m_lorry (4.312%)

d_sea	p_recycl_inconel	grid_wind (2.084%)	b2f_Gl (1.14	1 1 1 1	o_ldf_inconel (0.891%)			
(4.322%)	(3.025%)	hOf Al	reus		p_incin_Al (0.926%)			
		b2f_Al (2.309%)	(1.23	5%)	p_ldf_Al (0.954%)	developers (0.64%)	s ff_lt <mark>m_</mark> recycl_GFR (0.629%) (0.582%)	ŀΡ
d_lorry (4.401%)	takt (3.124%)	p_incin_inconel	lubric (1.30		recycl_stee (1.102%)	p_incin (1.018		
		(2.741%)		p_incin_CFRP (1.892%)		f_CFRP .541%)	p_incin_GFRP (1.461%)	
water_factory (4.554%)	new_machine (3.551%)	m_air (2.959%)	new	_factory 2.0%)	ry m_sea (1.937%)		p_recycl_Al (1.898%)	
b2f_Ti (4.863%)	p_ldf_GFRP (3.897%)	E_factor (3.666%		p_ldf_ (3.654			air_travel (3.581%)	

wastewater_factory (4.149%)

b2f_inconel (4.132%)

maint_Al (4.03%)

CTV: freshwater ecotoxicity

new_factory takt

d_lorry	takt	new_factory (2.378%)	(1.047%)	(0.921%)		
(4.358%)	(2.929%)	, ,	b2f GFRP r	recycl steel		
		ata	(1.172%)	o_recycl_steel (0.957%)	p_incin_11 (0.676%)	
		m_air (2.623%)		incin CFRP	· i	 s ff Ito
d_sea	air_travel (3.411%)		(1.224%)	(1.002%)		
(4.402%)	(0.41170)					

CTV: human toxicity

b2f inconel

(4.299%)

p_ldf_Al

(3.626%)

maint Al

(4.124%)

p ldf inconel

(3.592%)

p_recycl_inconel

(4.071%)

p_incin_inconel p incin GFRP p recycl Al **lubricant** reuse (2.738%)(1.698%)(1.54%)(1.356%)(1.313%)wastewater factory grid wind b2f CFRP b2f Al (3.457%)m sea (2.794%) $(2.\overline{173\%})$ (2.353%)(1.766%)p ldf GFRP new machine E_factory

(3.914%)

m_lorry

(4.298%)

p_ldf_Ti (3.979%)

b2f GFRP p_incin_CFRP (2.071%) $(1.\overline{129\%})$ m_air (2.911%) m_lorry (4.333%)

d sea

 $(4.\overline{2}36\%)$

			reuse	(0.91%)					
		b2f_Al (2.425%)	b2f_Al (2.425%) (1.23%)		E_office (0.969%)		ff_ltd (0.631	developers %) (0.624%)	
d_lorry (4.436%)	takt (3.072%)	p_incin_inconel	lubricant (1.27%)	p_recycl_stee (1.1%)		p_incin_Ti (1.031%)		p_ldf_Al (0.972%)	
		(2.711%)	new_fact (1.914%			f_CFRP .676%)	p_	ncin_GFRP (1.458%)	
water_factory (4.481%)	new_machine (3.529%)	p_recycl_inconel (2.742%)	grid_wind (2.046%		m_sea (1.935%)			p_recycl_Al (1.915%)	

E_factory $(\overline{3.742\%})$

wastewater factory

 $(4.19\overline{2\%})$

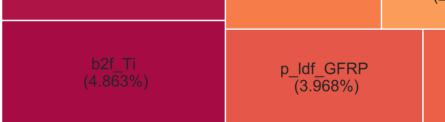
CTV: marine ecotoxicity

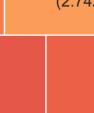
p_incin_Al (0.89%)

p_ldf_inconel

p_ldf_Ti (3.639%)

b2f_inconel (4.116%)







maint Al

 $(4.01\overline{3}\%)$

car_travel takt new_factory (2.539%) p_ldf_inconel (1.134%)

(3 0/10%)

p incin inconel

(3.115%)

p_recycl_inconel

(3.821%)

maint_Al (4.281%)

(1 37%)

(4.51 70)	(3.04170)		pax_ap	p ldf Al (0.646%)
		m sea	(1.156%)	(1.05%)p_incin_CFRR developers
water factory	E factory	(2.634%)	b2f_Al (1.332%)	reuse b2f_GFRP_incin_GFRPecycl_stee
$(4.\overline{406\%})^{3}$	(3.047%)	wastewater factory	(1.332 /0)	(1.067%) (0.859%) (0.854%) (0.729%)

grid wind

(2.89%)

d sea

(3.737%)

b2f Ti

(4.175%)

CTV: terrestrial ecotoxicity

3.047%)	
	wastewater_factory (2.643%)

b2f_CFRP (2.417%)

lubricant

(1.759%)

p_recycl_Al (1.688%) m_air (1.933%)

air travel

(3.281%)

p_ldf_Ti

(4.117%)

maint steel

(0.56%)

E office

p_incin_Al

(1.721%)

flights ap

(2.155%)

ff Ito

(0.893%)

new machine

(3.707%)

p ldf GFRP

(4.158%)

lubricant p ldf inconel E office (0.735%)(1.25%)m lorry (2.036%)wastewater factory (3.566%)maint battery p ldf steel (5.14%) (0.753%)(1.269%)p recycl_inconel ff Ito new machine (2.068%)m_sea

CTV: metal depletion

water factory (3.738%)

> air travel (3.926%)

p incin CFRP

(4.159%)

b2f inconel

(4.375%)

fleet (2.236%)

p incin inconel

(2.812%)

maint Al

(3.536%)

b2f Al

(4.338%)

p incin Ti (1.964%)

(1.552%)

d sea

(2.606%)

(0.934%)(1.101%)

takt

E factory

(4.304%)

(3.119%)

(0.755%) (0.623%) p recycl GFRP maint steel (0.919%)p recycl steelp incin GFRP (1.078%)m air (2.533%)

p ldf Al

(0.895%)

b2f CFRP

(1.062%)

p ldf Ti

(2.342%)

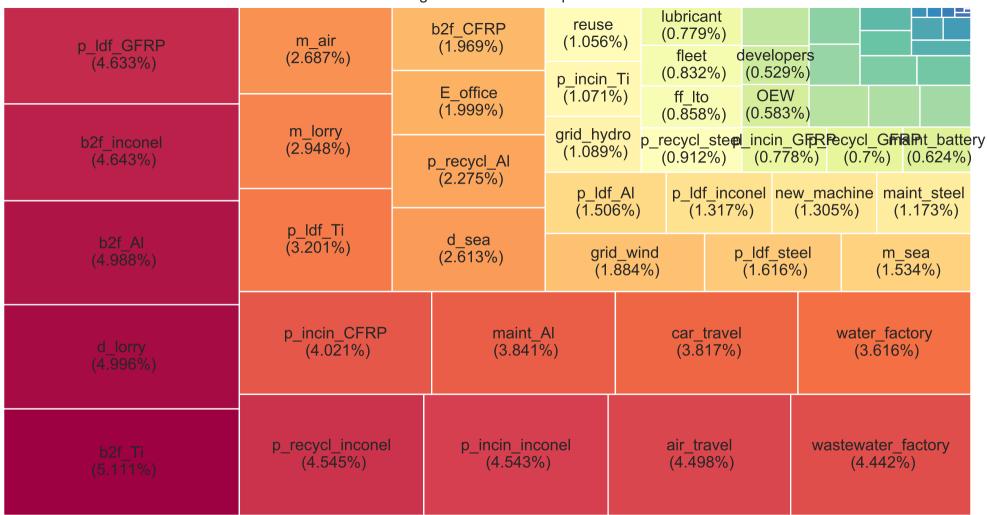
p recycl Al

(2.851%)

p_ldf_GFRP

(4.243%)

CTV: agricultural land occupation reuse b2f CFRP



p_ldf_Al m sea (1.152%)p recycl inconel p incin inconel (2.66%)

(3.056%)

new factory

(3.125%)

air travel

(3.185%)

b2f Ti

(3.973%)

b2f inconel

(4.144%)

(4.159%)

d lorry

(4.235%)

E factory (2.756%)takt

(2.781%)

b2f CFRP

(2.94%)

water factory

(3.794%)

p ldf GFRP

(4.066%)

CTV: climate change

developers (1.266%)reuse (1.331%)

pax ap

(2.466%)

lifetime (1.005%)**lubricant** (2.158%)

d sea

(4.013%)

 $(0.\overline{9}42\%)$

b2f Al

p_ldf_incone flights_ap

(0.988%)_recycl_statint steel (0.642%)(0.484%)b2f GFRP (0.9%)m air (1.735%)p incin Al

 $(0.50\overline{5}\%)$

E office

(0.538%)

(2.203%)new machine (3.786%)

wastewater factory (2.198%)grid wind (3.203%)

car_travel

(4.012%)

ff Ito p incin GFRP

(0.861%) (0.692%)

p_recycl_Al

(1.525%)

p_ldf_Al m sea (1.141%)p_incin_inconel b2f inconel (2.669%)

(4.196%)	(3.05%)	
d lorry	new factory	(2

 $(3.\overline{126\%})^{2}$

takt 2.758%) E factory

(2.785%)

CTV: fossil depletion

(1.262%)reuse (1.314%)

developers

b2f Al (0.997%)**lubricant**

(0.942%)

lifetime

p_ldf_inconel E_office (0.533%)

(0.649%) (0.484%) b2f GFRP ff Ito p incin GFRP (0.914%)(0.865%) (0.704%)m air (1.776%)

flights_ap

(0.569%)

(0.989%) recycl_state int steel

b2f CFRP (2.809%)

water factory

(3.821%)

p ldf GFRP

(4.055%)

pax ap (2.297%)

(2.15%)

wastewater factory (2.225%)new machine

(3.773%)

d sea

(4.024%)

p_incin_Al (2.202%)grid wind (3.221%)

car travel

(4.018%)

p recycl Al

(1.541%)

(4.237%)

b2f Ti (3.982%)

p recycl inconel

(4.178%)

air travel

(3.197%)

p recycl steel grid wind (1.183%)d sea m air (2.419%)

new machine

(3.124%)

air travel

(3.28%)

m lorry

(3.949%)

b2f inconel

(4.058%)

(4.319%)	(3.056%)

wastewater factory

(4.477%)

p incin inconel (2.452%)b2f CFRP

(2.491%)

takt

(2.804%)

CTV: freshwater eutrophication

maint Al

(3.859%)

E factory

(4.032%)

(1.262%)reuse (1.662%)p incin GFRP

b2f GFRP

p ldf Al grid gaps recycl GFRP (0.988%)p_incin_Ti (1.165%)m sea

p_incin_Al

(0.701%)

p ldf inconel (0.774%)

> (0.698%) (0.611%) lubricant (1.147%)p incin CFRP

(1.707%)new factory (1.895%)p_ldf_Ti (3.696%)

d lorry

(3.966%)

E office

(0.999%)

 $(1.7\overline{2}5\%)$ $(1.\overline{7}14\%)$ b2f Al p recycl Al (2.268%)(1.914%)p_ldf_GFRP

(3.707%)

p recycl inconel

(3.984%)

b2f_inconel	grid_wind	E_factory (2.715%)	developers (1.248%)	p_incin_GFRP (0.654%) ff_lto = office		
(3.983%)	(3.232%)	, , ,	reuse	(0.848%) E_offic (0.461		
		p_incin_inconel	(1.406%)	b2f_Al p recyc	cl_steegrid_	_gasflights_yea
	new_factory (3.259%)	(2.982%)		(0.864%) (0.6	6%) (0.54)	41%) (0.485%)
d_sea (3.996%)		(=:00=70)	p_recycl_Al (1.447%)	p_ldf_Al p_ (1.16%)	_ldf_incone (0.914%)	b2f_GFRP (0.894%)
				(1.1070)	(0.51470)	(0.00470)
		air_travel	lubricant	wastewater_	_factory	m_air

new_machine

(3.735%)

p_ldf_Ti (3.877%)

pax ap

(3.058%)

(2.16%)

m_sea

 $(2.\overline{653\%})$

 $(1.\overline{60}1\%)$

p_incin_Al

(2.299%)

b2f_CFRP

(3.45%)

b2f_Ti

(3.818%)

(2.021%)

takt

(2.49%)

water_factory

(3.559%)

p ldf GFRP

(3.824%)

CTV: ionising radiation

(3.055%) lifetime

car_travel (3.775%)p_recycl_inconel

(3.955%)

(3.444%)

p_ldf_Al (1.155%) takt

grid_wind

(3.191%)

b2f Ti

(3.971%)

p_recycl_inconel

(4.095%)

021_ITCOTTET	new_factory	(2.613%)	(******)	ff Ito		
(4.125%)	(3.131%)		developers	(0.862%)	E_office	
	air_travel (3.165%)	m_sea (2.709%)	(1.231%)		(0.502%) recycl_stee <mark>f</mark> light	s ap grid gas
				(0.922%)	(0.658%) (0.65	51%) (0.555%)
d_lorry (4.158%)			reuse	b2f Al	lifetime	p ldf inconel
			(1.419%)	(1.011%)	(0.94%)	(0.933%)

water_factory

(3.803%)

p_ldf_GFRP

(4.032%)

p_incin_inconel

(3.054%)

CTV: marine eutrophication

air_travel	E_factory
(3.165%)	(2.897%)
	E_factory (2.897%)

E factory	reuse (1.419%)	b2f_ (1.01	f_Al lifetime (0.94%)		p_ldf_incon (0.933%)	
(2.897%)	pax_ap (2.06%			n_air .759%)	p_recycl_Al (1.534%)	

wastewater_factory

(2.234%)

p_incin_GFRP (0.718%)

p_incin_Al

(2.171%)

new_machine

(3.773%)

car travel

(4.029%)

lubricant

(2.108%)

b2f CFRP

(3.238%)

d sea

(3.971%)

CTV: natural land transformation

p_recycl_

wastowater_factory

takt

b2f_Al (4.226%)	wastewater_factory (2.73%)	takt (2.349%)	(1.3 p_incin	cl_GFRP 865%) _inconel	lubricant (0.751%) p_ldf_Al (0.763%)			
d_sea (4.414%)	air_travel (2.866%)	m_lorry (2.451%)	grid_	_wind _42%)	devmonths (0.862%) OEW (1.07%)	grid_ (0.68 water_c (0.958	office	naint_battery (0.539%) m_sea (0.93%)
	p_incin_CFRP (2.89%)	b2f_GFRP (2.475%)		cycl_steel :.238%)	new_ma (1.904			_office .767%)
p_incin_GFRP (4.464%)	p_ldf_GFRP (3.079%)	b2f_CFRP (2.666%)	p_ldf_Ti (2.663%)		d_lorry (2.51%)			inconel 504%)
m_air (4.496%)	b2f_Ti (3.654%)	E_factor (3.609%			reuse :.134%)	p_recycl_Al (3.101%)		
water_factory (4.66%)	maint_Al (4.051%)	p_recycl_inco (3.8%)	onel car (3		travel 92%)		p_incir (3.672	

p_recycl_inconel (4.035%)	air_travel (3.103%)	m_sea (2.638%)		developers (1.24%) reuse		b2f_Al (0.903%) grid_gas p_ldf_inconel(0.522%)						
			E factory		(1.389%)		(0.926%) recycl		_stesint_steel 7%)(0.448%)			
p_ldf_Ti (4.055%)	new_factory (3.214%)		(2.747%)		cl_Al 4%)	p_lo (1.1	df_Al 64%)	b2f_GFRP (0.896%)	f	f_lto p_i	incin_GF (0.675%	
	(0.21470)	pax_ap (2.832%)			oricant .14%)	_		ewater_fact (2.091%)				
d_lorry (4.087%)	grid_wind p_incin_inconel (3.238%) (3.017%)				<u> </u>		lifetime (2.477%)				·	
(4.007 %)			takt (2.561%)						p_incin_Al (2.267%)			
maint_Al	car traval				hino		water factory		b2f CFRP			
(4.145%)	(3.859%)	car_travel new_macl (3.859%) (3.781%				3.689%)		,	(3.286%)			
m_lorry (4.221%)	b2f_inconel (4.018%))	p_ldf_GFRP (3.885%)			b2f_Ti (3.861%)				

CTV: ozone depletion

CTV: particulate matter formation

new_factory (3.047%)	takt (2.672%)		(1.17%)		(0.93	(0.932%) E_office (0.539%) (0.95%) grid_ga				
		m_sea								
grid_wind	(2.696%)						ff_lto p	incin_ (0.77	G FR@cycl_st ee	
(3.103%)	E_factory (2.999%)		,	,	n	,		,	pax_ap	
									(1.337%)	
air_travel (3.194%) p_inci									lubricant	
	(3.002%)		(2.316%)			(2.044%)			(2.029%)	
water factory	n roovel ince		p recycl inconel		iew n	nachine		b2f_CFRP		
(3.95%)	(3.881%)					(3.806%)		(3.333%)		
					d_sea (3.086%)		b2f_Ti (3.975%)			
()		(3333,0)						(3.975%)		
	(3.047%) grid_wind (3.103%) air_travel (3.194%) water_factory (3.95%)	(3.047%) grid_wind (3.103%) air_travel (3.194%) water_factory (3.95%) car_travel	new_factory (3.047%) grid_wind (3.103%) air_travel (3.194%) water_factory (3.95%) car_travel (3.881%) car_travel p_ldf_GFRF	new_factory (3.047%)	new_factory (3.047%) grid_wind (3.103%) E_factory (2.696%) gir_travel (3.194%) p_incin_inconel (3.002%) water_factory (3.95%) p_recycl_inconel (3.881%) p_ldf_GFRP (1.17%) developers (1.175%) flights_ap (1.206%) m_air (1.833%) p_recycl_inconel (2.316%)	new_factory (3.047%) (2.672%) (1.17%) (0.93 developers (1.175%) b2f_G (0.94 (2.696%) flights_ap (1.206%) b2f_G (0.94 (3.103%) E_factory (2.999%) m_air (1.833%) p_(1.833%) air_travel (3.194%) p_incin_inconel (3.002%) wastewater_factory (2.316%) water_factory (3.95%) p_recycl_inconel (3.881%) new_n (3.881%)	new_factory (3.047%) (2.672%) (1.17%) (0.932%) E (0.025%) (0.95%) grid (0.95%) (0.95%) grid (0.95%) grid (0.95%) (0.95%) grid (0.95%) (0.95%) grid (0.95%) (0.95%) grid (0.95%) (0.95%) (0.95%) grid (0.95%) (0.95%) (0.95%) (0.95%) grid (0.95%) (0.95%)	car_travel car	new_factory (3.047%) (2.672%) (2.678P	

CTV: photochemical oxidant formation p_incin_GFRP developers takt (1.231%)h2f_inconel air travel (2 5000/)

(4.052%)	(3.142%)	(2.369%)	reuse	ff_lto (0.834%) f	lights_ap			
		m_sea	(1.43%)	b2f_GFRP _p	(0.486%) _recycl_ste	eelgrid_	gas E	office
		(2.659%)	1 01	(0.917%)	(0.636%)	(0.53)	35%) (0.	495%)
d_lorry	d_lorry grid_wind (4.087%) (3.205%)	p_recycl_Al	p_ldf_Al	b2f	_AI	p_ldf_ir	nconel	
(4.087%)			(1.512%)	(1.162%)	(0.94	43%)	(0.92)	.8%)

new machine

(3.789%)

d sea

(3.964%)

p_incin_inconel

 $(3.\overline{03\%})$

 $(0.6\overline{9}9\%)$

water factory

(3.713%)

car travel

(3.931%)

lifetime

(1.994%)

p incin Al

(2.22%)

m air

(1.724%)

wastewater factory

(2.158%)

b2f CFRP

(3.334%)

p ldf GFRP

(3.918%)

lubricant

(2.141%)

pax ap

(2.317%)

(2.659%)
E_factory (2.813%)

new_factory

(3.207%)

b2f Ti

(3.884%)

p recycl inconel

(4.047%)

developers takt (1.23%)b2f inconel air travel (2.634%)

grid wind

(3.214%)

new machine

(3.845%)

p ldf GFRP

(4.01%)

(4.023%)	(3.163%)	(2.00+70)	reuse	ff_ito (0.867%)	E_office	
		m sea	(4.0000()	b2f GFRP _n	(0.514%)	ts_ap grid_gas
		(2.692%)		(0.927%) P	(0.647%) (0.5	543%) (0.537%)
d_lorry (4.112%)	new_factory (3.199%)		p_recycl_Al (1.524%)	p_ldf_Al (1.165%)	b2f_Al (0.98%)	p_ldf_inconel (0.934%)

CTV: terrestrial acidification

p_incin_GFRP

 $(0.7\overline{0}9\%)$

p_recycl_inconel

(3.642%)

car travel

(3.973%)

m air

(1.715%)

pax ap

(2.197%)

lifetime

(1.625%)

wastewater_factory

(2.177%)

b2f CFRP

(3.366%)

b2f Ti

(3.918%)

lubricant

(2.147%)

p_incin_Al

(2.207%)

new factory	,
(3.199%)	□ fastan.
	E_factory (2.888%)

new_factory	E_factory
(3.199%)	(2.888%)

- p_incin_inconel $(3.0\overline{25}\%)$
 - water factory

(3.811%)

d sea

(3.985%)

m sea b2f GFRP reuse $(1.\overline{2}19\%)$ car travel $(2\overline{2}19\%)$ (2 033%)

(3.024%)

b2f inconel

(3.065%)

p incin GFRP

 $(3.4\overline{15}\%)$

b2f Ti

(3.982%)

(3.999%)	(2.90070)	(=.= : 0 / 0)			(0.0000()	
(5.55570)			E office		(0.666%)	
			(1.363%)	grid_gas	OEW	
		n incin Ti	,	(0.873%)	(0.856%)	
	m_lorry	p_incin_Ti			(0.00070)	
m air	(2.984%)	(2.322%)	p_incin_inconel	new_fac	tory p_recycl	_GFRP lubricant

(2.481%)

b2f CFRP

(2.896%)

p_ldf_Ti

(3.376%)

p recycl inconel

(3.853%)

CTV: urban land occupation

m_lorry	p_incin_Ti
(2.984%)	(2.322%)
air_travel	p_recycl_Al

p_	_incin_ (1.5		
	gri	d_	wind

(2.218%)

b2f Al

(2.852%)

p_ldf_Al

(0.86%)

 $(1.\overline{1}19\%)^{1}$

p_ldf_GFRP (3.338%)

maint Al

(3.789%)

devmonths

p incin CFRP

(1.964%)

takt

(2.65%)

(0.929%)

(0.929%)

p_recycl_steel

(1.756%)

new machine

(2.522%)

d lorry

(3.069%)

wastewater factory

(3.736%)

 $(4.\overline{199}\%)$

p_incin_GFRP developers (0.645%)E factory (1.279%)d sea grid wind (2.652%)ff Ito (3.972%)(3.229%)(0.851%) maint_steel reuse

CTV: water depletion

lifetime (2.848%)

(3.026%)

air travel

(3.082%)

(0.437%)(1.422%)b2f_Al p_recycl_steegrid_gas E_office (0.872%) (0.591%) (0.533%) (0.479%) p recycl Al p_ldf_inconel b2f GFRP p ldf Al (1.454%)(1.167%)p incin inconel

lubricant

(2.171%)

m sea

pax ap (3.399%)

new factory

(3.235%)

p incin Al (2.28%)b2f CFRP (3.456%)

car travel

(3.849%)

new machine (3.769%)

b2f inconel

(3.948%)

b2f Ti (3.769%)

p_ldf_Ti

(3.897%)

(2.646%)

p ldf GFRP

(3.852%)

(2.568%)water factory (3.595%)

takt

(4.021%)

- (0.916%)(0.873%)

 - m_air
- wastewater factory (1.582%)(2.005%)