Supplementary Table S1. Environmental datasets used for scenario modelling, data source: ecoinvent 3.7.

Material flow	Circular scenario					Business-as-usual scenario				
	Scenario name	**C2 (Transport)**	**C3 (Waste processing)**	**C4 (Disposal)**	**D (Benefits)** *Avoided production modelled by process:*	**Scenario name**	**C2 (Transport)**	**C3 (Waste processing)**	**C4 (Disposal)**	**D (Benefits)** *Avoided production modelled by process:*
Wood	OSB board production	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Wood chips, from post-consumer wood, measured as dry mass {CH}| treatment of waste wood, post-consumer, sorting and shredding | Cut-off, S		Wood pellet, measured as dry mass {RER}| wood pellet production | Cut-off, S	Energy recovery	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Waste wood, untreated {CH}| heat production, untreated waste wood, at furnace 1000-5000 kW | Cut-off, S
Aluminium	Recycling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Aluminium scrap, post-consumer, prepared for melting {Europe without Switzerland}| treatment of metal scrap, mixed, for recycling, unsorted, sorting | Cut-off, S		Aluminium, primary, ingot {RoW}| production | Cut-off, S	Recycling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Aluminium scrap, post-consumer, prepared for melting {Europe without Switzerland}| treatment of metal scrap, mixed, for recycling, unsorted, sorting | Cut-off, S		Aluminium, primary, ingot {RoW}| production | Cut-off, S

Reinforcement steel (P1)	Recycling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste reinforcement steel {RoW}| treatment of waste reinforcement steel, recycling | Cut-off, S		Reinforcing steel {Europe without Austria}| reinforcing steel production | Cut-off, S	Recycling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste reinforcement steel {RoW}| treatment of waste reinforcement steel, recycling | Cut-off, S		Reinforcing steel {Europe without Austria}| reinforcing steel production | Cut-off, S
Reinforcement steel (P2)	Recycling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste reinforcement steel {RoW}| treatment of waste reinforcement steel, recycling | Cut-off, S		Reinforcing steel {Europe without Austria}| reinforcing steel production | Cut-off, S	Recycling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste reinforcement steel {RoW}| treatment of waste reinforcement steel, recycling | Cut-off, S		Reinforcing steel {Europe without Austria}| reinforcing steel production | Cut-off, S
Asphalt	Backfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste concrete, not reinforced {RoW}| treatment of waste concrete, not reinforced, recycling | Cut-off, S		Gravel, crushed {RoW}| production | Cut-off, S	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste bitumen {Europe without Switzerland}| treatment of waste bitumen, sanitary landfill | Cut-off, S	

Hazardous waste (asbestos)	Hazardous waste landfill	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Hazardous waste, for underground deposit {RER}| market for hazardous waste, for underground deposit | Cut-off, S		Hazardous waste landfill	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Hazardous waste, for underground deposit {RER}| market for hazardous waste, for underground deposit | Cut-off, S	
Concrete and concrete-based materials (P2)	Recycled aggregate	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste reinforced concrete {Europe without Switzerland}| treatment of waste reinforced concrete, recycling | Cut-off, S		Gravel, crushed {BR}| gravel production, crushed | Cut-off, S	Recycling for base layers	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste reinforced concrete {Europe without Switzerland}| treatment of waste reinforced concrete, recycling | Cut-off, S		Gravel, crushed {BR}| gravel production, crushed | Cut-off, S
Concrete and concrete-based materials (P3)	Recycling and material production	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste concrete, not reinforced {Europe without Switzerland}| treatment of waste concrete, not reinforced, recycling | Cut-off, S		Gravel, crushed {BR}| gravel production, crushed | Cut-off, S	Backfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste concrete, not reinforced {Europe without Switzerland }| treatment of waste concrete, not reinforced, collection for final disposal | Cut-off, S	

Electronic waste (WEEE)	Take-back scheme	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste electric and electronic equipment {GLO}| treatment of, shredding | Cut-off, S		Cable, unspecified {GLO}| production | Cut-off, S	Take-back scheme	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste electric and electronic equipment {GLO}| treatment of, shredding | Cut-off, S		Cable, unspecified {GLO}| production | Cut-off, S
Cabels	Durable products production for use in transportation infrastructure projects	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste electric and electronic equipment {GLO}| treatment of, shredding | Cut-off, S		Cable, unspecified {GLO}| production | Cut-off, S	Durable products production for use in transportation infrastructure projects	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste electric and electronic equipment {GLO}| treatment of, shredding | Cut-off, S		Cable, unspecified {GLO}| production | Cut-off, S
EPS	Heat treatment	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Waste expanded polystyrene {RoW}| treatment of, municipal incineration | Cut-off, S	Heat treatment	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Waste expanded polystyrene {RoW}| treatment of, municipal incineration | Cut-off, S

Plastics and PVC	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste polyvinylchloride {CZ}| market for waste polyvinylchloride | Cut-off, S		Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste polyvinylchloride {CZ}| market for waste polyvinylchloride | Cut-off, S	
Plastic pipes	Plastic granulate production	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Mixed plastics (waste treatment) {GLO}| recycling of mixed plastics | Cut-off, S		Polyethylene, high density, granulate, recycled {Europe without Switzerland} | polyethylene production, high density, granulate, recycled | Cut-off, S	Plastic granulate production	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Mixed plastics (waste treatment) {GLO}| recycling of mixed plastics | Cut-off, S		Polyethylene, high density, granulate, recycled {Europe without Switzerland}| polyethylene production, high density, granulate, recycled | Cut-off, S
Gravel	Reuse	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Gravel, round {RoW}| gravel and sand quarry operation | Cut-off, S	Reuse	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Gravel, round {RoW}| gravel and sand quarry operation | Cut-off, S

Mineral wool insulation	Reprocessed into blown insulation	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste mineral wool {Europe without Switzerland}| treatment of waste mineral wool, recycling | Cut-off, S		Stone wool {RoW}| stone wool production | Cut-off, S	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste mineral wool {RoW}| treatment of waste mineral wool, collection for final disposal | Cut-off, S	
Mineral wool insulation	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste mineral wool {RoW}| treatment of waste mineral wool, collection for final disposal | Cut-off, S		Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste mineral wool {RoW}| treatment of waste mineral wool, collection for final disposal | Cut-off, S	

Gypsum board	New gypsum board production	Transport, freight, lorry 3.5-7.5 metric ton, euro6 {RER}| market for transport, freight, lorry 3.5-7.5 metric ton, EURO6 | Cut-off, S Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste gypsum plasterboard {CH}| treatment of, recycling | Cut-off, S		Gypsum plasterboard {CH}| production | Cut-off, S	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste gypsum plasterboard {CH}| treatment of, collection for final disposal | Cut-off, S	
Gypsum board	Backfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste gypsum plasterboard {CH}| treatment of, collection for final disposal | Cut-off, S		Backfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste gypsum plasterboard {CH}| treatment of, collection for final disposal | Cut-off, S	
Gypsum board	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste paperboard {CH}| treatment of, inert material landfill | Cut-off, S		Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste paperboard {CH}| treatment of, inert material landfill | Cut-off, S	

Mineral wool insulation	Reprocessed into blown insulation	Transport, freight, lorry 3.5-7.5 metric ton, euro6 {RER}| market for transport, freight, lorry 3.5-7.5 metric ton, EURO6 | Cut-off, S Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste mineral wool {Europe without Switzerland}| treatment of waste mineral wool, recycling | Cut-off, S		Glass wool mat {RoW}| production | Cut-off, S	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Waste mineral wool {RoW}| treatment of waste mineral wool, collection for final disposal | Cut-off, S	
Glass	Window glass production	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste glass sheet {Europe without Switzerland}| treatment of waste glass sheet, sorting plant | Cut-off, S		Flat glass, uncoated {RER}| production | Cut-off, S	Landfilling within mixed CDW	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Inert waste {Europe without Switzerland }| treatment of inert waste, sanitary landfill | Cut-off, S	
Mixed construction waste	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste concrete gravel {RoW}| treatment of waste concrete gravel, collection for final disposal | Cut-off, S			Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S	Waste concrete gravel {RoW}| treatment of waste concrete gravel, collection for final disposal | Cut-off, S		

Slag	Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Inert waste {Europe without Switzerland }| treatment of inert waste, sanitary landfill | Cut-off, S		Landfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S		Inert waste {Europe without Switzerland }| treatment of inert waste, sanitary landfill | Cut-off, S	
Soil and excavated materials	Reuse in construction and land reclamation	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Clay {RoW}| clay pit operation | Cut-off, S	Backfilling	Transport, freight, lorry, unspecified {RER}| transport, freight, lorry, all sizes, EURO6 to generic market for | Cut-off, S			Clay {RoW}| clay pit operation | Cut-off, S