		Т	-reX Scatter plots of individual n	nethods		
T-reX— material/waste footprints	Activity:  NCA NMC111 LiMn204	kg / kg (battery)  or 00  or 01  or 02  or 04	T-reX— material/waste footprints Waste: Total combined — Total (kg)  **	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) Or Base -X- PkBudg500	T-reX— material/waste footprints Waste: Recycling combined — Recycling (kg)  1.6  1.4  1.2  (Algorithm of the companion of th	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP Scenario: (SSP2) O Base
2020 2030 2040 2050 2060 2070 2080 2090 2:  Year  T-reX— material/waste footprints  Waste: Openburning combined — Openburning (kg)  0.016  8: =8: 9: 9: 9: 9: 9: 9: 9: 9: 9: 9: 9: 9: 9:	Activity:	kg / kg (battery)  9 8 01	2020 2030 2040 2050 2060 2070 2080 2090 2100 Year  T-reX— material/waste footprints Waste: Landfill combined — Landfill (kg)	Activity: NCA NMC111 LiMn204 NMC811 LFP  Scenario: (SSP2) Or Base -×- PkBudg500	0.2 2020 2030 2040 2050 2060 2070 2080 2090  Year  T-reX— material/waste footprints  Waste: Incineration combined — Incineration (kg)  1.6  1.4  1.2  1.2  1.0  0.8  0.8  0.8  0.4	Activity:  NCA  NMC111  LiMn2O4  NMC811  LFP  Scenario: (SSP2)
0.006  2020 2030 2040 2050 2060 2070 2080 2090 2  Year  T-reX— material/waste footprints  Waste: Hazardous combined — Hazardous (kg)  1.4  1.2  1.0  0.8  0.6  0.4	2100	Ŀ	2020 2030 2040 2050 2060 2070 2080 2090 2100  Year  T-reX— material/waste footprints  Demand: Zinc — Zinc	Activity: NCA NMC111 LiMn204	Year  T-reX— material/waste footprints  Demand: Water — Water  80  70  80  80  80  80  80  80  80  80	Activity:  NCA  NMC111  LiMn204  NMC811  LFP  Scenario: (SSP2)
0.2  0.0    2020   2030   2040   2050   2060   2070   2080   2090   210	Activity:  NCA NMC111 LiMn204 NMC811 LFP  Scenario: (SSP2)	0.015 0.010 0.40 0.35 0.30 0.25	2020 2030 2040 2050 2060 2070 2080 2090 2  Year  T-reX— material/waste footprints Demand: Phosphate rock — Phosphate rock	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2)	40  30  2020 2030 2040 2050 2060 2070 2080 2090  Year  T-reX— material/waste footprints Demand: Petroleum — Petroleum  1.2  1.1  30  30  40  40  40  40  40  40  40  40	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP Scenario: (SSP2)
0.4  0.2  2020 2030 2040 2050 2060 2070 2080 2090 210  Year  T-reX— material/waste footprints  Demand: Nickel — Nickel  -0.2  -0.4  -0.4  -0.4  -0.4  -0.6	- ×- Base - x- PkBudg500	2.50 2.25 2.00 (x) 2.75	2020 2030 2040 2050 2060 2070 2080 2090 21  Year  T-reX— material/waste footprints  Demand: Natural gas — Natural gas	- ×- PkBudg500	0.8  0.7	- ×- Base - ×- PkBudg500
-1.0  -1.2  2020 2030 2040 2050 2060 2070 2080 2090 2:  Year  T-reX— material/waste footprints  Demand: Fluorspar — Fluorspar  0.18	Activity:  NCA  NMC111  LiMn2O4	90 1.50 1.00 0.75	2020 2030 2040 2050 2060 2070 2080 2090 2  Year  T-reX— material/waste footprints  Demand: Electricity — Electricity  **-&************	Activity: NCA NMC111 LiMn2O4	0.30  0.30	2100  Activity:  NCA  NMC111  LiMn204
0.13  0.14  0.13  0.14  0.12  0.12  2020  2030  2040  2050  2060  2070  2080  2090  21  Year  T-reX— material/waste footprints  Demand: Coke — Coke  2.6  2.4	000	kWh / kg (battery 00 00 00 00 00 00 00 00 00 00 00 00 00	2020 2030 2040 2050 2060 2070 2080 2090 2100  Year  T-reX— material/waste footprints  Demand: Cobalt — Cobalt	Activity:	0.1  0.1  0.2  0.1  2020 2030 2040 2050 2060 2070 2080 2090  Year  T-reX— material/waste footprints  Demand: Coal (brown) — Coal (brown)  0.9  0.9  0.8	
2.2    2.2	·	kg / kg (battery) 0.00  8.00	2020 2030 2040 2050 2060 2070 2080 2090 21  Year  T-reX— material/waste footprints  Demand: Cement — Cement	]	Year  T-reX— material/waste footprints  Demand: Bauxite — Bauxite  1.0	NMC111
2.8  (A)  2.8  2.8  2.0  2.0  2.0  2.0  2.0  2.0	NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2)  - > - Base - x- PkBudg500	0.5 kg / kg (battery) 0.0 c.0 c.0	2020 2030 2040 2050 2060 2070 2080 2090 210  Year  ReCiPe 2016 v1.03, midpoint (I)— material/waste footprin  water use — water consumption potential (WCP)	ts	0.9	i)— material/waste fo
0.9   3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3 - 3	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) OBase -x- PkBudg500	0.8 (pattery)  0.8 (pattery)  0.0 0.4	**************************************	Activity:  NCA  NMC111  LiMn204  NMC811  LFP  Scenario: (SSP2)  O Base  -x- PkBudg500	0.050	ar rints
0.050  0.040  0.040		kg PM2.5-Eq / kg (battery)  800.00  100.0  100.0  800.0  800.0		Activity:  NCA NMC111 LiMn204 NMC811 LFP  Scenario: (SSP2) Base	5.0	Activity:
ReCiPe 2016 v1.03, midpoint (I)— material/waste footprint land use — agricultural land occupation (LOP)  0.6  (Assume the content of the cont	Activity:  NCA  NMC111  LiMn204  NMC811  LFP  Scenario: (SSP2)  O Base  - X- PkBudg500	kg Co-60-Eq / kg (battery)  1.8  1.9  1.0  0.0  0.0	ReCiPe 2016 v1.03, midpoint (I)— material/waste footpring ionising radiation — ionising radiation potential (IRP)  **	Activity:  NCA  NMC111  LiMn2O4  NMC811  LFP  Scenario: (SSP2)  O Base  - ×- PkBudg500	ReCiPe 2016 v1.03, midpoint (I)— material/waste footp human toxicity: non-carcinogenic — human toxicity potentia  3.0	Activity:  NCA  NMC111  LiMn2O4  NMC811  LFP  Scenario: (SSP2)  ON Base  X PkBudg500
ReCiPe 2016 v1.03, midpoint (I)— material/waste footput human toxicity: carcinogenic — human toxicity potential  0.0225  0.0220  0.0175  0.0100  0.0075	Activity:  NCA NMC111 LiMn204 NMC811 LFP  Scenario: (SSP2)	g P-Eq / kg (battery) 00000 01000	2020 2030 2040 2050 2060 2070 2080 2090 210  Year  ReCiPe 2016 v1.03, midpoint (I)— material/waste footprophication: freshwater — freshwater eutrophication potentials: \$\\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	Activity: NCA NMC111 LiMn204 NMC811	ReCiPe 2016 v1.03, midpoint (I)— material/waste footp energy resources: non-renewable, fossil — fossil fuel poten  5.0  4.5  4.5  3.0	tial (FFP)  Activity:  NCA  NMC111  LiMn204  NMC811  LFP  Scenario: (SSP2)  O Base  -x- PkBudg500
0.0050    2020   2030   2040   2050   2060   2070   2080   2090     Year    ReCiPe 2016 v1.03, midpoint (I)— material/waste footprin ecotoxicity: terrestrial — terrestrial ecotoxicity potential (Trestrial — terrestrial ecotoxicity = 100     300	Activity: NCA NMC111 LiMn204		2020 2030 2040 2050 2060 2070 2080 2090 2  Year  ReCiPe 2016 v1.03, midpoint (I)— material/waste footpring ecotoxicity: marine — marine ecotoxicity potential (METI	ts 2)	2.5	nts (FETP)  Activity:
750  2020 2030 2040 2050 2060 2070 2080 2090 210  Year  ReCiPe 2016 v1.03, midpoint (I)— material/waste footprint climate change — global warming potential (GWP1000)  22  20  20  20  20  20  20  20  20			2020 2030 2040 2050 2060 2070 2080 2090 210  Year  ReCiPe 2016 v1.03, midpoint (I)— material/waste footpring idification: terrestrial— terrestrial acidification potential idification: terrestrial— terrestrial acidification idification idification is terrestrial— terrestrial acidification idification is terrestrial— terrestrial acidification idification is terrestrial— terrestrial acidification idification idifi	nts (TAP)	2020 2030 2040 2050 2060 2070 2080 2090 2  Year  EF v3.1 EN15804— material/waste footprin water use — user deprivation potential (deprivation-weighted  (\hat{A}\)  \[ \begin{array}{cccccccccccccccccccccccccccccccccccc	ts water consumption)
12	ozone concentrati	100	2020 2030 2040 2050 2060 2070 2080 2090 21  Year  EF v3.1 EN15804— material/waste footprints land use — soil quality index	···	EF v3.1 EN15804— material/waste footprints ionising radiation: human health — human exposure efficience  3.0  2.5  2.5  3.1  3.1  3.1  3.2  3.3  3.3  3.4  3.5  3.5  3.5  3.5  3.6  3.7  3.7  3.8  3.8  3.8  3.8  3.9  3.9  3.9  3.9	y relative to u235
0.04  2020 2030 2040 2050 2060 2070 2080  Year  EF v3.1 EN15804— material/waste footprints eutrophication: terrestrial — accumulated exceedance (A  0.50  0.45  0.45	2090 2100  E)  Activity:  NCA  NMC111  Limn204  NMC811  LFP  Scenario:	entroby do di	0.026  0.026  0.026  0.024  0.022  0.020  0.020		1.0  2020 2030 2040 2050 2060 2070 2080 2090  Year  EF v3.1 EN15804— material/waste fool eutrophication: freshwater — fraction of nutrients reaching from the state of the sta	eshwater end compar
0.20 0.15 0.10  2020 2030 2040 2050 2060 2070 2080 2090 21  Year  EF v3.1 EN15804— material/waste footprints energy resources: non-renewable — abiotic depletion potential (A	-×- PkBudg500	ecotox 275 250 (has 200	0.014  0.012  2020 2030 2040 2050 2060 2070 2080 2090  Year  EF v3.1 EN15804— material/waste footprints icity: freshwater — comparative toxic unit for ecosystems	(SSP2)  ->	0.006  0.006  2020 2030 2040 2050 2060 2070 2080  Year  EF v3.1 EN15804— material/waste footpric climate change: land use and land use change — global warmi  0.050  0.045  0.045  0.046  0.047	ng potential (GWP10)
180	2100	175   150		Scenario: (SSP2)  O Base  -X- PkBudg500   7P100)  Activity: NCA	0.020 0.015	© - ∞ - ∞ - ∞ - ∞ - ∞ - ∞ - ∞ - ∞ - ∞ -
10  10  2020 2030 2040 2050 2060 2070 2080 2090 2100  Year  EF v3.1 EN15804— material/waste footprints acidification — accumulated exceedance (AE)	NMC811 LFP  Scenario: (SSP2)  O PkBudg500  Activity:	0.00 kg (pattery) 0.00 co.01 0.00 co.01 0.00 co.01 0.00 co.01 0.00 co.01 0.00 co.01	Ø• -8-• •8 - ·8• -·9• -8- •8 - ·8• -0• · -0 - · 8 - ·8• -0 - ·8 - ·8• -0 - ·8 - ·8 - ·8 - ·8 - ·8 - ·8 - ·8 -	NMC811 LFP  Scenario: (SSP2)  One Base  NMC811  LFP  Scenario: (SSP2)  Activity:	10	NMC811 LFP  Scenario: (SSP2)  O Base  NBC811  Activity:
0.18 0.16 0.10 0.08 0.00		m2.ppm.h / kg (battery) 0.16	2020 2030 2040 2050 2060 2070 2080 2090 216  Year  EDIP 2003 no LT— material/waste footprints non-renewable resources no LT— nickel no LT	00	0.0150 0.0150 0.0100 0.0075 0.0050 0.0050 0.0050 0.0050 EDIP 2003 no LT— material/waste footprints non-renewable resources no LT— natural gas no LT— natural gas no LT— material gas no LT	NMC811   LFP
1.0  1.0  0.9  0.8  0.7  0.7  0.7  0.7  0.7  0.7  0.8  0.8		0.14 0.12 (kg (pattery) 0.08 0.06 0.04 0.02 0.00	2020 2030 2040 2050 2060 2070 2080 2090 21  Year  EDIP 2003 no LT— material/waste footprints non-renewable resources no LT— iron no LT	Activity:  NCA NMC111 LiMn204 NMC811 LFP Scenario: (SSP2) Base PkBudg500	Year  EDIP 2003 no LT— material/waste footprints non-renewable resources no LT— copper no LT	2100
0.14  0.12  0.10  0.08  0.08  0.08  0.00	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2)  NO Base -x- PkBudg500	4.0 3.5  kg / kg (pattery) 2.5 1.5 1.0	*:=\begin{array}{cccccccccccccccccccccccccccccccccccc	Activity:  NCA  NMC111  LiMn2O4  NMC811  LFP  Scenario: (SSP2)  - ×- PkBudg500	0.30  0.30  0.30  0.30  0.20  0.10  0.05  0.05  0.05  EDIP 2003 no LT— material/waste footprints non-renewable resources no LT— brown coal	Activity:  NCA  NMC111  LiMn2O4  NMC811  LFP  Scenario: (SSP2)  O Base  - ×- PkBudg500
0.012  0.010  0.010  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.000  0.000	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) Base - × - PkBudg500	3.6 kg (battery) 3.7 kg (battery) 3.8 2.8 2.6 2.4 2.2	8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 - 8 -	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) Or Base -x- PkBudg500	1.0    Second Se	· · · · · ·
EDIP 2003 no LT— material/waste footprints non-renewable resources no LT— aluminium no LT  0.30  0.30  0.25  0.25  0.10  0.20  0.20  2020  2030  2040  2050  2060  2070  2080  2090  21	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2)	0.012 0.011 (kg waste / kg (pattery) 0.010 0.000 0.000		Activity:  NCA NMC111 LiMn204 NMC811 LIFP  Scenario: (SSP2)  OH Base  -X- PkBudg50	3	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) Or Base ->- PkBudg500
Year  EDIP 2003 no LT— material/waste footprints human toxicity no LT— via surface water no LT  300  275  250  250  275  200  175  150  125	Activity:  NCA  NMC111  LiMn204  NMC811  LFP  Scenario: (SSP2)  Base  PkBudg500	m3 soil / kg (battery)  8 6 2 8 6	Year  EDIP 2003 no LT— material/waste footprints	Activity:  NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) · · · · · Base - × - PkBudg500	EDIP 2003 no LT— material/waste footprints  ×10 <sup>7</sup> human toxicity no LT — via air no LT  4.5  4.0  4.0  3.5  2.0  1.5	Activity:  NCA  NMC111
2020 2030 2040 2050 2060 2070 2080 2090 210  Year  EDIP 2003 no LT— material/waste footprints global warming no LT — GWP 500a no LT   (A) 14	Activity: NCA NMC111 LiMn2O4 NMC811 LFP  Scenario: (SSP2) OO Base -X- PkBudg500	Ĺ.	20 2030 2040 2050 2060 2070 2080 2090 2100  Year  EDIP 2003 no LT— material/waste footprints global warming no LT — GWP 20a no LT  **	Activity: NCA NMC111 LiMn204 NMC811 LFP  Scenario: (SSP2) OH Base -X-PkBudg500	1.0	-⊗ - Activity: -⊗ - NCA - NMC111 - LiMn2O4 - NMC811 - LFP - Scenario: (SSP2) - O - Base
8  2020 2030 2040 2050 2060 2070 2080 2090 2100  Year  EDIP 2003 no LT— material/waste footprints eutrophication no LT—terrestrial eutrophication no LT  3.5  3.0  (\hat{\lambda}{\lambda})  2.5  1.5	Activity:  NCA NMC111 LiMn2O4 NMC811 LIFP Scenario: (SSP2)	0.035 0.030 0.020 0.020 0.015	2020 2030 2040 2050 2060 2070 2080 2090 2100  Year  EDIP 2003 no LT— material/waste footprints eutrophication no LT — separate N potential no LT	Activity:  NCA NMC111 LiMn204 NMC811 LIFP  Scenario: (SSP2) · • · · Base - × · PkBudg500	Year  EDIP 2003 no LT— material/waste footprints eutrophication no LT — combined potential no LT  0.18  0.16  0.16  0.16  0.10  0.10  0.10  0.10	Activity:  NCA  NMC111
1.0  2020 2030 2040 2050 2060 2070 2080 2090 210  Year  EDIP 2003 no LT— material/waste footprints ecotoxicity no LT— in sewage treatment plants no I  250000 250000 2000 2000 2000 2000 2000	Activity:   NCA	0.010 6000 5500 4 4500 4000 3500	2020 2030 2040 2050 2060 2070 2080 2090 2  Year  EDIP 2003 no LT— material/waste footprints ecotoxicity no LT— chronic, in water no LT	Activity:  NCA  NMC111  LiMn2O4  NMC811  LFP  Scenario: (SSP2)	0.06  0.06  2020 2030 2040 2050 2060 2070 2080 2090  Year  EDIP 2003 no LT— material/waste footprints ecotoxicity no LT— chronic, in soil no LT  3000  2750  (Arabical Section 1988 - 19	2100  Activity: NCA NMC111 Limn204 NMC811 LFP  Scenario: (SSP2)
EDIP 2003 no LT— material/waste footprints ecotoxicity no LT— acute, in water no LT    100000	2100  Activity: NCA NMC111 LiMn204 NMC811 LFP	3	2020 2030 2040 2050 2060 2070 2080 2090 2  Year  EDIP 2003 no LT— material/waste footprints acidification no LT	O Base	2000  1750  1500  2020  2030  2040  2050  2060  2070  2080  2090  Year   Crustal Scarcity Indicator 2020— material/waste foo material resources: metals/minerals — crustal scarcity pot  16000  14000  12000  12000  10000	2100  tprints tential (CSP)  Activity: NCA NMC111 LiMn204 NMC811 LFP
3500 - 3500 - 2500 - 2500 - 20	Scenario: (SSP2)  Solution Base  -x- PkBudg500	2.00 H 1.75 1.50 1.25	2020 2030 2040 2050 2060 2070 2080 2090 2  Year	1	1000   Section 1000	(SSP2)