

## ● Appendices

### Appendix 7: Environmental figures

- 1 As outlined in the Combined Independent Auditor's Report (see page 165-173 of our Integrated Annual Report 2019), this Appendix is part of the assurance scope of EY's assurance procedures over KPN's 2019 sustainability information.
- 2 Scoping and calculation methodology of the reported items is specified In Appendix 3 (page 180-193 of our Annual Report 2019)
- 3 Coverage of all figures according to materiality assessment (98% of operational costs)
- 4 NLIDC was sold in 2019. Where material, environmental figures have been corrected unless stated otherwise.

Table 1: Energy consumption (in PJ)

	Target 2030 compared to base year	target 2022 compared to base year	2019	2018	2017	2016	2010 (base year)
The Netherlands		-	2.728	2.841	2.820	2.955	3.662
KPN non-NL entities		-	-	-	0.012	0.019	0.217
<b>KPN Group (excluding NLIDC)</b>	<b>-44%</b>	<b>-34%</b>	<b>2.728</b>	<b>2.841</b>	<b>2.832</b>	<b>2.974</b>	<b>3.879</b>
Energy directly consumed		-	0.386	0.445	0.483	0.489	-
Energy indirectly consumed		-	2.342	2.396	2.349	2.485	-
<b>KPN Group (excluding NLIDC)</b>	<b>-44%</b>	<b>-34%</b>	<b>2.728</b>	<b>2.841</b>	<b>2.832</b>	<b>2.974</b>	<b>3.879</b>
NLIDC (sold in 2019)		-	0.299	0.393	0.400	0.408	0.365
<b>Total</b>		<b>-</b>	<b>3.027</b>	<b>3.234</b>	<b>3.232</b>	<b>3.382</b>	<b>4.244</b>

1 KPN Group energy consumed (excluding NLIDC) decreased by 30% compared to base year.

Table 2: Electricity consumption (in GWh)

	Target 2030 compared to base year		Target 2022 compared to base year		2019 <sup>1</sup>		2018		2017		2016		2010 (base year)	
	NL	KPN Group	NL	KPN Group	NL	KPN Group	NL	KPN Group	NL	KPN Group	NL	KPN Group	NL	KPN Group
Network					580	580	595	595	581	583	606	608	694	697
Offices and shops					37	37	36	36	33	34	39	42	70	72
<b>KPN Group (excluding NLIDC)</b>	<b>-33%</b>		<b>-27%</b>		<b>617</b>	<b>617</b>	<b>631</b>	<b>631</b>	<b>614</b>	<b>617</b>	<b>645</b>	<b>650</b>	<b>764</b>	<b>769</b>
NLIDC (sold in 2019)					83	83	107	107	109	109	111	111	99	99
<b>Total</b>					<b>700</b>	<b>700</b>	<b>738</b>	<b>738</b>	<b>723</b>	<b>726</b>	<b>756</b>	<b>761</b>	<b>863</b>	<b>868</b>

1 KPN Group electricity consumption decreased by 20% versus base year

Table 3: Fuel consumption, lease vehicle fleet (petrol, diesel and LPG)

	Unit	target as from 2025	target 2020	target 2019 <sup>1</sup>	2019	2018	2017	2016	2010 (baseyear)
KPN The Netherlands (excluding NLIDC)	1,000 liter	100% inflow of CO <sub>2</sub> e neutral cars	-50%	-49%	8,457	9,347	9,429	10,126	16,597
NLIDC (sold in 2019)	1,000 liter				66	65	63	65	119
<b>Total</b>	<b>1,000 liter</b>				<b>8,523</b>	<b>9,412</b>	<b>9,492</b>	<b>10,191</b>	<b>16,716</b>

1 KPN The Netherlands fuel consumption decreased by 49% versus base year

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Table 4: Other Energy consumption KPN Group

	Unit	2019	2018	2017	2016
<b>Natural gas</b>					
KPN Group (excluding NLIDC)	1,000 m <sup>3</sup>	2,580	3,424	4,390	3,774
NLIDC (sold in 2019)	1,000 m <sup>3</sup>	49	74	79	82
<b>Total natural gas</b>		<b>2,629</b>	<b>3,498</b>	<b>4,469</b>	<b>3,856</b>
Heating purchased	GJ	27,618	29,653	32,279	39,594
Cooling purchased	GJ	92,891	94,571	95,139	102,980
<b>Diesel for emergency power generators</b>					
KPN Group (excluding NLIDC)	1,000 liter	116	103	129	119
NLIDC (sold in 2019)	1,000 liter	56	81	63	122
<b>Total diesel for emergency power generators</b>		<b>172</b>	<b>184</b>	<b>192</b>	<b>241</b>

Table 5: CO<sub>2</sub>e emissions own operations Scope 1 and 2 (in kTon)<sup>1</sup>

	target 2050	2019	2018	2017	2016	2010 base year
Scope 1 NL	0.0	0.0	0.0	0.0	0.0	58.8
Scope 2 NL	0.0	0.0	0.0	0.0	0.0	35.9
<b>KPN Group (excluding NLIDC)</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>94.7</b>
KPN non-NL entities	0.0	0.0	0.0	0.0	0.0	25.0
NLIDC (sold in 2019)	0.0	0.0	0.0	0.0	0.0	44.0
<b>Total</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>0.0</b>	<b>163.7</b>

<sup>1</sup> The reported emissions in the table are net scope 1 and scope 2 market based. In the table on page 50 both net and gross scope 1 emissions are reported as well as the location and market based scope 2 emissions.

Table 6: Energy efficiency and Carbon intensity indicators

	target 2020	2019	2018	2017	2016	2010
Ton CO <sub>2</sub> e per Gb/s KPN Netherlands (2010=100)	0.0	0.0	0.0	0.0	0.0	100.0
GWh per Gb/s Network Netherlands (2010 =100)	5.2	5.4	5.6	7.8	11.2	100.0

Table 7: CO<sub>2</sub>e emissions Scope 3 (in kTon) KPN The Netherlands

	target 2040 compared to base year	target 2025 compared to base year	Target 2020 compared to base year	2019 <sup>1</sup>	2018	2017	2016	2014 base year
CAT1 Purchased goods and services				498.7	518.6	544.3	526.0	535.1
CAT2 Capital goods				198.5	174.9	162.8	200.0	237.5
CAT3 Fuel and energy related activities				5.1	9.7	26.9	40.7	93.0
CAT4 Upstream transportation and distribution				-	-	-	-	-
CAT5 Waste generated in operations				0.1	0.5	0.1	0.0	0.3
CAT6 Business travel				3.2	3.1	3.5	3.3	3.2
CAT7 Employee commuting				16.5	15.9	15.5	16.6	17.7
CAT8 Leased assets				-	-	-	-	-
CAT9 Downstream transportation and distribution				17.6	18.3	19.6	14.9	23.0
CAT10 Processing of sold products				-	-	-	-	-
CAT11 Use of sold products				2.1	2.3	2.8	3.1	3.7
CAT12 End-of-life				-	-	-	-	-
CAT13 Downstream leased assets				135.1	135.0	146.8	147.1	128.0
CAT14 Franchises				-	-	-	-	-
CAT15 Investments				-	-	-	-	-
<b>Total CO<sub>2</sub>e emissions</b>	<b>-50%</b>	<b>-20%</b>	<b>-17%</b>	<b>876.9</b>	<b>878.3</b>	<b>922.3</b>	<b>951.7</b>	<b>1,041.4</b>
<b>Total upstream CO<sub>2</sub>e emissions</b>				<b>722.1</b>	<b>722.7</b>	<b>753.0</b>	<b>786.6</b>	<b>886.7</b>
<b>Total downstream CO<sub>2</sub>e emissions</b>				<b>154.9</b>	<b>155.6</b>	<b>169.3</b>	<b>165.1</b>	<b>154.7</b>

1 Due to refining our methodology, we restated our scope 3 figures for previous years. Our emissions in the value chain decreased by 16% compared to base year.

Table 8: Other environmental impacts KPN Group

	Unit	target 2020	2019	2018	2017	2016
<b>Materials usage</b>						
Cable length <sup>12</sup>	1,000 km		373	367	364	359
Paper consumption	Tons		268	459	505	1,042
% FSC or PEFC	%		100%	100%	100%	100%
<b>Coolants (e.g. R407C and R417A)</b>						
KPN Group (excluding NL DC)	kg		657	825	838	766
NL DC (sold in 2019)	kg		0	157	51	263
Total	kg		657	982	889	1,029
<b>Water</b>						
Consumption offices and shops (excluding NL DC)	1,000 m <sup>3</sup>		52.4	66.5	76.0	89.1
Consumption operations (excluding NL DC)	1,000 m <sup>3</sup>		31.7	51.7	91.7	80.0
Total KPN Group (excluding NL DC)	1,000 m <sup>3</sup>	80	84.1	118.2	167.7	169.1
NL DC (sold in 2019)	1,000 m <sup>3</sup>		92.3	130.0	123.3	125.8
Total	1,000 m <sup>3</sup>		176.4	248.2	291.0	294.9

1 Including tubes used for cables

2 Excluding Reggefiber

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**Table 9: Estimated avoided energy consumption and CO<sub>2</sub>e emissions by usage of KPN products and services**

Estimated avoided energy consumption (in PJ) <sup>1</sup>	target 2020	target 2019	2019	2018	2017	2016
Teleworking (enabled by KPN connectivity) <sup>2</sup>			2154	2144	1434	1428
Dematerialisation			0.169	0.131	0.130	0.076
KPN Audioconferencing			0.109	0.135	0.130	0.140
KPN Video Conferencing			0.050	0.053	0.056	0.004
KPN Hosting services			0.032	0.030	0.035	0.041
KPN iTV Cloud solution			0.012	0.018	0.018	0.017
Total estimated avoided energy consumption (excluding NLIDC)			2.527	2.511	1.804	1.706
Total energy consumption KPN (excluding NLIDC)			2.728	2.841	2.832	2.974
<b>% Avoided energy consumption compared to energy consumption KPN</b>	<b>94%</b>	<b>89%</b>	<b>93%</b>	<b>88%</b>	<b>64%</b>	<b>57%</b>
Estimated avoided energy consumption NLIDC services (NLIDC sold in 2019)			N/a	0.120	0.123	0.111
Total energy consumption KPN (including NLIDC)			N/a	3.234	3.232	3.382
% Avoided energy consumption compared to energy consumption KPN (including NLIDC)			N/a	81%	60%	54%
<hr/>						
Estimated avoided CO <sub>2</sub> e –emissions (in kTon) <sup>1</sup>			2019	2018	2017	2016
Teleworking (enabled by KPN connectivity) <sup>2</sup>			173.0	172.3	114.5	114.7
Dematerialization			12.4	10.4	10.3	7.4
KPN Audioconferencing			8.3	10.2	10.0	10.7
KPN Video Conferencing			3.7	3.8	4.2	0.3
KPN Hosting services			3.7	3.5	4.0	4.7
KPN iTV Cloud solution			1.8	2.5	2.5	2.3
<b>Total estimated avoided carbon emissions</b>			<b>203.0</b>	<b>202.7</b>	<b>145.4</b>	<b>140.1</b>
Estimated avoided emissions NLIDC services			N/a	13.8	14.1	12.7
Total estimated avoided carbon emissions (including NLIDC)			N/a	216.4	159.5	152.8
<hr/>						
Avoided Particulate matter emissions (PM <sub>10</sub> ) in tons <sup>3</sup>			2019	2018	2017	2016
Total avoided PM <sub>10</sub> emissions			410	not calc.	not calc.	not calc.

1 NLIDC is sold in 2019. NLIDC services (KPN Colocation services) are therefore excluded.

2 In 2018 we updated our Teleworking calculation methodology using more accurate data from CBS on the number of Teleworkers in the Netherlands. The figure was higher than the number we used in previous years.

3 PM<sub>10</sub> is particulate matter 10 micrometers or less in diameter.

Table 10: Circular information on reuse, recycling and disposal

		Target 2020	Target 2019	Result 2019	Result 2018	Result 2017	Result 2016
<b>Total outflow<sup>1</sup></b>							
<b>Total volume non-hazardous materials &amp; waste</b>	<b>ton</b>			<b>6,538</b>	<b>6,494</b>	<b>5,344</b>	<b>6,417</b>
Reuse	ton			480	497	347	332
Recycling	ton			4,486	4,416	3,135	3,684
Incineration (net) <sup>2</sup>	ton			1,543	1,547	1,833	2,160
Landfill	ton			29	34	29	241
<b>Total volume hazardous materials &amp; waste</b>	<b>ton</b>			<b>148</b>	<b>105</b>	<b>56</b>	<b>275</b>
Reuse	ton			–	–	–	–
Recycling	ton			114	75	53	171
Incineration (net)	ton			31	20	3	101
Landfill	ton			3	10	–	3
<b>Total volume</b>	<b>ton</b>			<b>6,686</b>	<b>6,599</b>	<b>5,400</b>	<b>6,692</b>
% Reuse	%			7%	7%	6%	12%
% Recycling	%			69%	68%	59%	34%
<b>% Reuse and Recycling<sup>3</sup></b>	<b>%</b>	<b>79%</b>	<b>77%</b>	<b>76%</b>	<b>75%</b>	<b>65%</b>	<b>46%</b>
% Incineration (net)	%			24%	24%	34%	51%
% Landfill	%			0%	1%	1%	3%
<b>Collected equipment</b>							
Modems and							
TV settop boxes	%	80%	70%	78%	67%	69%	74%
Mobile phones <sup>4</sup>	%			5%	6%	6%	9%

1 Figures are excluding NLJDC (sold in 2019).

2 Residual waste is incinerated which leaves a residue. After incineration, part of this residue is recycled (e.g. in construction applications). To determine net-incineration as reported, we deduct the volume of residue after incineration which is recycled and the volume which is landfilled.

3 In 2016 we calculated the reuse and recycling rate based on a partial scope (i.c. 42% of total volume)

4 Percentages 2017 and 2018 have been restated due to expansion of scope.