HUMAN is CAPITAL

SYCOMORE am

The Electricity Value Chain as Screened by the NEC Open-Source Metric

[NEC]i

Empowering investors with an open-source environmental metric

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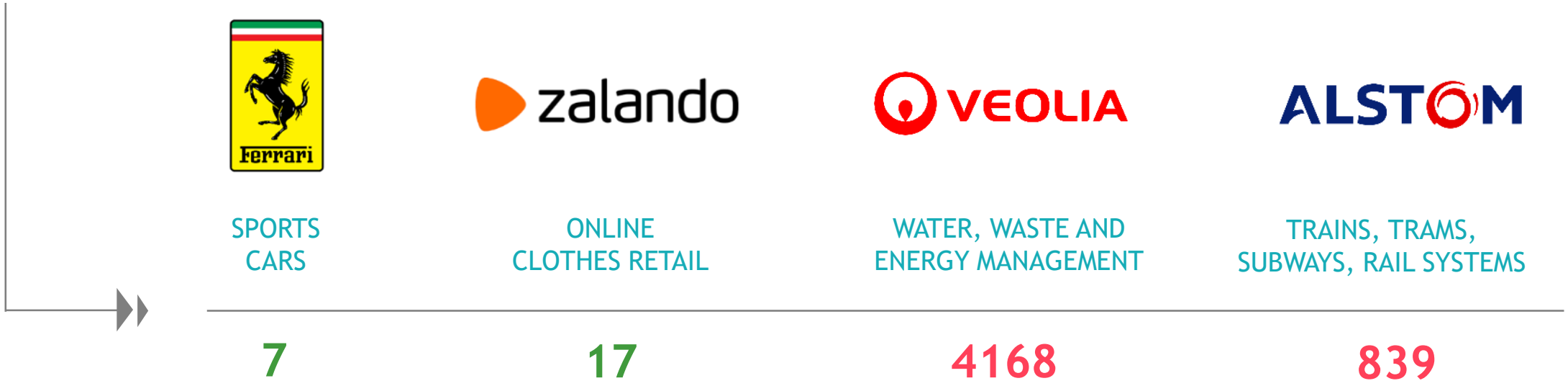
What does the carbon footprint tell us?

A question of greenhouse gas scope

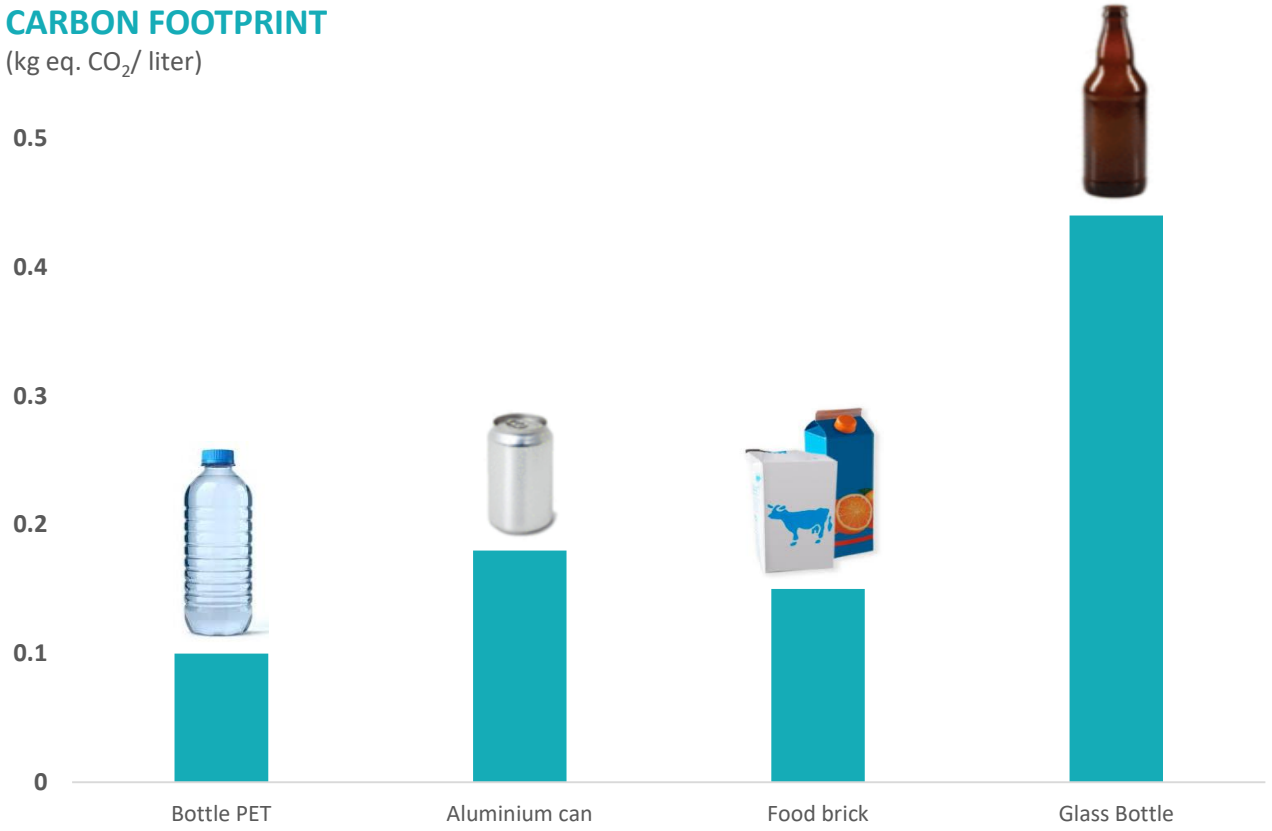
CARBON FOOTPRINT
TONS eq. CO_2/ YEAR/ M€ invested



Source: Carbon footprint calculated as scope 1, scope 2 and tier one supplier scope 3 in CO_2 eq. / year / M€ invested as of June 2018, Trucost.

What does the carbon footprint tell us?

A question of environmental scope



Existing indicators, such as the carbon footprint or environmental ratings, do not reflect on the transition risk, nor on climate risk or on issues beyond carbon, such as damages related to waste, air quality, water or biodiversity

Source: carbon footprint of packaging according to the Ecoinvent greenhouse gas emissions factor and the ADEME FOODGES database, Quantis calculations, 2018.

Challenges beyond carbon…

23% of global mortality is due to environmental damage, or 12.6 million persons annually (1)

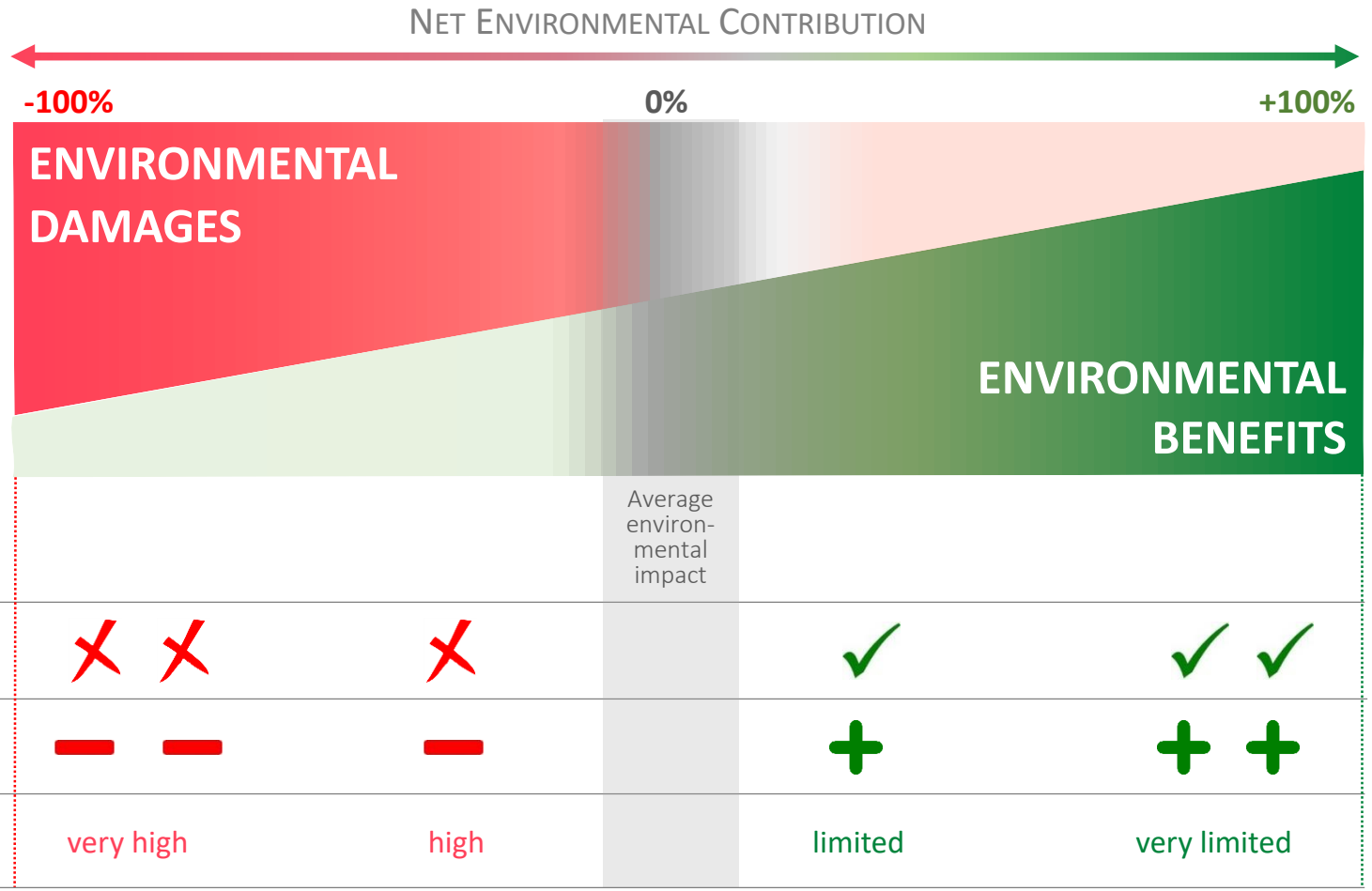
« Earth Overshoot Day has moved from late September in 2000 to August 1 in 2018. »(2)

« The sixth mass extinction of animal species is underestimated »(3)

(1) Whole Health Organization, March 2016, 2012 figures: http://apps.who.int/iris/bitstream/10665/204585/1/9789241565196_eng.pdf
(2) Global Footprint Network: https://www.overshootday.org/
(3) IPBES, March 2018: https://www.futura-sciences.com/planete/actualites/zoologie-sixieme-extinction-masse-animaux-sous-estimee-58704/.

NEC: a new advanced metric

Multi-issue analysis per functional unit (kWh, passenger.km, ton.km, m^2 …) and by activity, a bottom-up product-based, life-cycle approach



- A metric designed to assess transition risk, to drive investment decisions and to report according to the TCFD recommendations, to the French "Article 173" and in line with EU sustainable finance plan's environmental objectives

NB: **article 173 of the French law on energy transition for green growth**, voted in 2015 and first reporting year 2016, first disclosure deadline June 30, 2017.

Integrating key environmental issues

	CLIMATE	RESOURCE WASTE	BIODIVERSITY	WATER	AIR QUALITY	EXAMPLES OF SPECIFIC KPIS & CERTIFICATIONS
ECOSYSTEMS	✓	🔍	✓	✓	🔍	- Type of agriculture, fishery and farming (intensive vs organic, …) - GHG content and water footprint - Palm Oil usage (RSPO) - Forestry and wood certifications (PEFC, FSC, SFI) - APUR, Ecolabels, Blue Angel...
ENERGY	✓	✓	✓	🔍	✓	- Species depletion (Nb/MWh) - Type of extraction of fossil fuels - Carbon Tracker Initiative over 2°C budget for fossil fuels - gCO_2e/kWh…
MOBILITY	✓	🔍	🔍		✓	- Passenger mobility: CO_2e, NO_X and fine particles per passenger.km - Freight: CO_2e, NO_X and fine particles per ton.km
CONSTRUCTION	✓	✓	🔍	🔍	✓	- Energy Intensity - Carbon content of materials and constructive solutions - Construction and operation certifications, such a BREEAM, LEED, BBCA, HQE, Passiv Haus, etc.…
PRODUCTION	✓	✓	✓	✓	🔍	- ReCiPe method with ecosystem quality endpoint from Ecoinvent - Share of fertilizers and pesticides in chemicals production - Product reliability and lifespan - MSI score for textile from Sustainable Apparel Coalition - % of input with recycled materials …

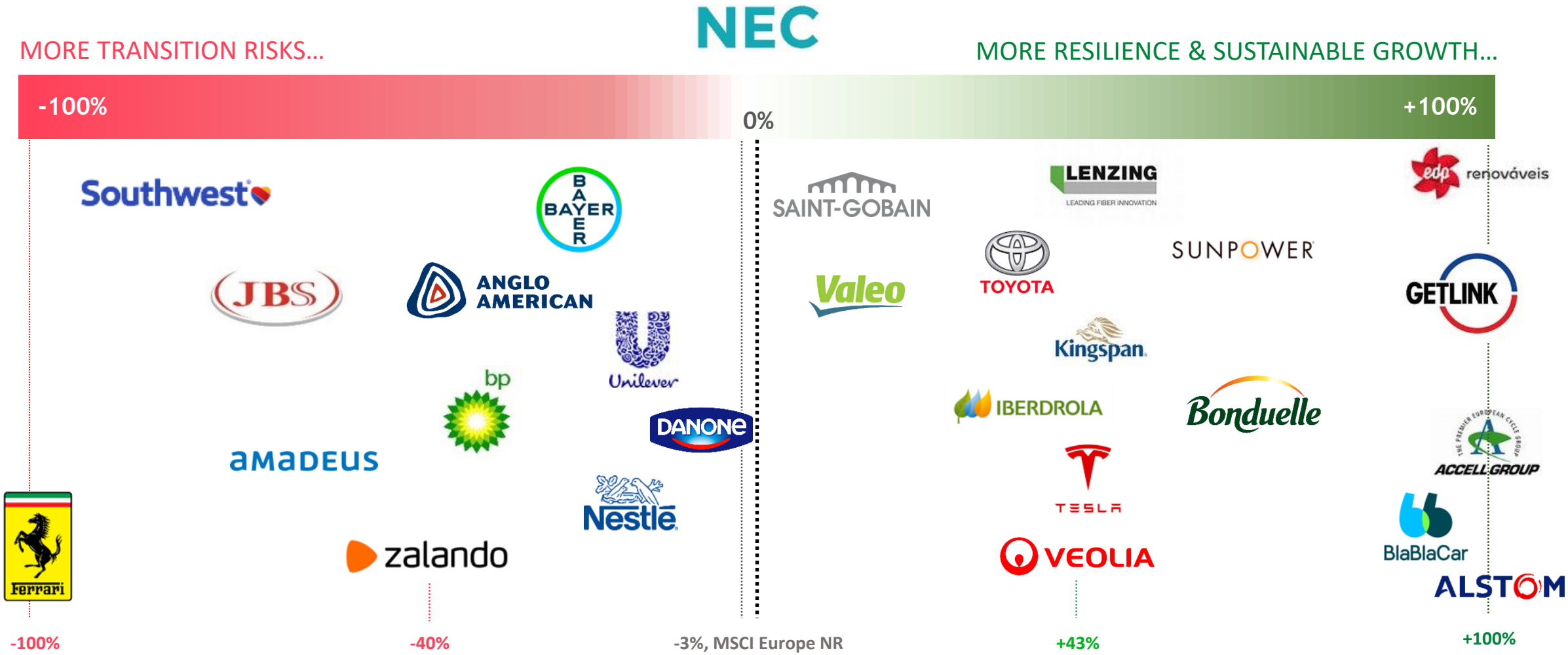
✓ Key issues for the impact domain

🔍 Important issue, but hard to quantify (lack of reliable data)

Source: NEC 1.0, Sycomore AM, Quantis and I Care&Consult, October 2018.

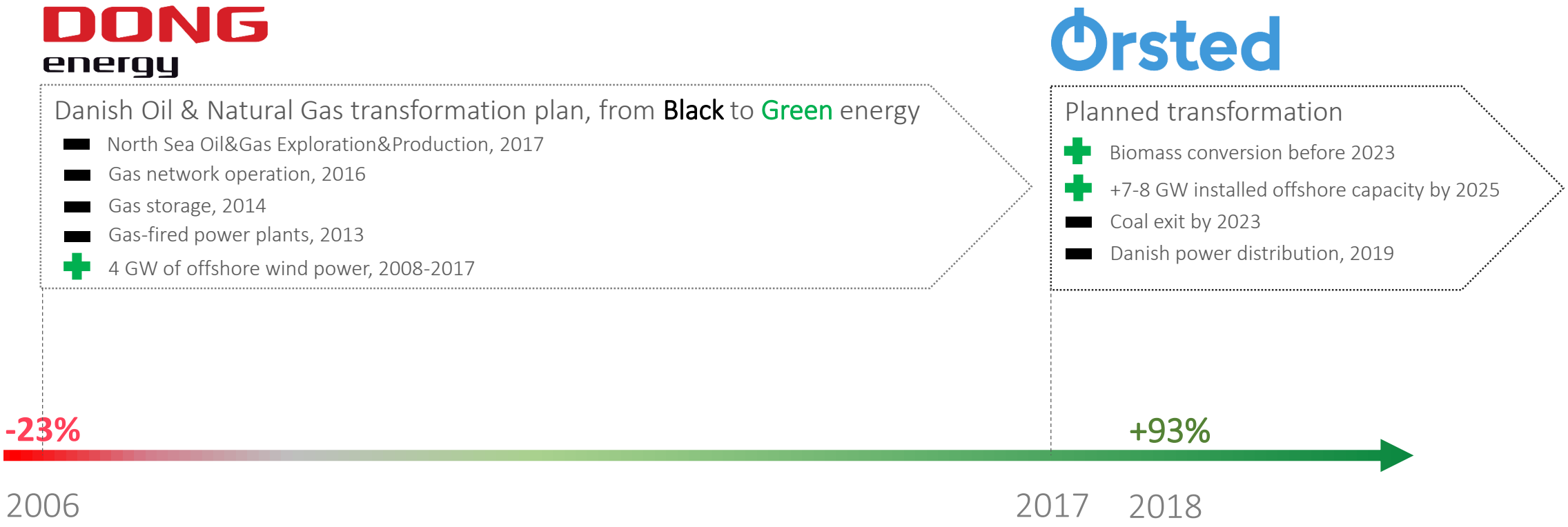
- A multi-dimensional approach for an holistic view of the net environmental impact

How green are your investments?



Source: NEC 1.0 of a selection of listed equities and of MSCI Europe Net Return (reinvested dividends), calculated by Sycomore AM, Quantis and I Care&Consult on 2017 and 2018 data.

The NEC over time



- The NEC can be used over time to assess past transformations and future trajectories
- Aligning a electric utility with the environmental transition takes decades

Source: calculation by Sycomore AM on 2006 and 2018 data with NEC 1.0 methodology.

NEC 1.0 = 1 method + 15 interconnected frameworks

Value chain / industry	Impact intensity	Contribution domain	Sustainable Development Goals
Food & beverage	HIGH	ECOSYSTEMS	
Water			
Wood & paper			
Fuel		ENERGY	
Electricity			
Heat			
Mobility and transport		MOBILITY	
Building & real estate		CONSTRUCTION	
Basic materials		PRODUCTION	
Chemistry			
Waste			
Apparel & textile			
Household & personal care	MODERATE (HIGH /3)		
Information technology			
Appliances			
Insurance, Banks, Retail, Telecom, Furniture, …	LIMITED (HIGH /10)	FINAL USE NEC OR NEC LIMITED TO [-10%;+10%]	ACCORDING TO FINAL USE

Source: NEC 1.0 methodology handbook, industry framework classification, Sycomore AM, 2018.

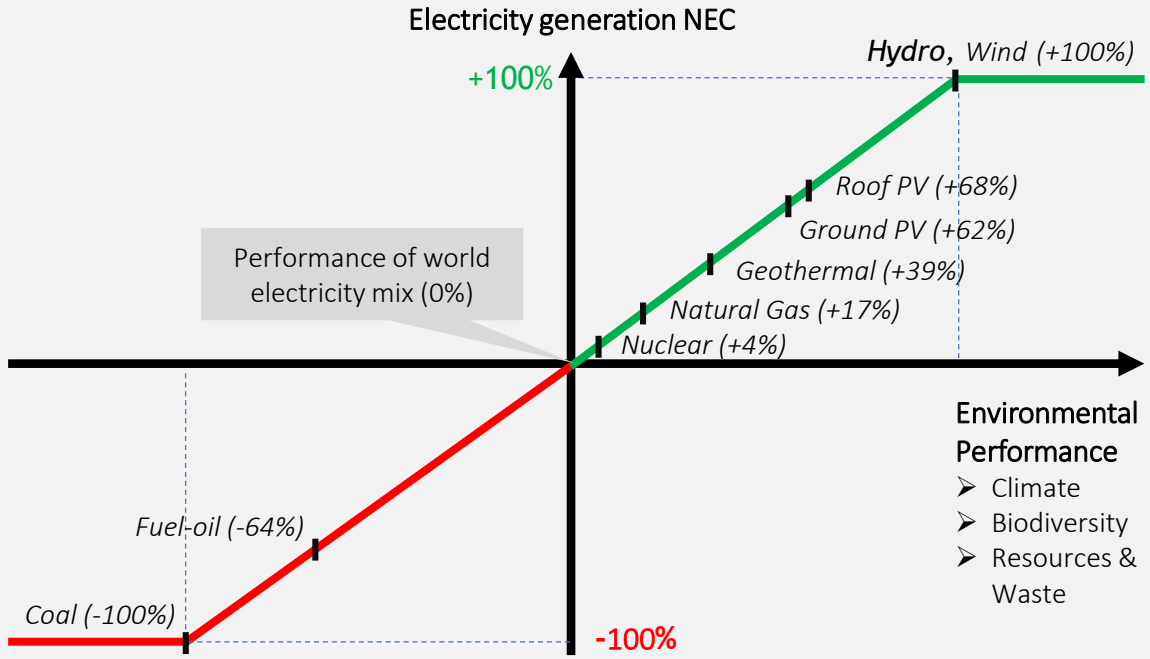
Zoom on the electricity framework

Electric infrastructures and equipment

Electricity generation

Electricity transport, distribution and retail

NEC = **Climate component** (Weighting 50%) + **Biodiversity component** (Weighting 25%) + **Resources & Waste component** (Weighting 25%)



Sources: I Care & Consult calculations based on EcoInvent 2015, IEA 2015, NEC 1.0.

Climate component per generation technology

Production technology	Total emission factor (kg CO_2 eq/ MWhe)	Environmental performance of climate component
Hydroelectric, run of river	4	100%
Waste incineration co-generation powerplant	5	100%
Nuclear powerplant	23	97%
Wind turbines	28	97%
Hydroelectric, dam in mild climate	31	96%
Biomass co-generation powerplant	60	92%
Hydroelectric, dam in tropical climate	74	91%
Geothermal powerplant	80	90%
Rooftop solar PV	86	89%
Ground solar PV	88	89%
EU Green taxonomy threshold	100	87%
Natural Gas co-generation powerplant	569	23%
Natural Gas powerplant	635	15%
Fuel-oil powerplant	1 194	-61%
Coal co-generation powerplant	1 215	-64%
Coal	1 308	-77%

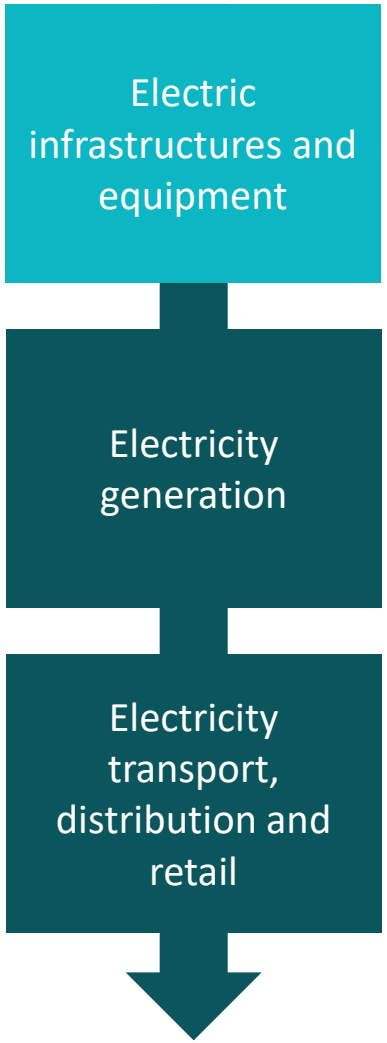
Sources: I Care & Consult calculations based on EcoInvent 2015, IEA 2015, NEC 1.0 and EU green taxonomy at https://ec.europa.eu/info/publications/sustainable-finance-teg-taxonomy_en#190618

Resulting electricity generation NEC

Weight	50%	25%	25%		
Production technology	Climate Component	Biodiversity component	Resources & Waste component (including radioactive waste)	Environmental performance	**NEC**
Hydro, run of river	100%	100%	100%	100%	100%
Hydro dam, mild climate	96%	89%	85%	92%	100%
Hydro dam, tropical climate	91%	89%	85%	89%	100%
Waste co-generation	100%	108%	22%	83%	100%
Wind	97%	5%	14%	53%	100%
Rooftop solar	89%	-11%	-23%	36%	68%
Ground solar	89%	-23%	-22%	33%	62%
Biomass co-generation	92%	-112%	26%	25%	47%
Geothermal	90%	-75%	-22%	21%	39%
Natural Gas co-generation	23%	7%	10%	16%	30%
Natural Gas	15%	13%	-6%	9%	17%
Nuclear	97%	-41%	-145%	2%	4%
Fuel-oil	-61%	-17%	2%	-34%	-64%
Coal co-generation	-64%	-101%	14%	-54%	-100%
Coal	-77%	-112%	3%	-66%	-100%

Sources: I Care & Consult calculations based on EcoInvent database version 3, NEC 1.0.

Electric infrastructures and equipment NEC calculation



NEC = **Final use NEC** + **Incremental NEC**

- **The Final use NEC** is the NEC of the related electricity based on the electricity generation type or mix (gas, renewables…)
  - **Upstream wind equipment providers**, such as Vestas's wind turbines or Sif Holding NV's offshore monopiles, have the NEC of wind generation = **+100%**
- Regarding equipment for network, default values are available for undifferentiated use
  - Equipment related to **Standard Network equipment** (cables, meters, electricity management, etc.): **Incremental NEC = +10%**
  - Equipment related to **Smart Energy System**, advanced smart grids, etc.: **Incremental NEC = +15%**

Electricity transport, distribution and retail NEC calculation

Electric infrastructures and equipment

Electricity generation

Electricity transport, distribution and retail

NEC = Σ **MWh or economic activity share by country** ✖ **NEC country**

Zone	EU-28	World	OECD Total	North America	South America	Africa	Middle East	Asia w/o China	Asia with China
NEC	17%	0%	10%	3%	100%	0%	5%	-28%	-32%

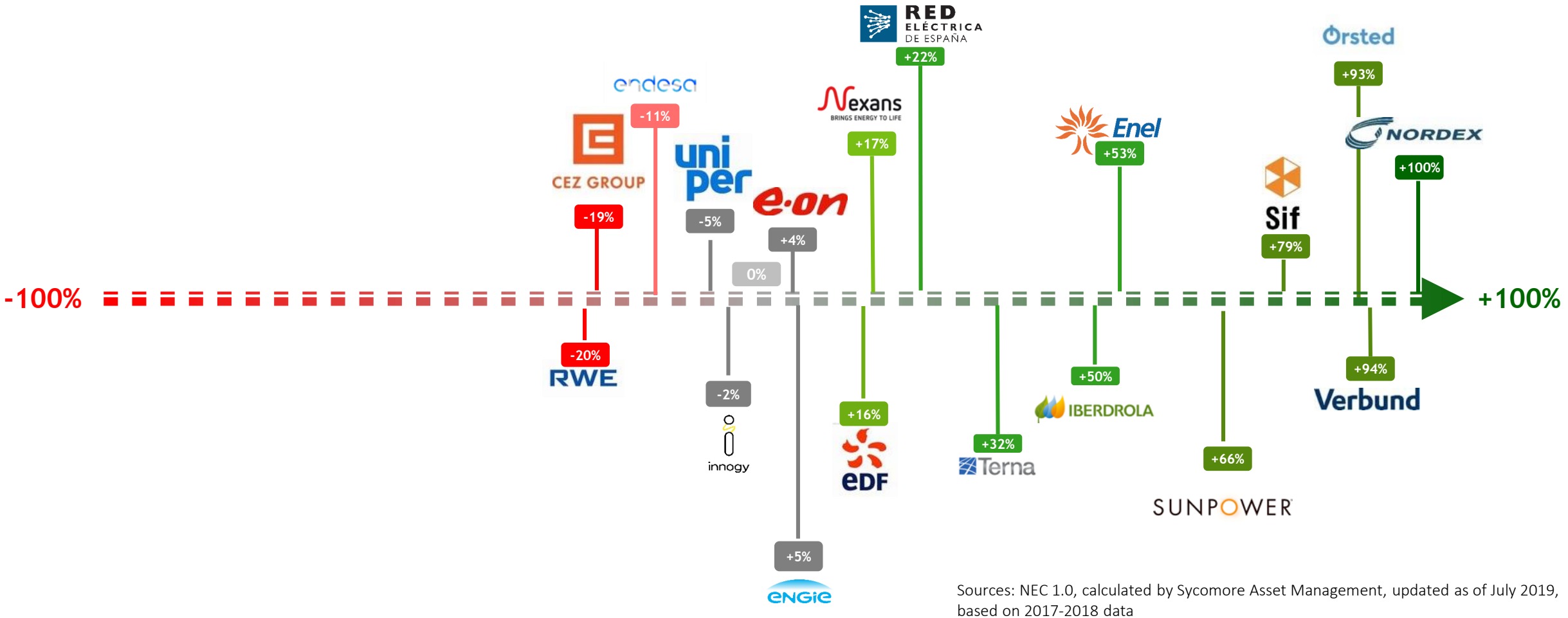
Energy Mix	NEC
Austria	100%
Belgium	24%
Denmark	38%
Estonia	-44%
Finland	45%
France	26%
Germany	-18%
Iceland	100%
Ireland	12%
Italy	35%

Energy Mix	NEC
Kosovo	-100%
Luxembourg	100%
Netherlands	-19%
Norway	100%
Poland	-78%
Portugal	33%
Spain	22%
Sweden	99%
United Kingdom	7%
Switzerland	100%

Energy Mix	NEC
China	-44%
India	-62%
Russia	25%
Brazil	100%
United States	-20%
Australia	-51%
Canada	98%

Sources: NEC 1.0 derived from IEA 2015, I Care & Consult calculation.

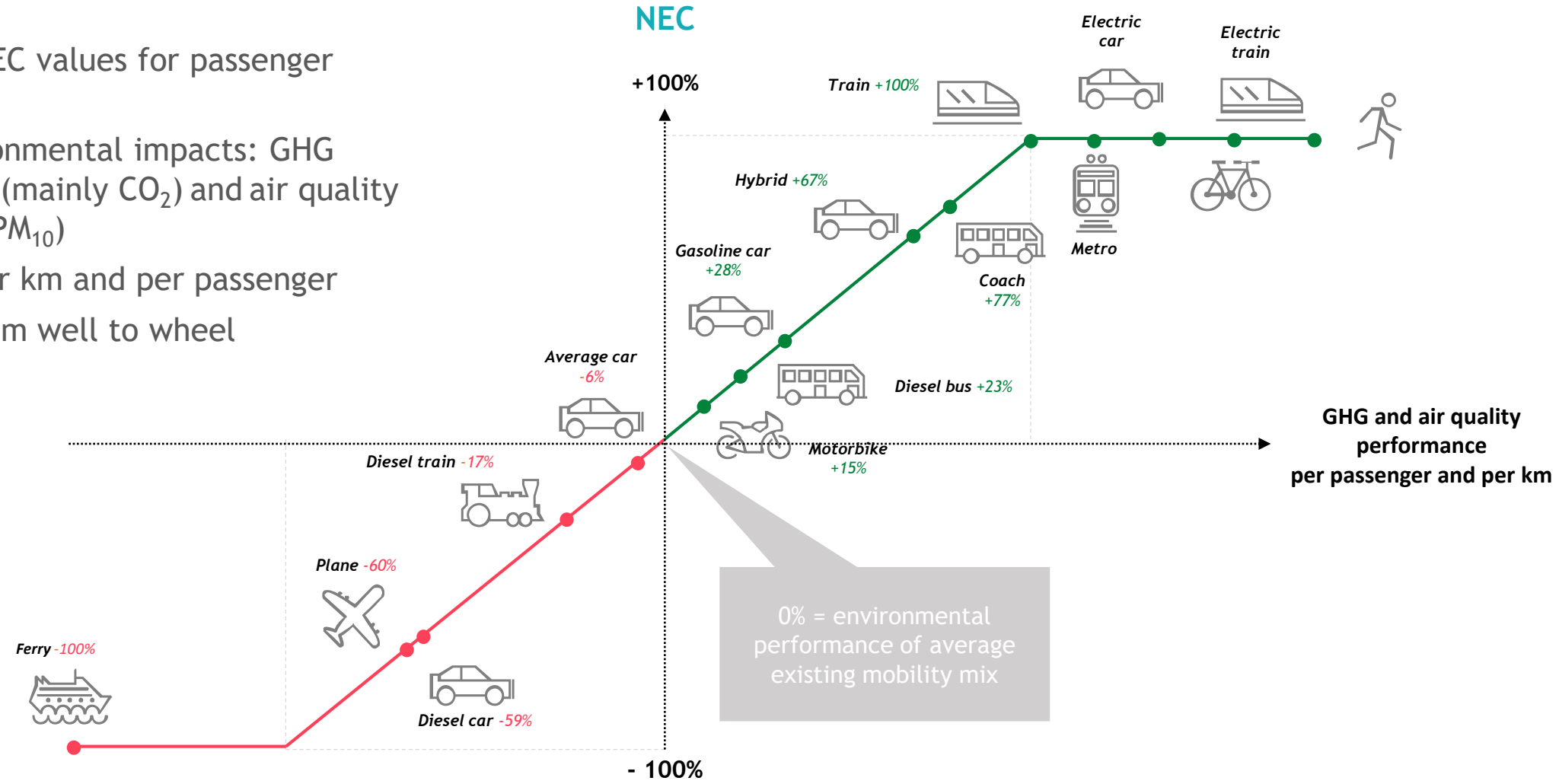
Outcome for electricity



Sources: NEC 1.0, calculated by Sycomore Asset Management, updated as of July 2019, based on 2017-2018 data

Connection to mobility & transport framework

- Default NEC values for passenger transport
- Key environmental impacts: GHG emissions (mainly CO_2) and air quality (NO_x and PM_{10})
- Impact per km and per passenger
- Scope: from well to wheel



Sources: I Care & Consult 2017 calculations, NEC 1.0 transportation framework, based on IEA, Eur. Env. Agency, IUC, ICCT, ADEME, transportenvironment.org, etc.

What is Tesla's NEC, as a car manufacturer?

NEC CALCULATION	Default NEC		Incremental NEC				Resulting NEC
	Electric vehicle 100%	+	Electric mix in USA -37% x 67% (% of vehicles sold in the USA)	+	Overweight -31%	=	+44%
	Car manufacturer framework		VS		VS		

Source: NEC 1.0, Tesla's data 2018, calculation by Sycomore AM, 2019.

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Initiated in June 2015 by Sycomore AM, the R&D works and tests have involved I Care & Consult since 2015, Quantis since 2016, BNP Paribas Securities Services since 2017 and ISIGE/Mines ParisTech in 2018. The 15 frameworks of NEC 1.0 have been tested over 2,000 companies, 16 funds and 8 indexes.