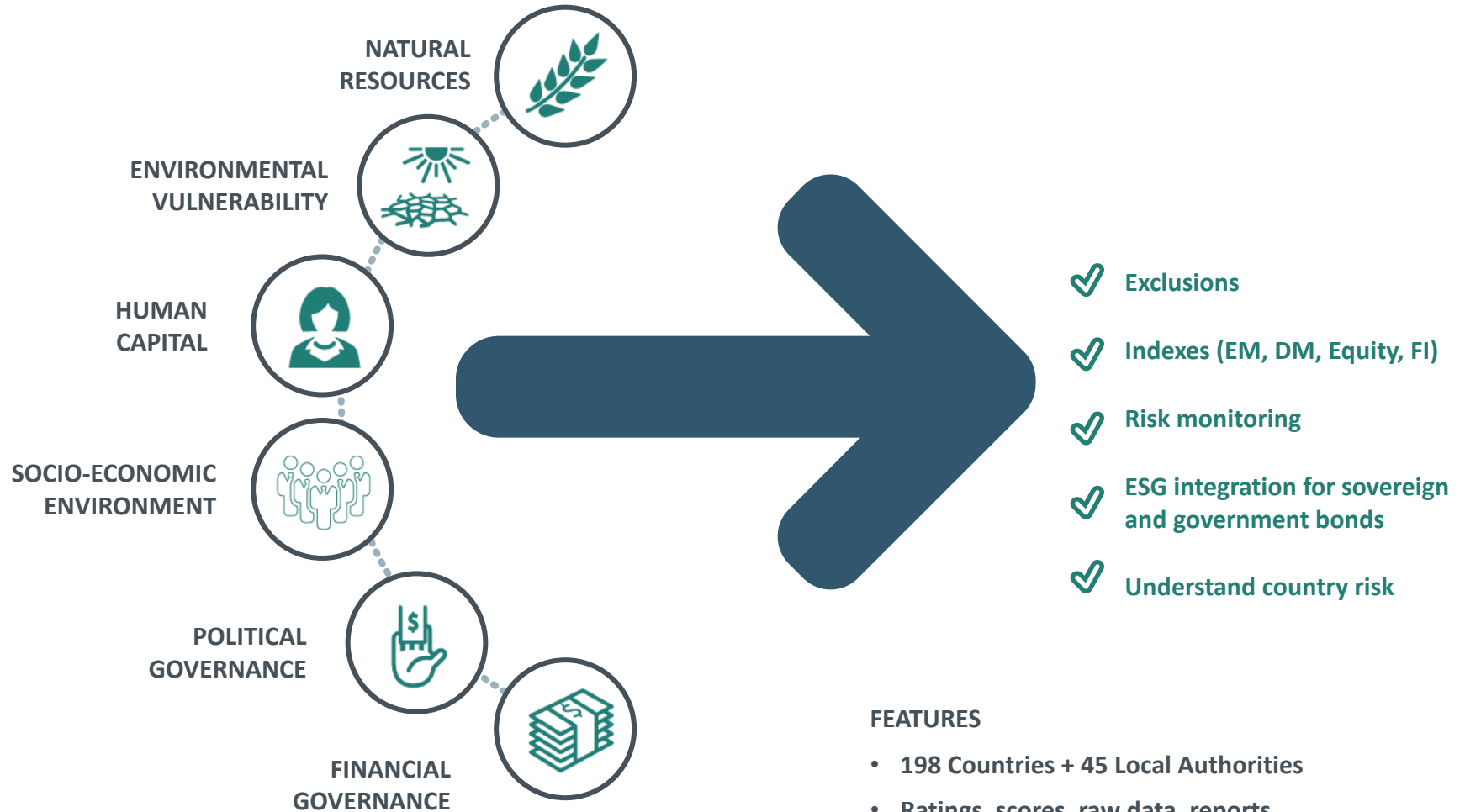
RATING COMMENT

Germany maintained its rating of AA, with a constant negative outlook. The country has a strong management performance related to providing for the basic needs of its population; to increase education rate and life expectancy; to improve the country's investment in R&D; and to improve health and education infrastructure. This performance is in line with the median level relative to other countries in Northern Europe. In contrast, Germany has a high exposure to risks related to energy security; lack of productive land and of mineral resources per capita; and, lack of water resources per capita. This risk exposure is in line with the median level relative to other countries in Northern Europe.

MOST SIGNIFICANT RECENT EVENTS

MSCI ESG Research tracks high-impact global events and incorporates the impact of such events in ESG Government Ratings on a monthly basis. At the time of the last monthly review, no events with significant impact on the theme scores or the overall ESG Government Rating were flagged.

MSCI ESG GOVERNMENT RATINGS



MSCI ESG SOVEREIGN RATINGS - FRAMEWORK

Pillar	Risk Factor	Exposure sub-factor	Management Sub-factor
Environmental	Natural resource risk	<ul style="list-style-type: none"> ○ Energy security risk ○ Water resources ○ Productive land and mineral resources 	<ul style="list-style-type: none"> ○ Energy resource management ○ Water resource management ○ Resource conservation
	Environmental externalities and vulnerability risk	<ul style="list-style-type: none"> ○ Vulnerability to environmental events ○ Environmental externalities 	<ul style="list-style-type: none"> ○ Environmental performance ○ Management of environmental externalities
Social	Human capital risk	<ul style="list-style-type: none"> ○ Basic human capital ○ Higher education and technology-readiness ○ Knowledge capital 	<ul style="list-style-type: none"> ○ Basic needs ○ Human capital performance ○ Human capital infrastructure ○ Knowledge capital management
	Economic environment risk	<ul style="list-style-type: none"> ○ Economic environment 	<ul style="list-style-type: none"> ○ Wellness
Governance	Financial governance risk	<ul style="list-style-type: none"> ○ Financial capital 	<ul style="list-style-type: none"> ○ Financial management
	Political governance risk	<ul style="list-style-type: none"> ○ Institutions ○ Judicial and penal system ○ Governance effectiveness 	<ul style="list-style-type: none"> ○ Political rights and civil liberties ○ Corruption control ○ Stability and peace

- 1-10 underlying data points per sub-factor
- Ratings and score with 9 years of history for 198 countries/regions (99% of traded sovereign debt)
- Weight-setting tool allows clients to re-weight risk factors based on their own views
- 98 data points evaluated to compute 27 sub-factors

PRODUCT FEATURE

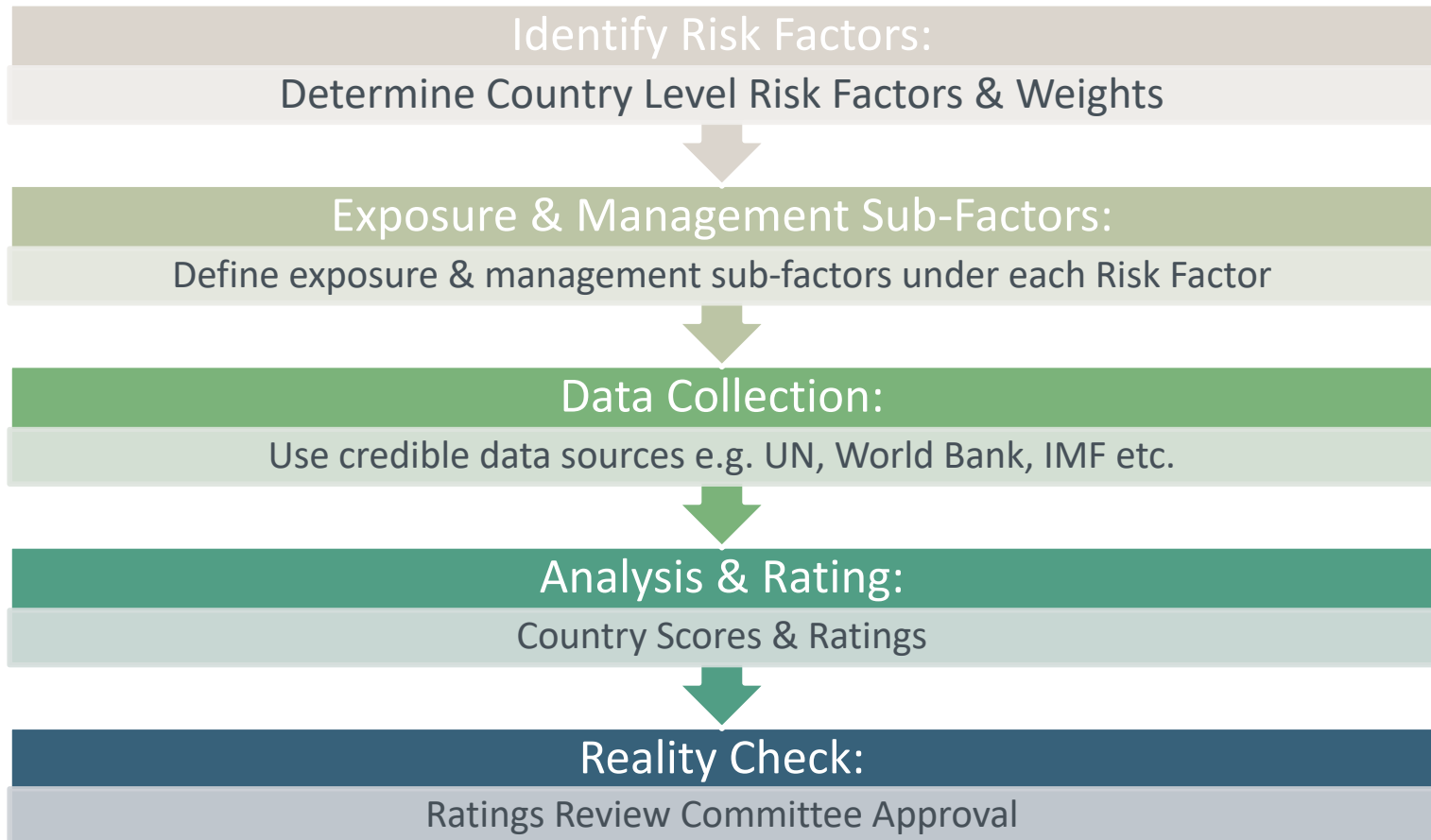
- Online profiles, scores, and ratings for 198 Countries/regions
 - As part of Government Ratings, ESG assessment of 45 Local Authorities is also available
- Sovereign Screen available for 198 countries
- Data feed, bond matching for sovereign and quasi-sovereign entities
- Excel scoring file with customizable weights and peer set comparisons
- Raw data available on request

KEY ESG PERFORMANCE METRICS						
	Denmark	Global	N. Eur. ⁵	DM ⁴	Rating Peers ('AA' countries)	Trend
Environmental Parameters						
Energy consumption per capita (kgoe/capita/year)	3,048	3,350	4,960	4,240	4,821	↑
Energy intensity (2011 \$-ppp per kgoe)	14.1	8.9	10.1	11.1	10.2	↑
Proven fossil and nuclear fuel reserves (TJ/person)	0.9	19.2	2.1	10.2	17.2	↓
Renewable energy (% of total energy consumption)	8%	5%	13%	8%	10%	↑
Social Parameters						
Income inequality (GINI, higher => more inequality)	26.9	36.8	30.1	33.7	30.0	↓
Infant mortality rate (per 1000 live births)	2.9	13.1	3.2	3.3	3.4	↑
Life expectancy (years, at birth)	80.3	75.2	80.8	81.5	81.5	↑
Young and old age support ratio	0.36	0.23	0.32	0.34	0.31	↓
Governance Parameters						
Public debt (% of GDP)	46%	58%	56%	81%	50%	↑
Political governance score (out of 10)	9.5	5.9	8.8	8.5	9.3	↓

⁴ → Northern Europe | ⁵ → Developed Markets
 ↑ reflects Positive, → reflects Stable and ↓ reflects Negative trend as compared to past available data.

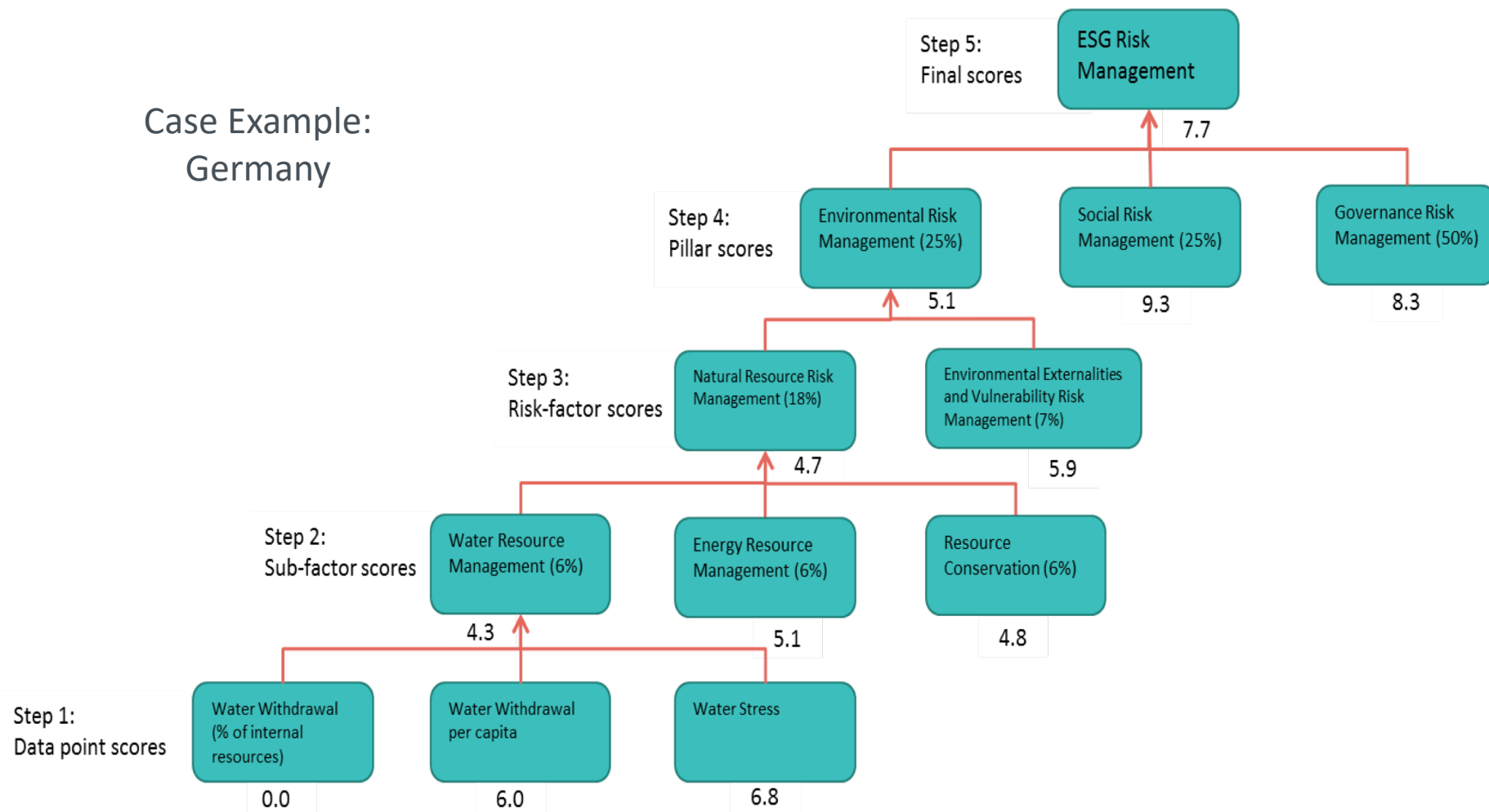
RESEARCH PROCESS AND SCORING METHODOLOGY

RESEARCH PROCESS



SCORING METHODOLOGY

Case Example: Germany



NON-SOVEREIGN GOVERNMENT RATINGS

- Local Authorities
 - German States
 - Australian States & Territories
 - Major Canadian Provinces
 - Select US States
 - Select Swiss Cantons
- Agencies
- Supranationals
 - European Community
 - European Union
 - European Financial Stability Fund

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Our line of products and services includes indexes, analytical models, data, real estate benchmarks and ESG research.

MSCI serves 98 of the top 100 largest money managers, according to the most recent P&I ranking.

For more information, visit us at www.msci.com.

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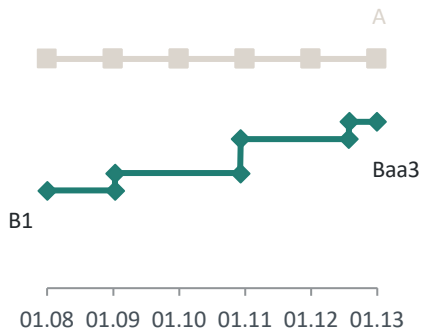
MATERIALITY OF ESG FACTORS

Some case studies

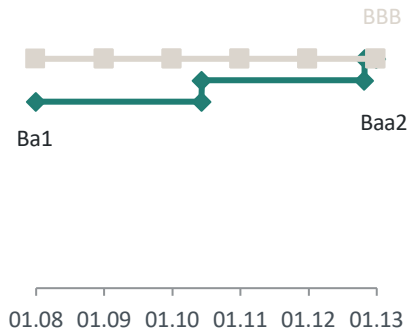
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EM Credit Upgrades

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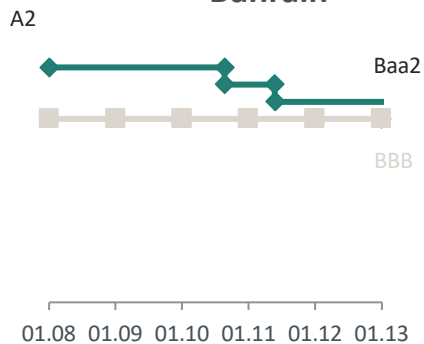


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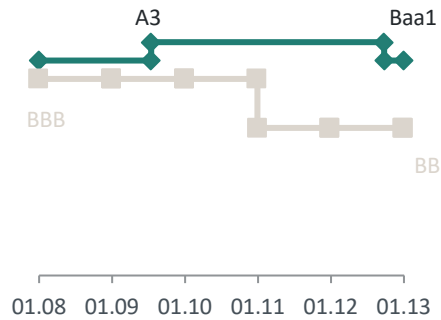


EM Credit Downgrades

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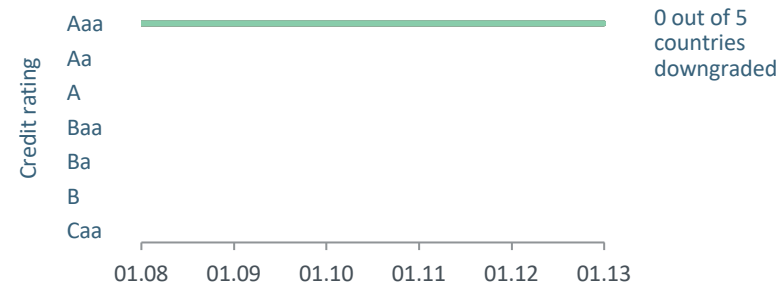
South Africa



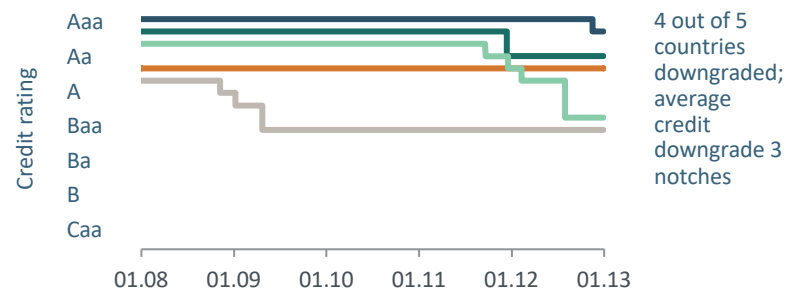
— Credit Rating (Moody's)
— ESG Rating (MSCI)

EUROZONE CREDIT DOWNGRADES

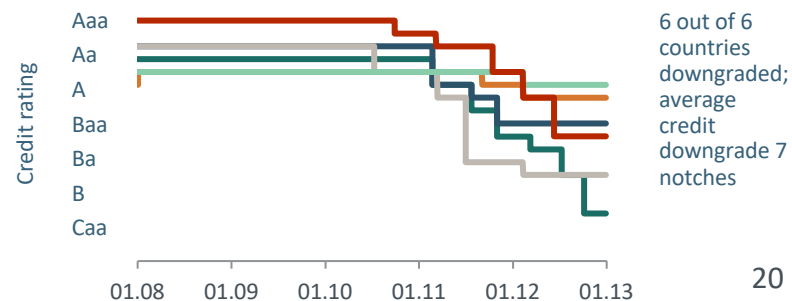
Eurozone - ESG = 'AA' +



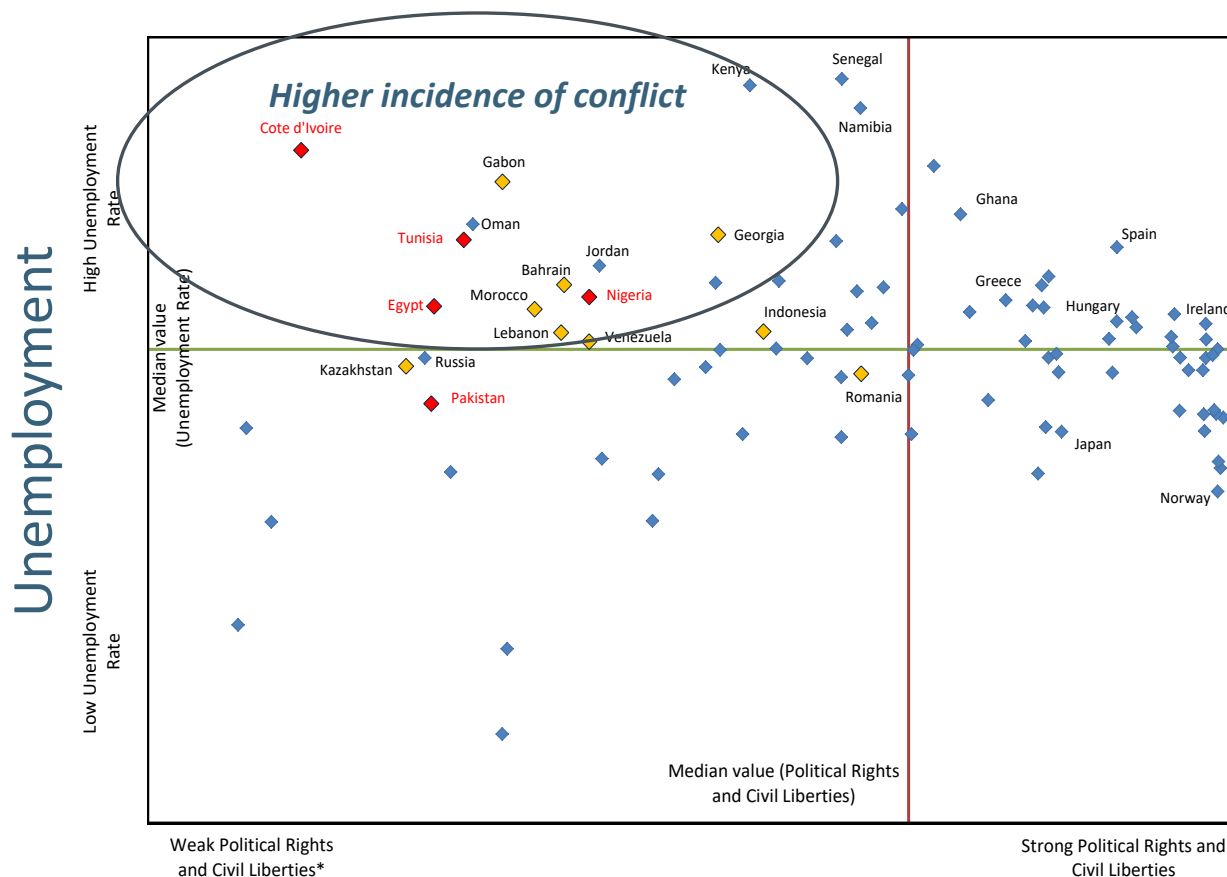
Eurozone - ESG = 'A'



Eurozone - ESG = 'BBB'



POLITICAL RIGHTS AND CIVIL LIBERTIES – ECONOMIC STABILITY



Underlying Indicators

- Strength of institutions
- Press freedom
- Stability and peace
- Judicial system, rule of law
- Government effectiveness
- Corruption perception
- Control of corruption
- Political rights
- Civil liberties

Political Rights and Civil Liberties

IMPROVING POLITICAL GOVERNANCE → ECONOMIC GROWTH SUSTENANCE

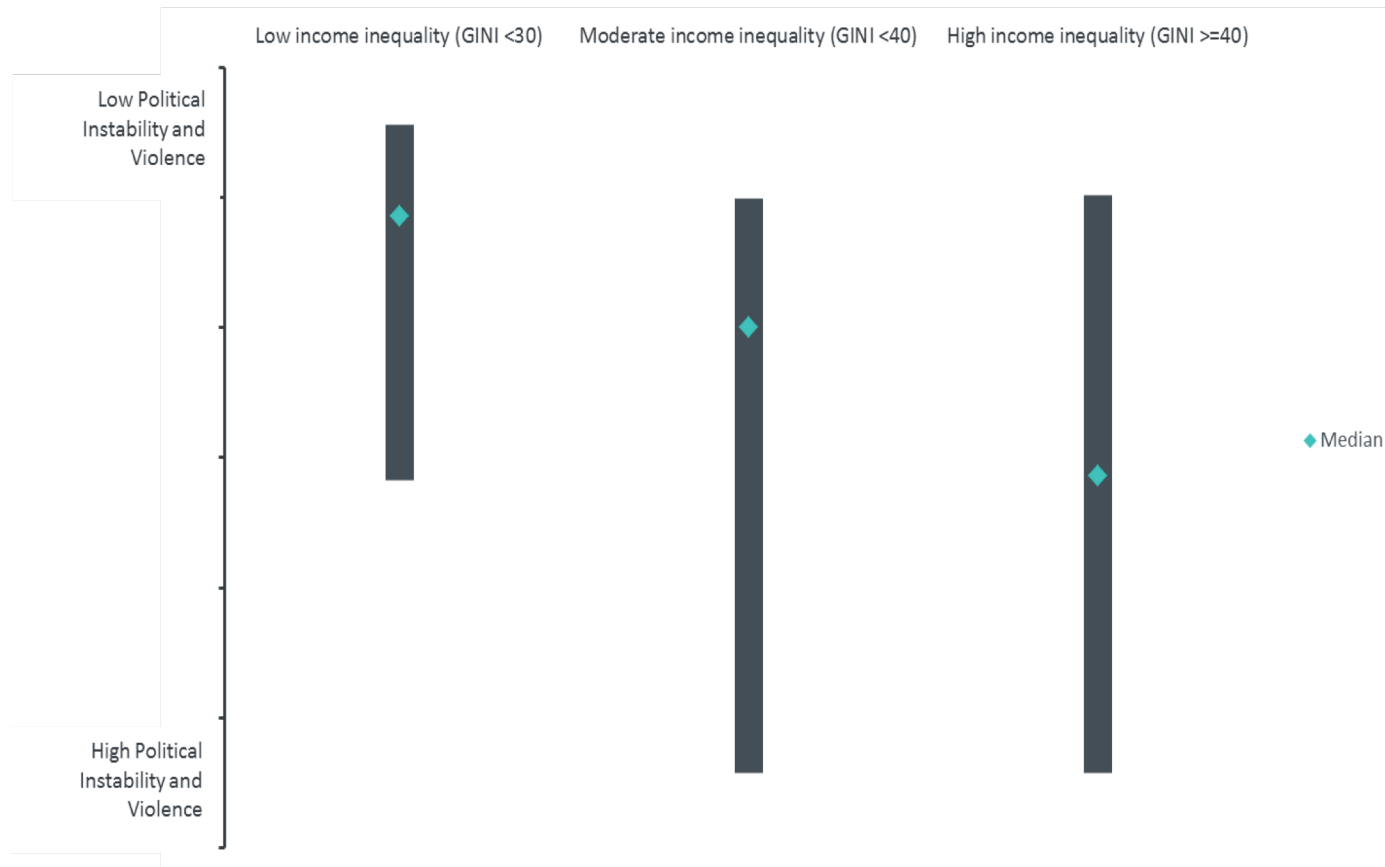


Horizontal Axis: Political governance score trend (between 1996 and 2000)

Vertical Axis: Change in the 10 year average GDP growth rate (2000-2010 vs. 1990-2000)

- Analysis performed on low and lower middle income countries with high economic growth during 1990-2000.
- It is found that **7 out of 11 countries with improving political governance** during 1996-2000 could sustain the **high growth rates** during 2000-2010 also.
- Similarly **7 out of 9 countries with deteriorating political governance** witnessed **fall in their average GDP growth** during 2000-2010.

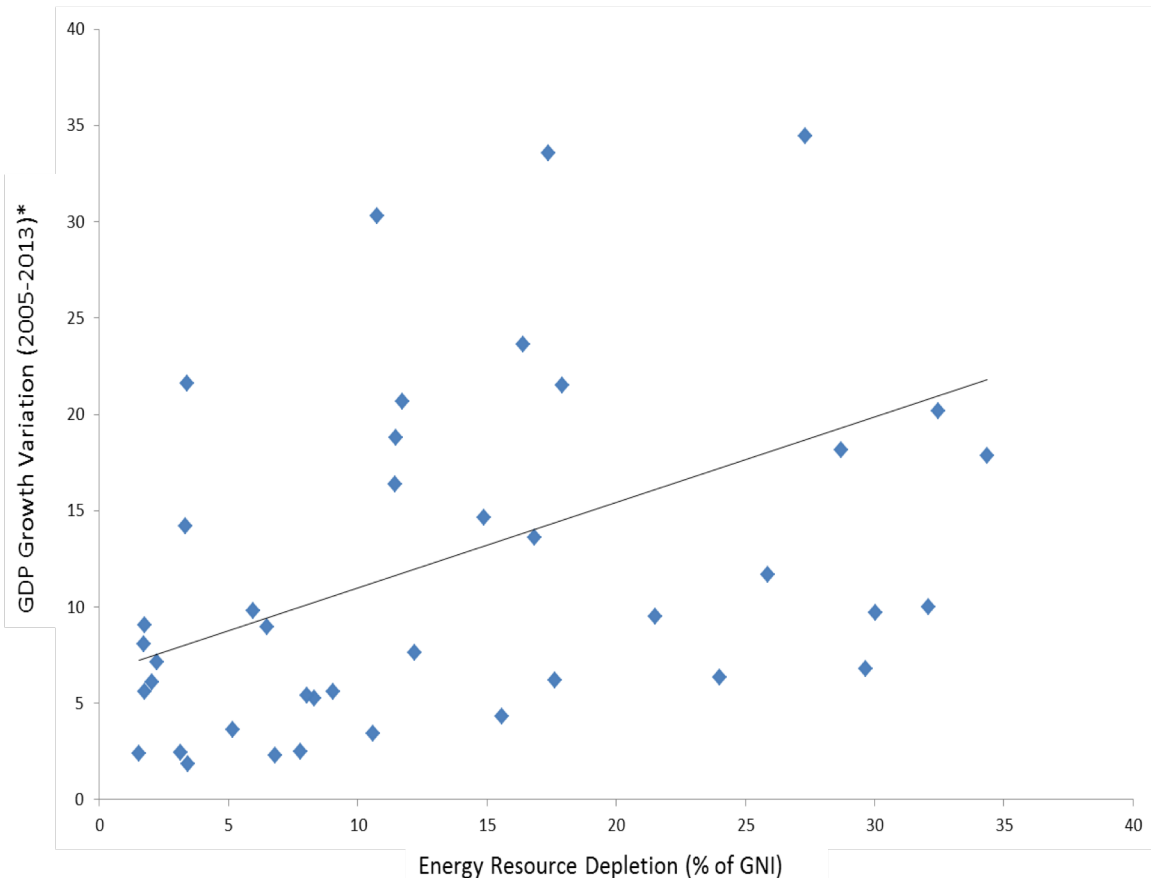
HIGH INCOME INEQUALITY → HIGH POLITICAL INSTABILITY AND VIOLENCE



Analysis done on countries in MSCI country universe shows that countries with **moderate to high income inequality** have a **higher level of political instability and violence**

HIGH ENERGY RESOURCE DEPLETION → UNSUSTAINABLE ECONOMIC GROWTH

GDP Growth Variation (%) vs. Energy Resource Depletion Rate (for all energy exporting nations)



*difference between maximum annual GDP growth rate and minimum annual GDP growth rate during 2005-2013

Underlying Indicators

- Energy resources (TJ per capita)
- Energy efficiency (\$/ kg oil equiv.)
- Renewable energy (%)
- Energy imports (%)
- Water resources (m³ per capita)
- Water withdrawal (%)
- Water stress (% territory)
- Productive land (ha per capita)
- Net agricultural products imports (% of GDP)
- Mineral resources (USD per capita)
- Energy resource depletion (% of GNI)
- Mineral resource depletion (% of GNI)

HIGH NATURAL RESOURCE DEPLETION AND DEPLETING RESOURCE BASE → GROWTH SUSTENANCE?



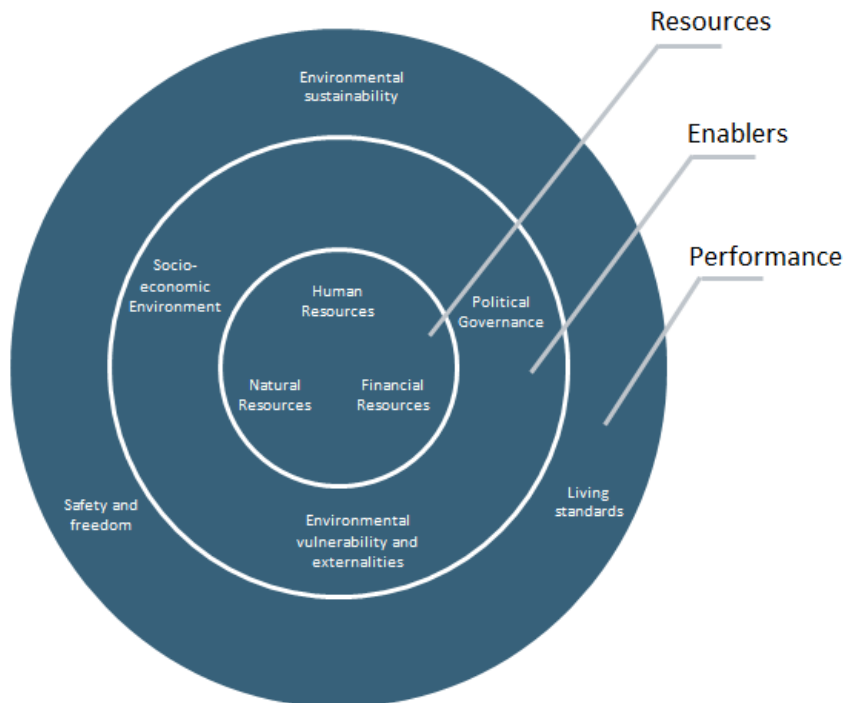
Natural wealth (USD per capita) is calculated as the sum of per capita fossil fuel, mineral and agriculture/forest wealth. Natural resource depletion is the sum of net forest depletion, energy depletion, and mineral depletion.

APPENDIX

PHILOSOPHY

MSCI ESG Sovereign Ratings reflects how countries' exposure to and management of environment, social, and governance risks could impact the value creation process, and thus the long-term sustainability of their economies.

Value creation process (Resources – Enablers – Performance)



ESG risks factors facing countries

- Natural resource risk
- Environmental externalities and vulnerability risk
- Human capital risk
- Economic environment risk
- Political governance risk
- Financial governance risk

MSCI ESG GOVERNMENT RATINGS FRAMEWORK – SIX RISK FACTORS

Natural Resources

- The risk of not having and not managing the natural resources

- Energy security, water stress
- Sustainable economic growth
- Food security
- Pressure on trade balances

Environmental Vulnerability and Externalities

- The risk of a country's resources and enabling environment being vulnerable to environmental events (e.g. infrastructure), and exposed to environmental externalities

- Security of physical assets
- Health impacts of pollution
- Vulnerability to extreme weather events
- Biodiversity

Human Capital

- The risk of not having balanced and productive human capital

- Technology readiness
- Labor productivity
- Competitiveness of workforce
- Access to basic services

Economic Environment

- The risk of not having conducive economic environment to utilize the resources effectively

- Inequality - social upheaval
- Youth unemployment
- Ease of doing business & Infra
- Labor freedom and workers' rights

Financial Governance

- The risk of not having sufficient financial capital to manage the resources and aforementioned risks

- Trade vulnerability
- Fiscal transparency and governance in resource sector
- Sustainable fiscal and external debt positions

Political Governance

- The risk of not having an effective political governance structure to manage/support value creation process

- Costs of corruption
- Accountability of government
- Violence, political uncertainty

Environmental

Philippines: annual cost of typhoons 4% of GDP ¹
China: cost of pollution >5% of GDP ²

Social

South African strikes cost ~\$400 ³ million in 2012, growing in 2013

Governance

World Bank estimates cost of corruption at 2-4% of GDP, equivalent to 20% tax on foreign investment ⁴

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