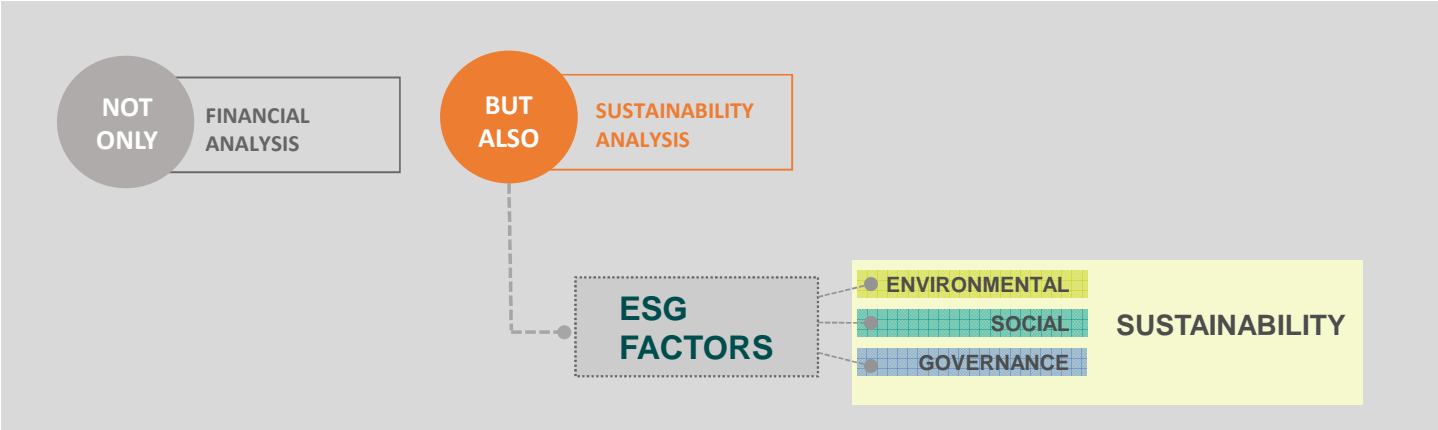# European green SRI funds: a performance evaluation

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SYMPHONIA**SGR**

Settimana dell'SRI
Forum per la Finanza Sostenibile

Socially Responsible Investments (SRI)

SRI investing is any investment strategy which seeks to consider both financial return and social good.

NOT ONLY FINANCIAL ANALYSIS

BUT ALSO SUSTAINABILITY ANALYSIS

ESG FACTORS

- ENVIRONMENTAL
- SOCIAL
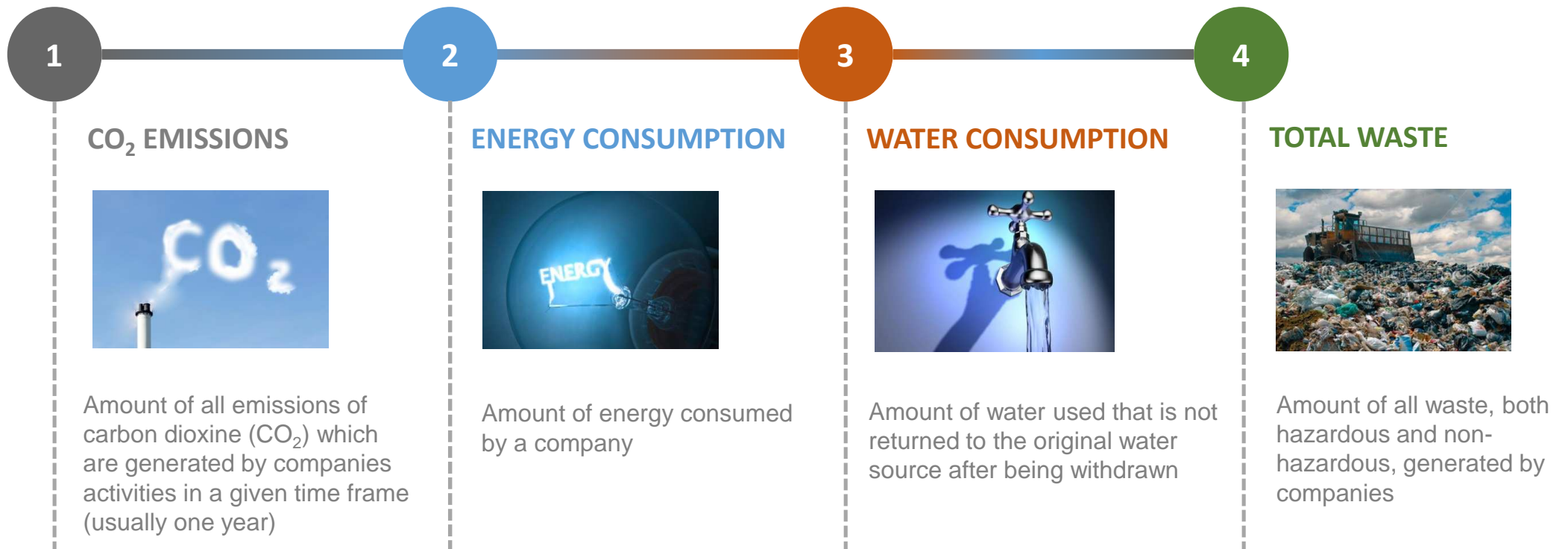- GOVERNANCE

SUSTAINABILITY

Green investing is a subset of socially responsible investing where fund managers and other investors typically use a set of screens to weed out the stocks of companies that don't meet certain criteria relating to environmental issues.

! Labelling fund green or environmentally friendly helps investors identifying investments that address climate or environmental issues.

Environmental measure

The **environmental measure** is computed considering four environmental externalities:

1	2	3	4

CO$_2$ EMISSIONS

Amount of all emissions of carbon dioxine (CO_2) which are generated by companies activities in a given time frame (usually one year)

ENERGY CONSUMPTION

Amount of energy consumed by a company

WATER CONSUMPTION

Amount of water used that is not returned to the original water source after being withdrawn

TOTAL WASTE

Amount of all waste, both hazardous and non-hazardous, generated by companies

European green SRI funds: a performance evaluation

Main goal

Evaluate the environmental and financial performances of European green funds

- We formulate three models for the evaluation of the performances of green funds within a Data Envelopment Analysis.

- **Data Envelopment Analysis (DEA)** can be applied to the measurement of mutual fund performance since each fund may be seen as a decision making unit which requires a set of inputs, such as different risk measures and the initial and exit fees of the investment, and supplies some outputs, such as a return indicator

- DEA models can also integrate strategic non-financial objective measures to traditional financial metrics to give a more balanced view of socially responsible investments.

Environmental database

We consider 112 funds selected with the following Bloomberg criteria:

Selected Screening Criteria
Universe Criteria
11) Country of Domicile: Eastern Europe
12) General Attribute: Environmentally Friendly
13) Fund Type: Open-End Funds

We downloaded for each stock of each fund the following data:
1. CO_2 emission (tons);
2. Energy consumption (MWh);
3. Water consumption (m^3);
4. Total waste (tons).

Environmental indicators definition

For each fund $j = 1, \ldots, n$ let us introduce the following notations:

- h: environmental esternality,
- n_j: total number of assets in fund j,
- α_{jk}: weight of asset k in fund j
- A_{jk}^h: data related to externality h for asset k of fund j
- Q_k: market capitalization of asset k

Let us consider

$$A_j^h = \frac{\sum_{k=1}^{n_j} \alpha_{jk} \tilde{A}_{jk}^h}{\sum_{k=1}^{n_j} \alpha_{jk}}$$
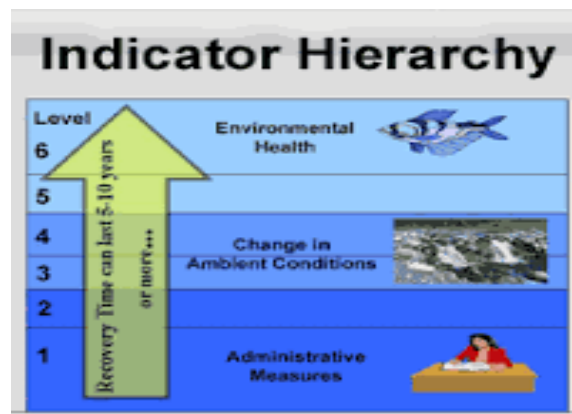
the data related to externality j with $\tilde{A}_{jk}^h = \dfrac{A_{jk}^h}{Q_k}$.

Let $\bar{A}^h$ be the maximum value of A_j^h, $j = 1, \ldots, n$:
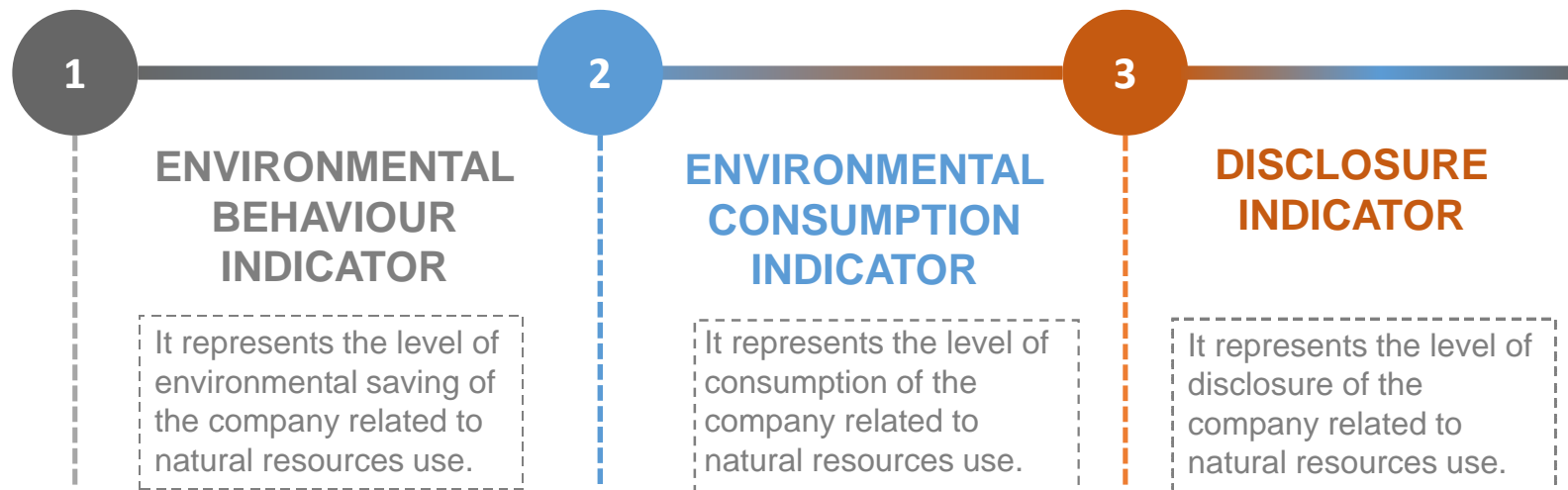
$$\max_{j=1,\ldots,n} \left\{ A_j^h \right\}$$

and let $\underline{A}^h$ be the minimum value of A_j^h, $j = 1, \ldots, n$:

$$\min_{j=1,\ldots,n} \left\{ A_j^h \right\}.$$

Environmental indicators

An environmental indicator is a value derived from parameters that describe the state of the environment and its impact on human beings, ecosystems and materials, the pressures on the environment, the driving forces and the responses steering that system.

1

ENVIRONMENTAL BEHAVIOUR INDICATOR

It represents the level of environmental saving of the company related to natural resources use.

2

ENVIRONMENTAL CONSUMPTION INDICATOR

It represents the level of consumption of the company related to natural resources use.

3

DISCLOSURE INDICATOR

It represents the level of disclosure of the company related to natural resources use.
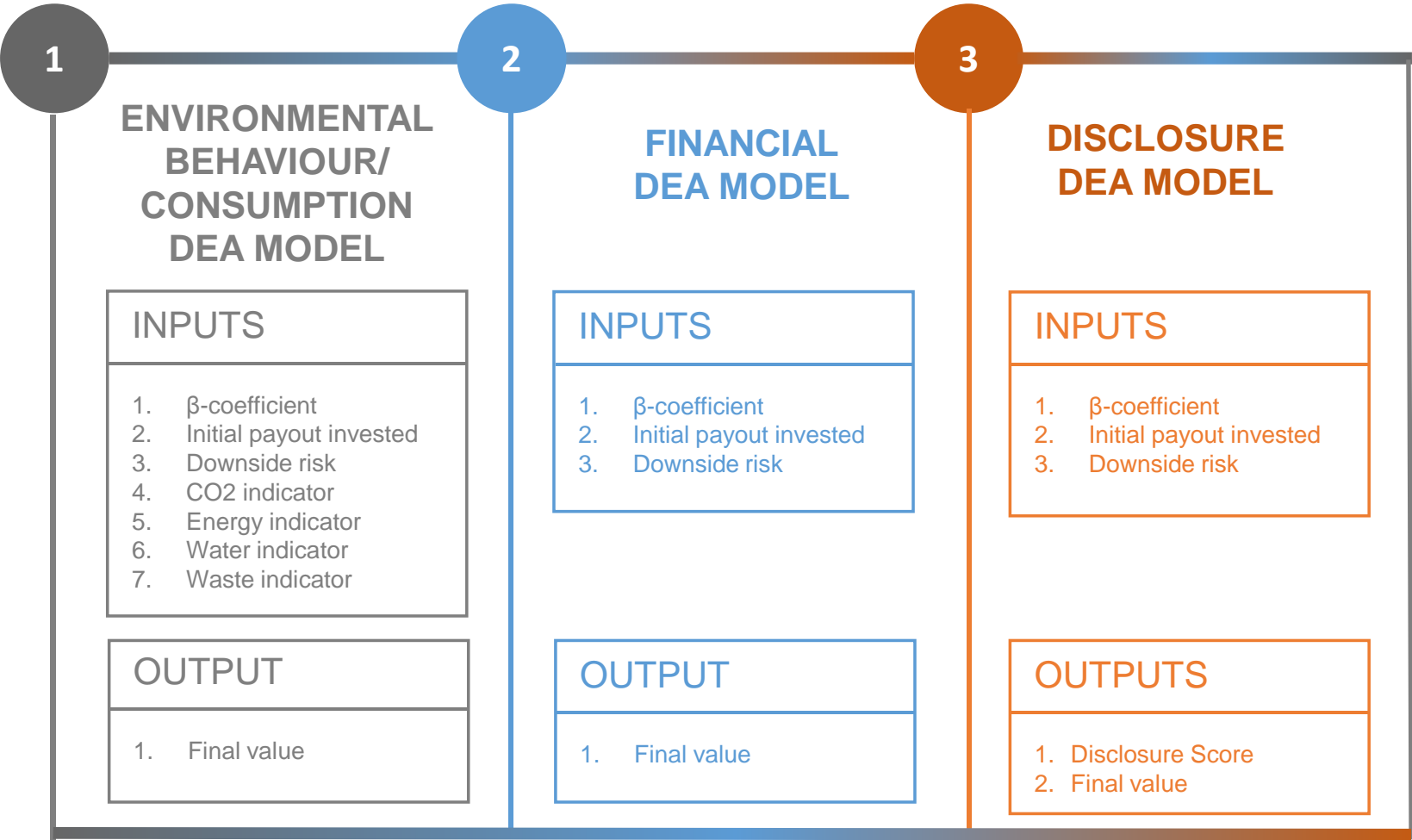
Financial parameters database

We consider for each fund the following data:

1. The capital invested in the mutual fund, net of the initial fees;
2. β-coefficient (the ratio of the covariance between the fund and the market returns to the variance of the market return);
3. The final value of the investment, net of the exit fees;
4. Downside risk (amount of loss that could be sustained as a result of the decline in value).

DEA models' Inputs/Outputs

(1)

ENVIRONMENTAL BEHAVIOUR/ CONSUMPTION DEA MODEL

INPUTS

1. β-coefficient
2. Initial payout invested
3. Downside risk
4. CO_2 indicator
5. Energy indicator
6. Water indicator
7. Waste indicator

OUTPUT

1. Final value

(2)

FINANCIAL DEA MODEL

INPUTS

1. β-coefficient
2. Initial payout invested
3. Downside risk

OUTPUT

1. Final value

(3)

DISCLOSURE DEA MODEL

INPUTS

1. β-coefficient
2. Initial payout invested
3. Downside risk

OUTPUTS

1. Disclosure Score
2. Final value

Empirical results: best performing funds

Ranking	Consumption DEA Model		Financial DEA Model		Disclosure DEA Model	
#	Fund Name	Efficiency score	Fund Name	Efficiency score	Fund Name	Efficiency score
1	DNB FINANS	1	DNB HEALTH CARE	1	DNB HEALTH CARE	1
2	DNB HEALTH CARE	1	SWEDBANK RENTE	1	SWEDBANK RENTE	1
3	DNB EUROPA II	1	DELPHI NORDIC FUND	0,977427	DNB FINANS	1
4	DNB EUROPA	1	DNB GLOBAL ETISK V	0,966793	DNB EUROPA II	1
5	FOLKSAMS GLOBALA AKTIEFOND	1	DNB GLOBAL SELEKTIV II	0,944964	LGT SUST QLTY BOND HDGD-€B	1
6	KLP AKSJEEUROPA INDEKS I	1	KLP AKSJEGLOBAL INDEKS I	0,942401	NORD/LB GLB CHALLEN IND-I	1
7	LGT SUST QLTY BOND HDGD-€B	1	DNB FINANS	0,942057	KLP AKSJEEUROPA INDEKS I	0,998763
8	NORD/LB GLB CHALLEN IND-I	1	DNB NORDIC TECHNOLOGY	0,939895	DNB EUROPA	0,99803
9	PICTET-ETHOS CH SW SUST-PDY	1	STOREBRAND GLOBAL VERDI	0,935645	FOLKSAMS GLOBALA AKTIEFOND	0,989979
10	SWEDBANK RENTE	1	STOREBRAND GLOBAL MULTIFAKT	0,925099	DELPHI NORDIC FUND	0,977427

Empirical results: worst performing funds

Ranking	Consumption DEA Model		Financial DEA Model		Disclosure DEA Model	
#	Fund Name	Efficiency score	Fund Name	Efficiency score	Fund Name	Efficiency score
108	KBI INSTITUTIONAL GESS-€DA	0,570261	SWISSCANTO CH EF GREEN INV A	0,526687	KBI INSTITUTIONAL GESS-€DA	0,570261
109	NORDEA INV KLIMA OG MILJO	0,557391	ZKB FONDS AKTIEN LC NACH-AA	0,520444	NORDEA INV KLIMA OG MILJO	0,538255
110	DNB SMB	0,448487	DNB SMB	0,448487	DNB SMB	0,448487
111	DNB OST-EUROPA	0,425803	DNB OST-EUROPA	0,402046	DNB OST-EUROPA	0,402046
112	DNB NAVIGATOR-AC1	0,375543	DNB NAVIGATOR-AC1	0,375543	DNB NAVIGATOR-AC1	0,375543