

Supplementary Information

Environmental and nutritional assessment of young children's diets in Norway: comparing the current diet with national dietary guidelines and the EAT-Lancet reference diet

European Journal of Nutrition

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Supplementary Table S1 Foods included in the food groups

Grain products		Raw grains and breakfast cereals Bread and porridge Uncooked white and whole grain pasta and rice
Potatoes		Raw potatoes
Vegetables	Dark green vegetables	Raw and boiled spinach and broccoli
	Red, orange vegetables	Raw and boiled carrots Raw tomatoes and red pepper Ketchup, tomato paste and crushed tomatoes
	Other vegetables	Raw cucumber, avocado, sweet corn, sugar snaps, cauliflower and onion
Fruit, incl. juice	Fruit and berries	Raw fruit and berries (mainly apple, banana, blueberries and orange) Raisins
	Fruit smoothies	Fruit smoothies without added sugar
	Fruit juice	Fruit juice without added sugar
Legumes		Dried, frozen or fresh beans, lentils and peas
Nuts	Nuts	Raw peanuts and tree nuts; peanut butter
Added vegetable fats	Vegetable oils	Mainly olive, rapeseed, sunflower and soy oil
	Margarine	Liquid and soft margarine based on vegetable oils
Dairy products	Milk	Whole, semi-skimmed and skimmed milk Milk with flavour
	Yoghurt	Drinking yoghurt, yoghurt and "skyr"
	Cheese	Hard cheese, cheese spread and "brunost"
	Butter	Butter and butter mixes (Bremykt)
Red meat	Whole and minced red meat	Raw whole and minced meat of beef, pork and lamb
	Processed red meat products	Processed meat products with beef, pork or lamb (sausage, ham, salami, liver paste, etc.)
Poultry	Whole and minced poultry	Raw whole and minced meat of chicken and turkey
	Processed poultry products	Processed meat products with chicken or turkey (sausage, ham, liver paste, etc.)
Eggs		Raw eggs
Fish	Lean fish	Raw fillets of cod and other white fish
	Fatty fish	Raw fillets of salmon and other fatty fish
	Processed fish products	Processed fish products (fish cakes, fish fingers, etc.)

Sweets	Sweets, cakes and desserts	Jam, sweets, chocolate, cakes, sweet biscuits, ice-cream, etc.
	Sugar-sweetened beverages	Juice concentrate, soda and other sugar-sweetened drinks
	Artificially sweetened beverages	Juice concentrate, soda and other artificially sweetened drinks
Drinking water		Tap water, mineral water
Other	Plant-based beverages	Mainly oat milk
	Formula milk	Mainly toddler formula prepared from powder
	Industrially produced toddler dinners	Ready-to-eat dinner meals including potatoes, vegetables, pasta, meat and/or fish
	Added salt and condiments	Salt, herbs, etc.

Supplementary Table S2 Food composition in the current diet among 2-year-olds in Norway (Småbarnskost 3, $n = 1413$) [1], the FBDG scenario diet and the EAT-*Lancet* scenario diet

	Småbarnskost 3		FBDG scenario diet		EAT-<i>Lancet</i> scenario diet	
	Food (g/day)	Energy (kJ/day)	Food (g/day)	Energy (kJ/day)	Food (g/day)	Energy (kJ/day)
Total	1729	5293	1874	5303	1639	5308
Grain products	222	1694	264	2073	295	2054
Whole-grain bread ^a	89	874	80	791	80	787
White bread ^b	31	294	35	352	0	0
Whole-grain porridge	87	305	100	174	150	261
Rice and pasta ^c	6	96	30	461	30	461
Other grains	9	124	19	296	35	545
Potatoes	14	46	30	102	25	85
Vegetables	71	163	188	269	152	186
Fruit, incl. juice	217	563	187	630	101	260
Fruit and berries	129	352	187	630	101	260
Fruit smoothies	58	156	0	0	0	0
Fruit juice	30	55	0	0	0	0
Legumes	6	28	15	166	38	553
Nuts	0	7	10	260	26	676
Added vegetable fats	12	274	15	407	20	733
Vegetable oils	1	35	5	183	20	733
Margarine	11	239	10	224	0	0
Dairy products	489	1495	260	619	128	262
Milk	357	655	160	247	80	124
Yoghurt	104	372	90	260	48	139
Cheese	21	268	10	112	0	0
Butter	7	200	0	0	0	0
Red meat	31	280	25	126	8	69
Whole and minced red meat	7	42	15	82	8	69
Processed red meat	24	238	10	43	0	0
Poultry	7	39	20	98	15	75
Whole and minced poultry	4	23	15	70	10	47
Processed poultry	3	16	5	28	5	28
Eggs	12	71	10	62	7	43
Fish	32	226	40	262	14	84
Lean fish	3	10	10	35	8	28
Fatty fish	8	76	20	188	6	56
Processed fish products	21	139	10	40	0	0
Sweets	89	330	30	229	30	229
Sweets, cakes and desserts	15	250	10	192	10	192
Sugar-sweetened beverages	42	80	20	37	20	37

Artificially sweetened beverages	32	1	0	0	0	0
Drinking water	475	0	780	0	780	0
Other	29	82	0	0	0	0
Plant-based beverages	9	20				
Formula milk	14	40				
Industrially produced toddler dinners	5	15				
Added salt, condiments, etc.	1	7				

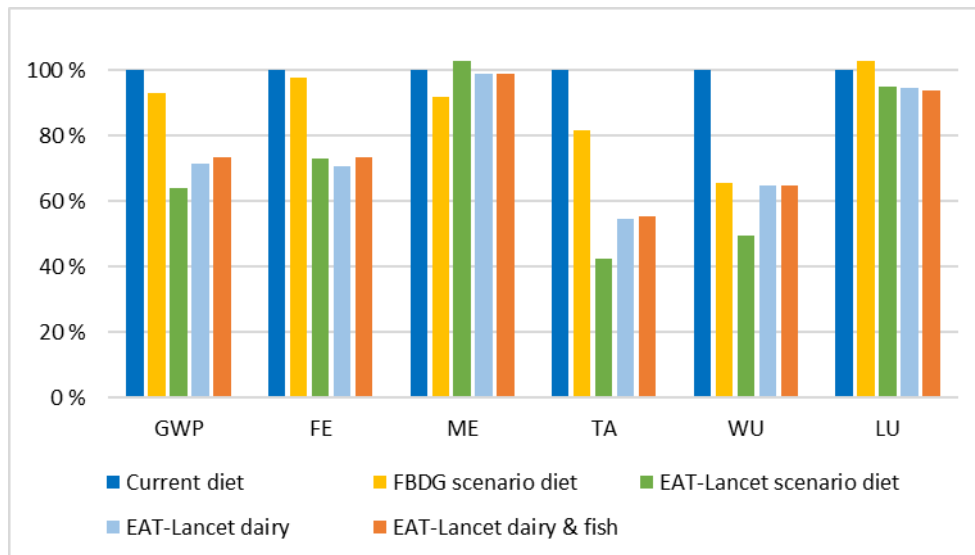
^a Whole-grain content $\geq 50\%$

^b Whole-grain content $< 50\%$

^c Current diet includes whole-grain and refined rice and pasta. The scenario diets include whole-grain only.

Supplementary Table S3 Content of macro- and micronutrients in the three EAT-*Lancet* scenario diets and the recommended intake for children aged 2-5 years according to the Norwegian nutrition recommendations [2]. The EAT-*Lancet* scenario follows the target values of the EAT-*Lancet* reference diet [3] adjusted for an energy intake of 5.3 MJ/d. The EAT-*Lancet* dairy and dairy & fish scenarios are based on the first scenario but includes double amounts of dairy products and dairy and fish products, respectively, still within the recommended intake ranges of the EAT-*Lancet* reference diet adjusted to 5.3 MJ/d

	EAT- <i>Lancet</i>	EAT- <i>Lancet</i> dairy	EAT- <i>Lancet</i> dairy & fish	Recommended intake
Energy (MJ)	5.3	5.3	5.3	5.3
Protein (E%)	16	18	19	10-20
Total fat (E%)	37	33	32	25-40
<i>Saturated fat (E%)</i>	6	7	7	< 10
<i>Monounsaturated fat (E%)</i>	17	14	14	10-20
<i>Polyunsaturated fat (E%)</i>	10	9	8	5-10
Total carbs. (E%)	43	45	45	45-60
<i>Added sugar (E%)</i>	2	2	2	< 10
Dietary fibre (g/MJ)	5	5	5	$> 2-3$
Whole grain (g/MJ)	22	22	22	> 7.5
Vitamin A (μg)	428	452	455	350
Vitamin D (μg)	1.3	1.6	2.4	10
Vitamin E (mg)	14	12	11	5
Thiamine (mg)	1.3	1.4	1.4	0.6
Riboflavin (mg)	0.8	1.0	1.0	0.7
Niacin (mg)	11	11	12	9
B6 (mg)	1.2	1.3	1.3	0.7
Folate (μg)	296	302	303	80
B12 (μg)	1.7	2.5	2.9	0.8
Vitamin C (mg)	59	59	59	30
Calcium (mg)	419	600	601	600
Iron (mg)	10.6	10.6	10.6	8
Zinc (mg)	7.5	8.1	8.1	6
Iodine (μg)	55	76	99	90
Salt (g)	1.6	1.8	1.8	$< 3-4$



Supplementary Fig. S1 Total environmental impact per impact category from the scenario diets in relation to the impacts from the current diet among 2-year-olds in Norway (Småbarnskost 3, $n = 1413$) [1]. FE, freshwater eutrophication; GWP, global warming potential; LU, land use; ME, marine eutrophication; TA, terrestrial acidification; WU, water use

References:

1. Astrup, H., et al., *Småbarnskost 3. Landsomfattende undersøkelse av kostholdet blant 2-åringer i Norge [in Norwegian]*. 2020: Oslo.
2. Norwegian Directorate of Health, *Anbefalinger om kosthold, ernæring og fysisk aktivitet [in Norwegian]*. 2014: Oslo.
3. Willett, W., et al., *Food in the Anthropocene: the EAT-Lancet Commission on healthy diets from sustainable food systems*. *Lancet*, 2019. **393**(10170): p. 447-492.