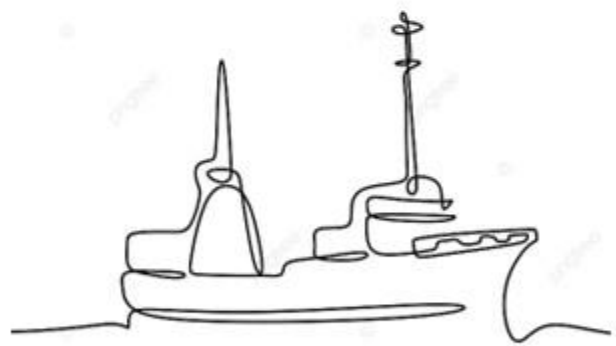
Journey to the **decarbonization** of the maritime transport sector

2022.07.21

Hyerin Park
Founder/CEO
Enomad Corp



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About Speaker

발제자 소개

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Hyerin Park

The integrating environmental supply chain management system for shipbuilding Industry (2007)
Design Business Model of Urban Mining of Rare Earth Elements to E-Waste (2007)
Green Financial System to Building Sustainable Energy Business in Korea (2009)
Carbon Trading System for Korea Clean Energy Market (2009)

150kW Tidal Power System to empower isolated Islands in Korea (2011-2013)

Established Enomad (2014)
Designed and Launched Enomad Uno – The World's smallest hydro power generator (2016)
Selected as the most innovative entrepreneur in sustainable business by Global Entrepreneur Summit hosted by US government and Indian Government (2017)
Selected as the most innovative entrepreneur by BBC World and filmed <The Korean Innovator Harnessing River Power> (2018)
Nominated as the top 10 of woman entrepreneur of the year award by Impact Square, Paris City Council (2019)
Partnership with Patagonia to provide personal scale sustainable energy solution (2019)
Selected as the most innovative start-up by Prince Andrew, Pitch at Palace(2019)
Selected at the member of Presidential Committee of Green Growth of Korea (2020)
Nominated as the sustainable brand partner of Rolls-Royce (2020)
Selected as the member of Presidential Committee of Carbon Neutrality (2021)
Selected as the member of Committee of Energy, Department of Industry (2022)


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Cash
BNP PARIBAS
FORTIS
De bank en verzekering
n wereld in verandering
Die Bank und Versicherung für eine Welt im Wandel
O banco para um mundo em mudança
El banco para un mundo en evolución
追求卓越 與時俱進
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Sustainable

지속가능하다

Climate Change

기후변화

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France
French winemakers light up fields to save the 2021 harvest from early season frosts
2021.04.08
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80%
Frost has damaged 80% of France's Vineyards
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TOTAL
RATE
WEEK
MONTH
YEAR
38
MIN
10
MAX
1,000
500
0
1998
2000
2002
2004
2006
2008
2010
2012
2014
2016
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Climate Change
=
Economic Risk
WORLD ECONOMIC FORUM
COMMITTED TO IMPROVING THE STATE OF THE WORLD
MITTAL
SCHIRO
MERKEL
SCHWAB
GUTHRIE
ISDELL
SCHMIDT
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GHG Emissions

Sustainable Energy

재생에너지

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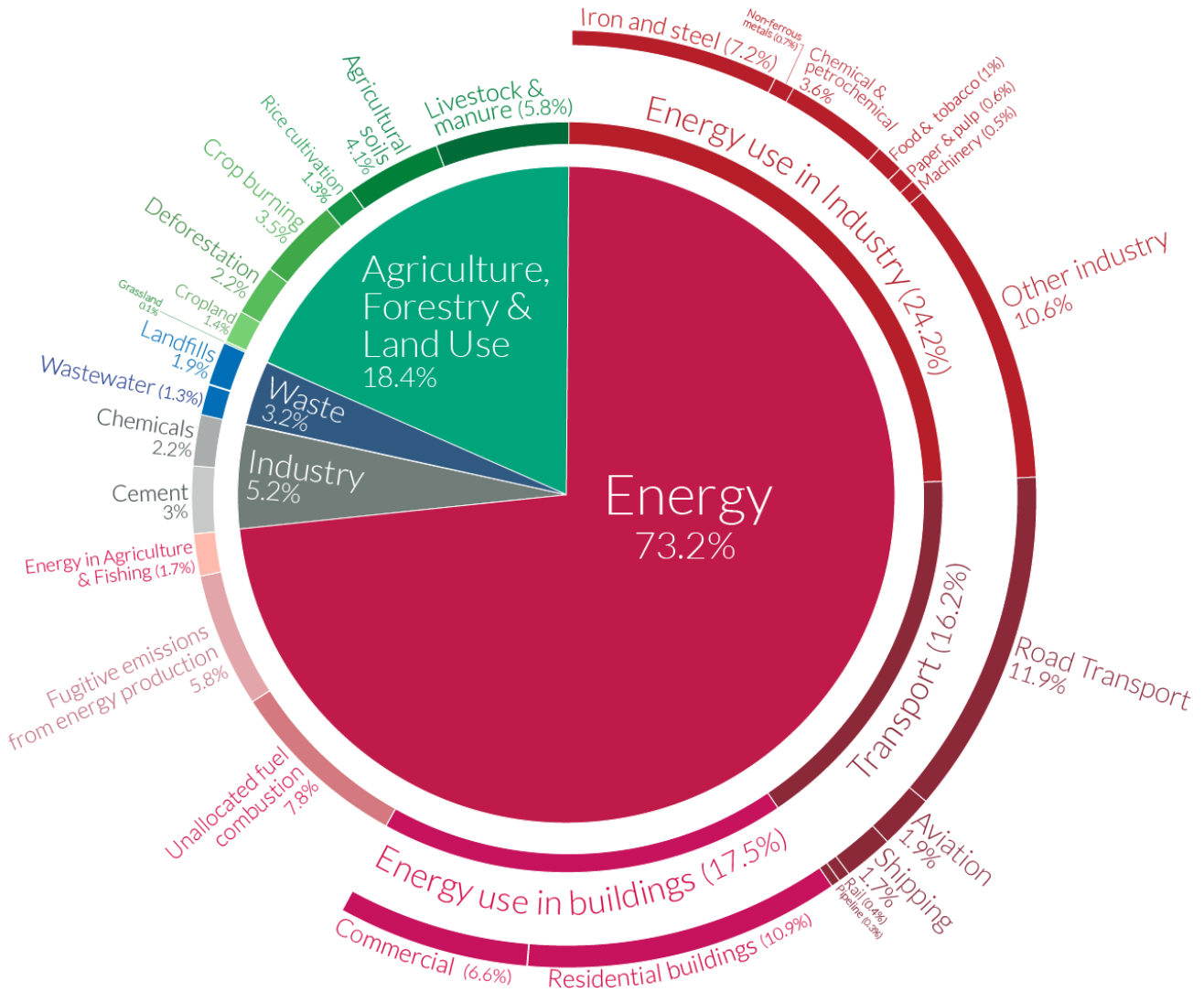
Global greenhouse gas emissions by sector

This is shown for the year 2016 – global greenhouse gas emissions were 49.4 billion tonnes CO_2eq.

Our World in Data



OurWorldinData.org – Research and data to make progress against the world's largest problems.

Source: Climate Watch, the World Resources Institute (2020).

Licensed under CC-BY by the author Hannah Ritchie (2020).

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Traditional Power System



Enomad Uno Power System



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Modular Design
100% Recyclable Plastic
PB-Free Circuit board
Li-ion Battery
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MALIBU TWO XL


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Bring Your Own Powerplant
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ISPO Brandnew
Presented by YKK

Selection 2020

Outdoor Adventure

MEET ENOMAD UNO @ ISPO2020

2020.01.26 - 2020.01.29
NEUE MESSE MUNCHEN, MUNICH, GERMANY




231 NBY

Sustainable Energy

재생에너지

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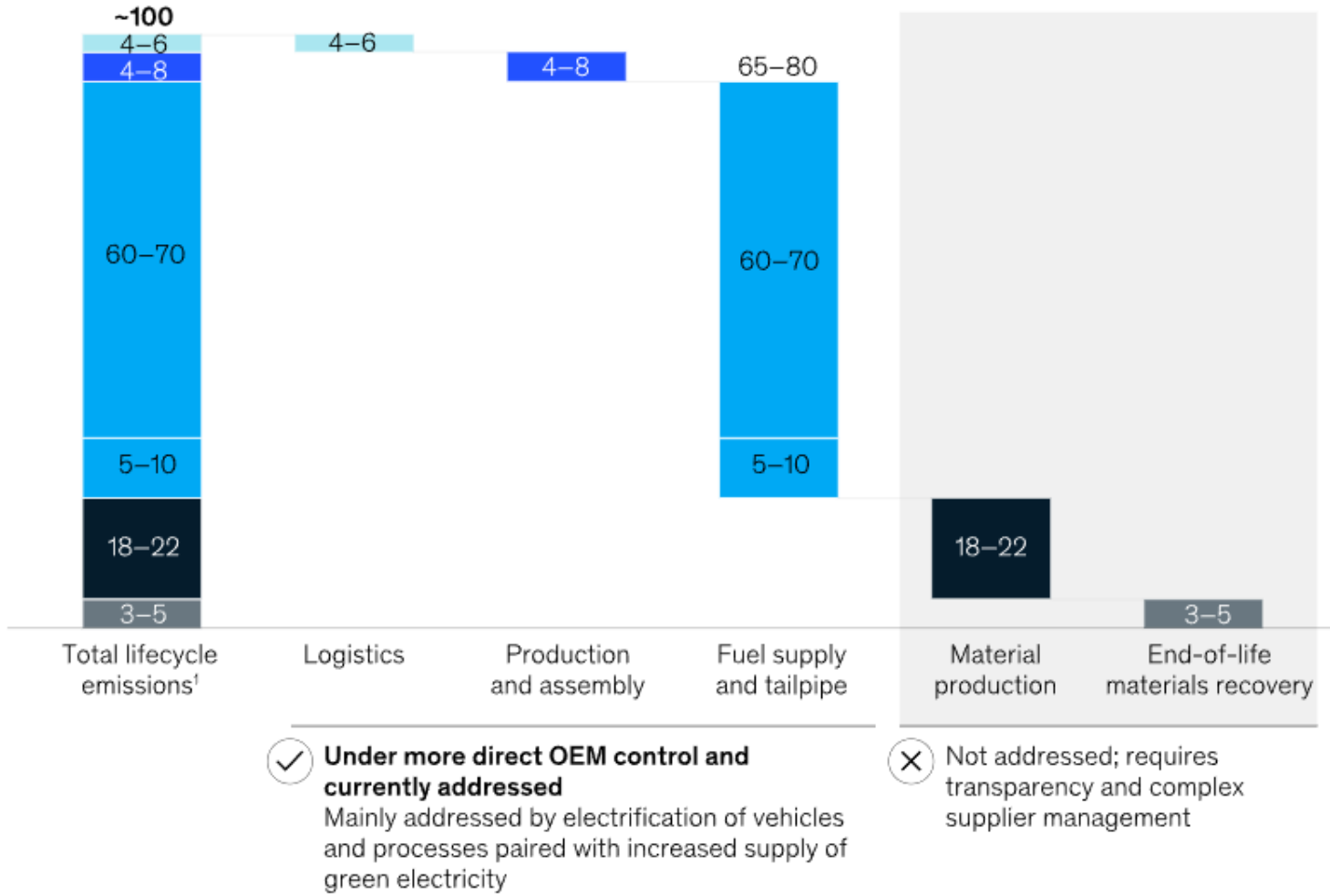
The automotive industry has largely focused on the reduction of tailpipe emissions; reducing material production emissions should also be a priority.

% of total current life-cycle emissions of internal combustion engine vehicles



[1]For C-segment vehicle.
Source: Natural and bio Gas Vehicle Association; expert interviews; McKinsey analysis

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구분			2020 계	2020 1톤미만	2020 1~2톤미만	2020 2~3톤미만	2020 3~4톤미만	2020 4~5톤미만	2020 5~6톤미만	2020 6~7톤미만	2020 7~8톤미만	2020 8~9톤미만	2020 9~10톤미만
전체	합계	합계 (척)	65,744	13,408	20,890	7,885	4,964	5,668	1,052	1,701	2,408	382	3,530
동력	소계	척수 (척)	64,987	12,904	20,779	7,843	4,929	5,645	1,046	1,699	2,395	382	3,510
		톤수 (톤)	546,614.69	9,113.68	30,106.67	20,605.03	16,598.06	26,526.25	5,806.3	11,022.06	18,621.66	3,265.64	34,098.64
		마력수 (마력)	16,373,113	804,209	3,002,304	1,826,078	1,342,159	1,833,058	377,300	618,741	1,069,595	182,424	2,105,382
	강선	척수 (척)	1,231	17	29	28	14	40	3	7	9	2	33
		톤수 (톤)	285,368.93	9.36	42.81	74.6	49.38	193.09	17.04	44.63	71.37	17.1	315.7
		마력수 (마력)	1,329,602	601	3,651	6,376	3,671	13,696	1,400	2,245	1,917	660	10,609
	목선	척수 (척)	693	334	152	55	27	37	3	11	15	5	13
		톤수 (톤)	2,074.73	199.99	208.72	140.11	91.71	174.11	17.31	71.02	114.6	42.75	125.89
		마력수 (마력)	59,298	8,140	7,347	7,033	4,218	7,177	704	2,297	4,166	1,487	3,153
	FRP	척수 (척)	62,849	12,515	20,575	7,733	4,864	5,549	1,032	1,678	2,357	373	3,424
		톤수 (톤)	257,288.87	8,887.32	29,815.83	20,315.11	16,379	26,071.5	5,727.89	10,887.05	18,325.29	3,188.69	33,266.86
		마력수 (마력)	14,889,951	793,690	2,987,266	1,805,394	1,327,011	1,804,714	371,571	612,602	1,055,935	179,027	2,061,535
	기타	척수 (척)	214	38	23	27	24	19	8	3	14	2	40
		톤수 (톤)	1,882.16	17.01	39.31	75.21	77.97	87.55	44.06	19.36	110.4	17.1	390.19
		마력수 (마력)	94,262	1,778	4,040	7,275	7,259	7,471	3,625	1,597	7,577	1,250	30,085

톤급별 선질별 어선세력.2022.KOSIS

Total local Fishing Boats

- 99% 동력선
- 90% FRP선
- 80% 5톤 미만

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100% Electric.
X SHORE
X SHORE



Eelex 8000 Specs

Length
8m / 26.2 ft

Width
2.6 m / 8.5 ft

Depth
0.8 m / 2.6 ft

Weight
2,600 kg / 5,730 lbs

Acceleration
0-20 knots in 4.2 Seconds

Electrical Motor
225kW

Top Speed
30+ Knots

Cruising speed
20 Knots

Battery Capacity
126 kWh

Range
100 NM at lower speeds

Charging
6 hours on 32A

Display
24 inch touchscreen

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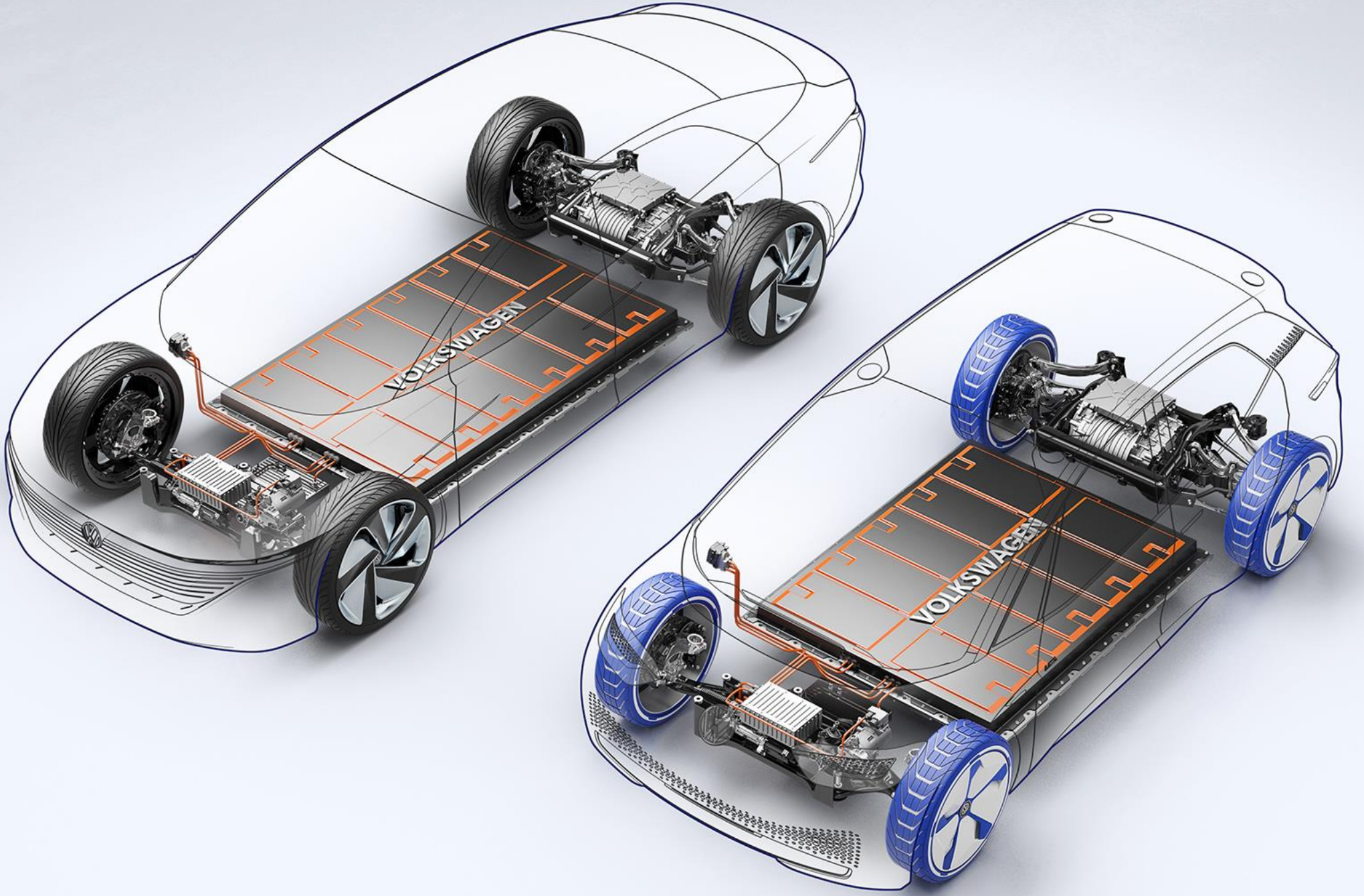

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MBC
30 (수)
7:29

뉴스 투데이
전남·광주

전남도, 어업용 면세유 인상액 지원

라게브리오 1천2백여 명분 전남 배정

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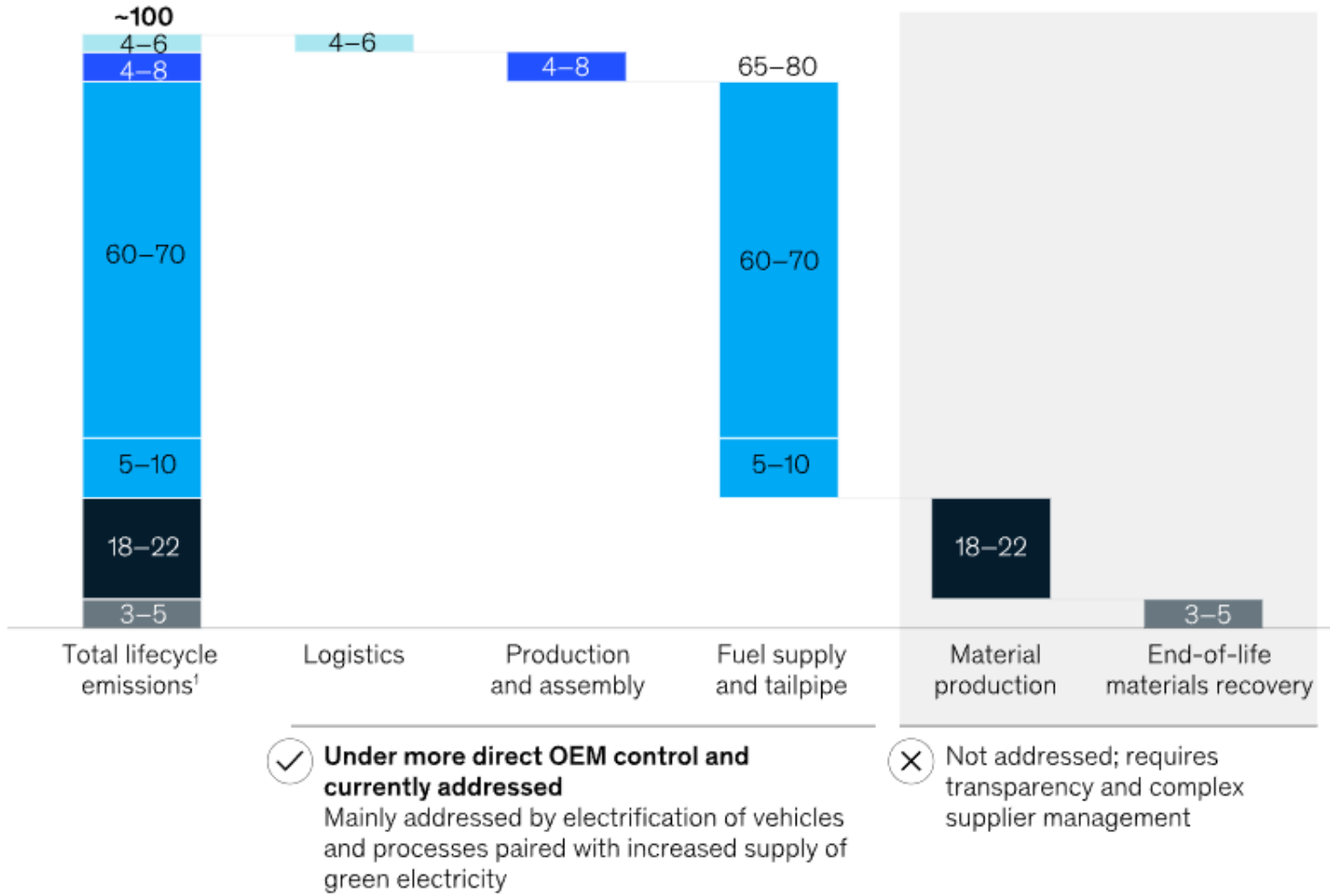
무대책, 무분별
해상풍력
철회하라
해상풍력반대


여수 시행정 0점
어민살인 100점
타도하자, 결사반대!
롯데몰
LOTTE MALL
여수어민
다 죽이는 해상풍력
결사반대!
결사 반대
산업자원통상부가
어민을 죽인다
여수시가
어민을 죽인다
여수 시행정 0점
어민살인 100점
타도하자, 결사반대!

The automotive industry has largely focused on the reduction of tailpipe emissions; reducing material production emissions should also be a priority.

% of total current life-cycle emissions of internal combustion engine vehicles



[1]For C-segment vehicle.
Source: Natural and bio Gas Vehicle Association; expert interviews; McKinsey analysis

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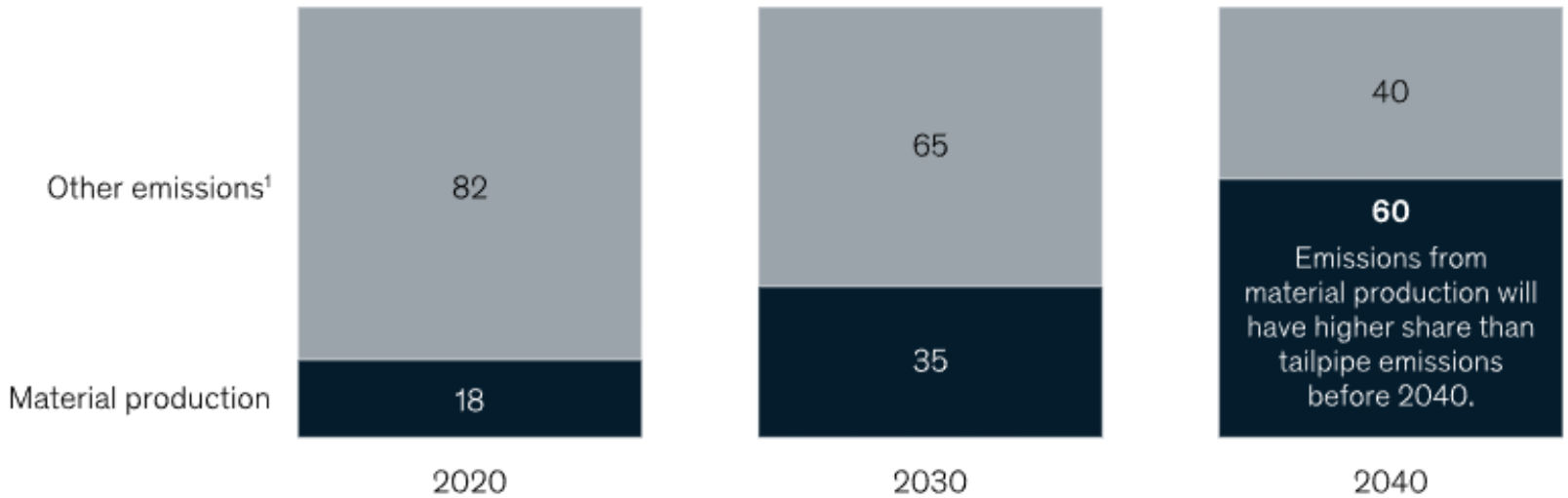
Emissions from material production may reach 60 percent of life-cycle emissions by 2040.

% of life-cycle emissions, (based on required sales data)



[1]Assumed constant range of 150,000 km/vehicle as baseline – End-of-life emissions not considered here.
[2]2018 average ~120gCO2/km, target today 95 gCO2/km. Future assumptions: 2030 75 gCO2/km; 2040 50 gCO2/km.
Source: High level estimation of Circular Cars Initiative (2020) for ambitious EV adoption scenario

McKinsey & Company

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Aluminium Ship

Recyclable Material to replace FRP



Marinized HDPE

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1. **Manufacturing Cost & Energy Consumption** : 2months to 2weeks (Automotive System)
2. **Operating Cost & Energy Consumption** : Lightweight consumes less energy

Yes (obvious, feasible) Benefits but No Standard discouraging the markets

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- Building an eco-system
- Education
- Best Practice

Thank You

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