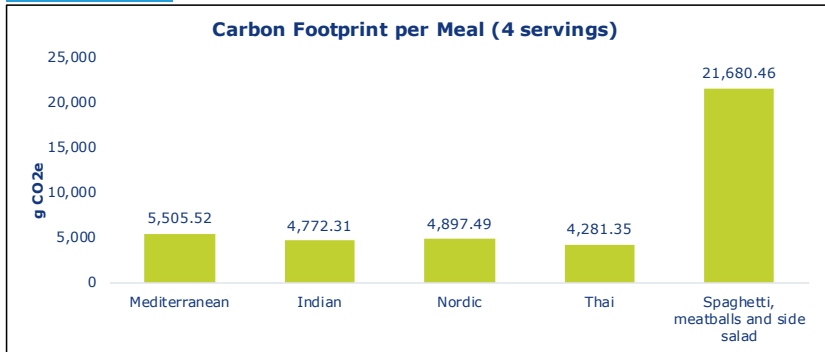


Planetary Plates: Environmental & Nutritional Analysis

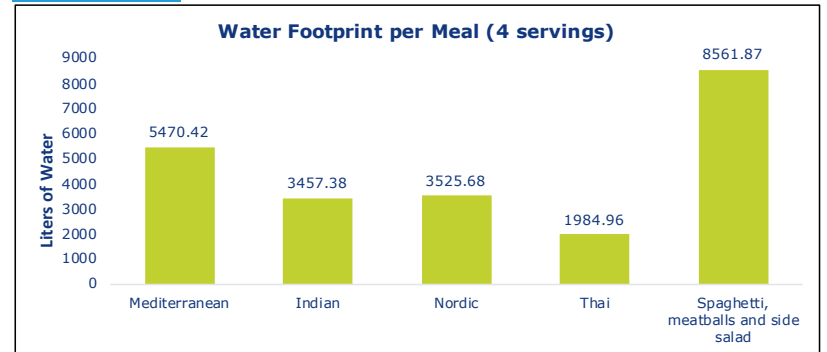
Global Salmon Initiative - 2022

This file contains detailed information on the methodology Global Salmon Initiative used to calculate carbon and water footprint for each of its four Planetary Plates created in partnership with Oldways. The tabs for each Planetary Plate include detailed carbon and water calculations, nutritional analysis and bonus sustainability tips.

Carbon Footprint		
Data source: https://simapro.com/products/agribalyse-agricultural-database/		
PLANETARY PLATES		g CO2e
	Mediterranean	5,505.52
	Indian	4,772.31
	Nordic	4,897.49
	Thai	4,281.35
COMPARISON MEAL	Spaghetti, meatballs and side salad	21,680.46



Water Footprint		
Database source: https://www.nature.com/articles/s41597-021-00909-8#Sec15		
PLANETARY PLATES		Liters of water
	Mediterranean	5470.42
	Indian	3457.38
	Nordic	3525.68
	Thai	1984.96
COMPARISON MEAL	Spaghetti, meatballs and side salad	8561.87



Notes on Methodology

Carbon Footprint: Calculating the carbon footprint of food production is a complex and nuanced process and there are a variety of methods that are and can be used. The carbon footprint of food production is dependent on a variety of factors, including but not limited to: production practices, regional growing differences, environmental conditions, transportation, processing practices, preparation and storage methods. As a result, carbon footprint figures within the scientific literature vary. For our purposes, we chose to use the AGRIBALYSE 3.0 database as it provided data across the majority of our recipe ingredients using the same methodology. Of particular importance is that it differentiated between wild and farmed salmon, enabling us to use this more granular data point across recipes analyzed.

AGRIBALYSE 3.0 is the French life cycle inventory (LCI) database for the agriculture and food sector. See open-access data (https://koumoul.com/s/data-fair/api/v1/datasets/agribalyse-synthese/metadata-attachments/AGRIBALYSE3.0.1_vf.xlsx), which is what informed our carbon footprint analysis. Per Agribalyse 3.0, "The latest version, published in 2020, comprises LCIs for 2,500 agricultural and food products produced and/or consumed in France, combining a production-based approach and a consumption-based approach....AGRIBALYSE uses a transparent methodology that was co-developed by an extensive partnership between public and private research institutes, coordinated by ADEME and INRAE. Methodology principles follow the key international guidelines as much as possible (ISO, LEAP, PEF)."

Water Footprint: Similarly, calculating the water footprint of food production is also complex and dependent on a variety of factors, including but not limited to: production practices, regional climatic differences, processing practices and preparation methods. As a result, water footprint figures within the scientific literature vary. For our purposes, we relied on the SU-EATABLE LIFE (SEL) database as it provided water footprint data across the majority of our recipe ingredients using the same methodology. However, the SEL data does not differentiate between wild and farmed salmon, but is in line with industry specific research and data (<http://hugin.info/209/R/2246047/887370.pdf>).

The database, developed in the framework of the EU SU-EATABLE LIFE project, builds on the double pyramid database of the Barilla Center for Food and Nutrition. The SEL database is organized in different levels of information suitable for different users and purposes. The SEL database contains 937 water footprint values extrapolated from 88 publications (2005–2018). WF data are summarized into a total of 72 typologies, 9 sub-typologies and 320 items.

Nutritional analysis: Nutritional analysis conducted by Oldways.

Where ingredient data was unavailable, it is simply noted in the row with a "-."

For questions about this research, please contact Sophie Ryan (sryan@globalsalmoninitiative.org).

Mediterranean Plate

Carbon Footprint

Data source: <https://simapro.com/products/agribalyse-agricultural-database/>

Ingredients	g CO2e (Agribalyse)
1 lemon	54.60
1 tablespoon extra virgin olive oil	24.70
1 pound farmed salmon	2780.52
3/4 teaspoon red pepper flakes	-
¼ teaspoon fennel seeds	5.85
½ teaspoon salt	-
¼ cup pitted olives	41.85
1 pound broccoli rapini	598.50
10 ounces dried whole grain orecchiette pasta	481.60
2 tablespoons extra virgin olive oil	49.40
3 cloves garlic, finely chopped	5.55
½ teaspoon red pepper flakes	-
1 (15-ounce) can chickpeas	539.75
Juice of ½ lemon	27.30
¼ cup grated Pecorino cheese	175.56
2 large oranges	446.20
¼ cup extra virgin olive oil, divided	98.80
2 bunches kale, preferably lacinto kale	77.00
¼ cup sunflower seeds	98.34
TOTAL (PER FOUR SERVINGS)	5505.52

Sustainability Tips

Feel free to make use of the leftover lemon zest and lemon juice from the Mediterranean Salmon with Olives recipe in this dish to cut down on food waste. The broccoli rapini cooks in the same water as the pasta to save water and flavor!

If you have leftovers, toss the extra salmon into the kale salad or orecchiette (whatever's left over!). It will make for a hearty lunch the next day.

Use both the zest and the juice of the Cara Cara oranges to reduce food waste. However, any variety of orange (such as navel oranges or blood oranges) will work.

Don't forget to use the entire broccoli rabe! Using the whole vegetable (not just the florets), will make sure you get plenty of healthy veg and help reduce food waste.

Water Footprint

Database source: <https://www.nature.com/articles/s41597-021-00909->

Ingredients	Water Footprint (Liters water/kg of food item)	Liters of water per ingredient
1 lemon	642.00	38.52
1 tablespoon extra virgin olive oil	14415.00	187.40
1 pound farmed salmon	2193.00	986.85
3/4 teaspoon red pepper flakes	N/A	-
¼ teaspoon fennel seeds	8280.00	41.40
½ teaspoon salt	N/A	-
¼ cup pitted olives	3015.00	135.68
1 pound broccoli rapini	325.00	146.25
10 ounces dried whole grain orecchiette pasta	1508.00	422.24
2 tablespoons extra virgin olive oil	14415.00	374.79
3 cloves garlic, finely chopped	589.00	8.84
½ teaspoon red pepper flakes	N/A	-
1 (15-ounce) can chickpeas	4177.00	1775.23
Juice of ½ lemon	642.00	19.26
¼ cup grated Pecorino cheese	5060.00	141.68
2 large oranges	654.00	300.84
¼ cup extra virgin olive oil, divided	14415.00	749.58
2 bunches kale, preferably lacinto kale	280.00	30.80
¼ cup sunflower seeds	3366.00	111.08
TOTAL (PER FOUR SERVINGS)	5470.42	

Nutrition Information (Prepared by Oldways)

Mediterranean Salmon with Olives	Calories: 280, Total Fat: 20g, Saturated Fat: 4g, Sodium: 420mg, Carbohydrate: 2g, Fiber: 0g, Total Sugar: 0g (Added Sugar: 0g), Protein: 23g
Orecchiette with Chickpeas and Greens	Calories: 470, Total Fat: 12g, Saturated Fat: 2.5g, Sodium: 105mg, Carbohydrate: 70g, Fiber: 12g, Total Sugar: 3g (Added Sugar: 0g), Protein: 18g
Kale Salad with Sunflower Seeds, Cara Cara Oranges, and Citrus Vinaigrette	Calories: 250, Total Fat: 18g, Saturated Fat: 2.5g, Sodium: 270mg, Carbohydrate: 22g, Fiber: 7g, Total Sugar: 10g (Added Sugar: 0g), Protein: 8g

Indian Plate

Carbon Footprint		
Data source: https://simapro.com/products/agribalyse-agricultural-database/		
Ingredients	g CO2e (Agribalyse)	
Garlic Spiced Salmon with Kachumber	1 tablespoon canola oil	121.80
	1 pound farmed salmon	2780.52
	2 garlic cloves, minced	3.70
	¼ teaspoon turmeric	0.66
	1 ½ teaspoons cumin, divided	-
	1 medium cucumber	972.00
	2 medium tomatoes, diced	122.40
	1 small red onion, diced	50.40
	¼ cup chopped fresh cilantro	5.19
	Juice of ½ lemon (2 tablespoons lemon juice)	27.30
Millet Tahari	1 cup millet	173.25
	1 tablespoon canola oil	121.80
	¾ teaspoon cumin	-
	¼ teaspoon turmeric	0.66
	¼ teaspoon garam masala	-
Red Lentil Dal	1 cup frozen peas	116.20
	1 cup dried red lentils	69.30
	1 tablespoon canola oil	121.80
	1 medium onion, finely chopped	71.40
	1 tablespoon finely minced fresh ginger	8.26
	2 cloves of garlic	3.70
	1 teaspoon ground cumin	-
3/4 teaspoon ground turmeric	1.97	
TOTAL (PER FOUR SERVINGS)		4772.31

Water Footprint			
Database source: https://www.nature.com/articles/s41597-021-00909-8#Sec15			
Ingredients	Water Footprint (Liters water/kg of food item)	Liters of water per ingredient	
Garlic Spiced Salmon with Kachumber	1 tablespoon canola oil	4301.00	38.52
	1 pound farmed salmon	2193.00	986.85
	2 garlic cloves, minced	589.00	5.89
	¼ teaspoon turmeric	N/A	-
	1 ½ teaspoons cumin, divided	N/A	-
	1 medium cucumber	353.00	70.60
	2 medium tomatoes, diced	41.00	9.84
	1 small red onion, diced	290.00	34.80
	¼ cup chopped fresh cilantro	N/A	-
	Juice of ½ lemon	642.00	19.26
Millet Tahari	1 cup millet	4478.00	783.65
	1 tablespoon canola oil	4301.00	38.52
	¾ teaspoon cumin	N/A	-
	¼ teaspoon turmeric	N/A	-
	¼ teaspoon garam masala	N/A	-
Red Lentil Dal	1 cup frozen peas	850.00	119.00
	1 cup dried red lentils	5874.00	1233.54
	1 tablespoon canola oil	4301.00	38.52
	1 medium onion, finely chopped	290.00	49.30
	1 tablespoon finely minced fresh ginger	1657.00	23.20
	2 cloves of garlic	589.00	5.89
	1 teaspoon ground cumin	N/A	-
3/4 teaspoon ground turmeric	N/A	-	
TOTAL (PER FOUR SERVINGS)		3457.38	

Sustainability Tips

Consider buying frozen farmed salmon, an environmentally-friendly option if fresh isn't available. Defrost the salmon at home so you know it's super fresh when you're ready to cook it. Zest the lime prior to juicing and keep some for topping the final dish. If you'd prefer to use fresh (vs. frozen) vegetables, try to eat with the seasons! Several of these vegetables are all in season at the same time. Be sure to look for some of the ingredients (cucumber, garlic, carrots, etc.) at your local farmers' market.

Nutrition Information (Prepared by Oldways)	
Garlic Spiced Salmon with Kachumber	Calories: 300, Total Fat: 19g, Saturated Fat: 4g, Sodium: 510mg, Carbohydrate: 7g, Fiber: 1g, Total Sugar: 3g (Added Sugar: 0g), Protein: 25g
Millet Tahari	Calories: 250, Total Fat: 6g, Sodium: 180mg, Carbohydrate: 41g, Fiber: 6g, Total Sugar: 2g (Added Sugar: 0g), Protein: 7g
Red Lentil Dal	Calories: 220, Total Fat: 4.5g, Saturated Fat: 0g, Sodium: 440mg, Carbohydrate: 34g, Fiber: 6g, Total Sugar: 1g (Added Sugar: 0g), Protein: 12g

Nordic Plate

Carbon Footprint			
Data source: https://simapro.com/products/agribalyse-agricultural-database/			
Ingredients	g CO2e (Agribalyse)		
Nordic Roasted Salmon with Mustard-Dill Sauce and Roasted Carrots	4 carrots, sliced into coins (about 2 cups)	124.8	
	2 tablespoons extra virgin olive oil, divided	49.4	
	2 lemons	109.2	
	6 sprigs dill	51.3	
	1 pound farmed salmon	2,780.52	
	1 cup spinach leaves	9.9	
	4 slices whole grain rye bread	102	
	1 tablespoon honey	14.95	
	1 tablespoon Dijon mustard	23.52	
	Juice of 1/2 lemon (2 tablespoons juice)	27.3	
	3 tablespoons extra virgin olive oil	74.1	
	1/4 cup dill, chopped	25.65	
	Pea Soup	4 small Yukon Gold potatoes	355.2
		1 tablespoon extra virgin olive oil	24.7
1 medium onion, chopped		71.4	
2 garlic cloves, minced		3.7	
4 cups low-sodium vegetable broth		307.2	
2 cups spinach leaves		19.8	
6 cups frozen peas		697.2	
3 sprigs dill	25.65		
TOTAL (PER FOUR SERVINGS)		4897.49	

Water Footprint				
Database source: https://www.nature.com/articles/s41597-021-00909-8#Sec15				
Ingredients	Water Footprint (Liters water/kg of food item)	Liters of water per ingredient		
Nordic Roasted Salmon with Mustard-Dill Sauce and Roasted Carrots	4 carrots, sliced into coins (about 2 cups)	195	62.4	
	2 tablespoons extra virgin olive oil, divided	14415	374.79	
	2 lemons	642	77.04	
	6 sprigs dill	N/A	-	
	1 pound farmed salmon	2193.00	986.85	
	1 cup spinach leaves	292.00	8.76	
	4 slices whole grain rye bread	771.00	92.52	
	1 tablespoon honey	N/A	-	
	1 tablespoon Dijon mustard	2809.00	39.33	
	Juice of 1/2 lemon (2 tablespoons juice)	642.00	19.26	
	3 tablespoons extra virgin olive oil	14415.00	562.19	
	1/4 cup dill, chopped	N/A	-	
	Pea Soup	4 small Yukon Gold potatoes	554.80	328.44
		1 tablespoon extra virgin olive oil	14415.00	187.40
1 medium onion, chopped		290.00	49.30	
2 garlic cloves, minced		589.00	5.89	
4 cups low-sodium vegetable broth		N/A	-	
2 cups spinach leaves		292.00	17.52	
6 cups frozen peas		850.00	714.00	
3 sprigs dill	N/A	-		
TOTAL (PER FOUR SERVINGS)		3525.68		

Sustainability Tips

To get the most out of the vegetables used in this meal, try saving and freezing the onion, celery and garlic scraps and skins to make veggie broth for the next time you make this soup recipe.

Be aware of the difference between the "best by" and "use by" dates on the crème fraiche container to maximize use. "Best by" dates are not expiration dates, and dairy products can often extend beyond this. "Use by" dates are an indicator of food safety, and the product should not be consumed after this.

Use Yukon Gold potatoes, which have thinner skins, to avoid peeling the potatoes, thereby reducing food waste.

Nutrition Information (Prepared by Oldways)

Nordic Roasted Salmon with Mustard-Dill Sauce and Roasted Carrots	Calories: 520, Total Fat: 33g, Saturated Fat: 6g, Sodium: 540mg, Carbohydrate: 27g, Fiber: 4g, Total Sugar: 9g (Added Sugar: 4g), Protein: 27g
Pea Soup	Calories: 290, Total Fat: 4.5g, Saturated Fat: 0.5g, Sodium: 370mg, Carbohydrate: 51g, Fiber: 12g, Total Sugar: 13g (Added Sugar: 0g), Protein: 13g

Thai Plate

Carbon Footprint		
Data source: https://simapro.com/products/agribalyse-agricultural-database/		
Ingredients	g CO2e (Agribalyse)	
Thai Ginger Salmon	1 pound farmed salmon	2,780.52
	¼ cup low sodium soy sauce	58.41
	3 cloves garlic, minced	5.55
	1 tablespoon ginger, minced	8.26
	Juice of 1 lime	31.80
1 teaspoon red pepper flakes	-	
Thai Vegetable Stir Fry	1 tablespoon peanut oil	61.23
	1 medium red onion, chopped (about ½ cup)	71.40
	½ tablespoon ginger, minced	4.13
	¼ teaspoon chopped red chili pepper	5.33
	2 carrots, sliced into half-coins (about 1 cup)	62.40
	3 ounces mushrooms, sliced (about 1 cup)	34.00
	¼ cup soy sauce-ginger-lime mixture (reserved from the Thai Ginger Salmon recipe)	-
	1 cup broccoli florets	119.70
	1 cup red cabbage, sliced into thin ribbons (yield from about 1/8 head of cabbage)	95.40
	¼ cup chopped fresh cilantro	5.19
Thai Noodle Salad with Peanut Sauce	Juice of 1 lime (about 2 tablespoons)	31.80
	2 teaspoons rice wine vinegar	9.41
	2 teaspoons low sodium soy sauce	11.88
	¼ cup natural peanut butter	231.70
	1 tablespoon brown sugar	14.84
	½ teaspoon ginger, finely minced	1.18
	1 small garlic clove, finely minced	1.85
	4 ounces brown rice Pad Thai noodles	143.51
	2 cups red cabbage	190.80
	1 large carrot, sliced into equal coins	31.20
	1 red bell pepper, chopped	119.60
	¼ cup cilantro leaves, chopped	5.19
	2-3 scallions, chopped (about ¼ cup)	-
	¼ cup roasted peanuts, chopped	145.08
TOTAL (PER FOUR SERVINGS)		4,281.35

Water Footprint			
Database source: https://www.nature.com/articles/s41597-021-00909-8#Sec15			
Ingredients	Water Footprint (Liters water/kg of food item)	Liters of water per ingredient	
Thai Ginger Salmon	1 pound farmed salmon	2193.00	986.85
	¼ cup low sodium soy sauce	613.00	36.167
	3 cloves garlic, minced	589.00	8.835
	1 tablespoon ginger, minced	1657.00	23.198
	Juice of 1 lime	642.00	38.52
1 teaspoon red pepper flakes	N/A	-	
Thai Vegetable Stir Fry	1 tablespoon peanut oil	7529.00	97.877
	1 medium red onion, chopped (about ½ cup)	290.00	49.3
	½ tablespoon ginger, minced	1657.00	11.599
	¼ teaspoon chopped red chili pepper	N/A	-
	2 carrots, sliced into half-coins (about 1 cup)	195.00	31.2
	3 ounces mushrooms, sliced (about 1 cup)	N/A	-
	¼ cup soy sauce-ginger-lime mixture (reserved from the Thai Ginger Salmon recipe)	-	-
	1 cup broccoli florets	325.00	29.25
	1 cup red cabbage, sliced into thin ribbons (yield from about 1/8 head of cabbage)	280.00	25.2
	¼ cup chopped fresh cilantro	N/A	-
Thai Noodle Salad with Peanut Sauce	Juice of 1 lime (about 2 tablespoons)	642.00	38.52
	2 teaspoons rice wine vinegar	N/A	-
	2 teaspoons low sodium soy sauce	613.00	7.356
	¼ cup natural peanut butter	2782.00	194.74
	1 tablespoon brown sugar	1294.00	18.116
	½ teaspoon ginger, finely minced	1657.00	3.314
	1 small garlic clove, finely minced	589.00	2.945
	4 ounces brown rice Pad Thai noodles	1597.00	180.461
	2 cups red cabbage	280.00	50.4
	1 large carrot, sliced into equal coins	195.00	15.6
	1 red bell pepper, chopped	379.00	49.27
	¼ cup cilantro leaves, chopped	N/A	-
	2-3 scallions, chopped (about ¼ cup)	N/A	-
	¼ cup roasted peanuts, chopped	2782.00	86.242
TOTAL (PER FOUR SERVINGS)			1984.96

Sustainability Tips

Double the Thai salad sauce and freeze it for quick and easy use for next time. Be sure to look for some of the ingredients (carrots, red onion, cabbage, etc.) at your local farmers' market. Feel free to substitute any fresh vegetables that you have on hand or that are in season near you.

Nutrition Information (Prepared by Oldways)

Thai Ginger Salmon	Calories: 240, Total Fat: 15g, Saturated Fat: 3.5g, Sodium: 360mg, Carbohydrate: 2g, Fiber: 0g, Total Sugar: 0g (Added Sugar: 0g), Protein: 24g
Thai Vegetable Stir Fry	Calories: 80, Total Fat: 3.5g, Saturated Fat: 0.5g, Sodium: 320mg, Fiber: 3g, Total Sugar: 4g (Added Sugar: 0g), Protein: 3g
Thai Noodle Salad with Peanut Sauce	Calories: 310, Total Fat: 13g, Saturated Fat: 2g, Sodium: 125mg, Carbohydrate: 38g, Fiber: 4g, Total Sugar: 8g (Added Sugar: 3g), Protein: 9g

Spaghetti + Meatballs

Carbon Footprint		
Data source: https://simapro.com/products/agribalyse-agricultural-database/		
	Ingredients	g CO2e (Agribalyse)
Spaghetti and Meatballs	1 pound spaghetti	758.18
	1 pound ground beef	19399.42
	1 egg	120.50
	2 cloves of garlic	3.70
	1/4 cup parmesan	175.56
	2 tbsp. olive oil	494.00
	1 small onion, chopped	50.40
	1/2 tsp. red pepper flakes	-
	1 28-oz. can crushed tomatoes	27.30
	4 cups romaine lettuce	264.00
Side Salad	1 cup tomatoes (chopped)	104.00
	2 carrots (chopped)	62.40
	1/4 cup Italian dressing	221.00
	TOTAL (PER FOUR SERVINGS)	21680.46

Water Footprint			
Database source: https://www.nature.com/articles/s41597-021-00909-8#Sec15			
	Ingredients	Water Footprint (Liters water/kg of food item)	Liters of water per ingredient
Spaghetti and Meatballs	1 pound spaghetti	1508.00	684.63
	1 pound ground beef	15139.00	6873.11
	1 egg	2562.00	125.54
	2 cloves of garlic	589.00	5.89
	1/4 cup parmesan	5060.00	141.68
	2 tbsp. olive oil	14415.00	374.79
	1 small onion, chopped	290.00	34.80
	1/2 tsp. red pepper flakes	-	-
	1 28-oz. can crushed tomatoes	267.00	210.93
	4 cups romaine lettuce	237.00	71.10
Side Salad	1 cup tomatoes (chopped)	41.00	8.20
	2 carrots (chopped)	195.00	31.20
	1/4 cup Italian dressing	-	-
	TOTAL (PER FOUR SERVINGS)		8561.87

The meal above was analyzed as a comparison meal from an environmental perspective. Like the Planetary Plates assessed, it includes an animal-based protein, carbohydrate and plant-based side dish.