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# The water footprint of Radisson Blu 2014 and 2015 breakfasts

Results report

September 2015



CARLSON  
REZIDOR  
HOTEL GROUP

Water Footprint Network provides science-based, practical solutions and strategic insights that empower companies, governments, small-scale producers and individuals to transform the way we use and share fresh water within earth's limits.

Founded in 2008 by the University of Twente, WWF, UNESCO-IHE, World Business Council for Sustainable Development, International Finance Corporation, Netherlands Water Partnership and Water Neutral Foundation, we are a dynamic, international learning community.

Working together with and supported by hundreds of partners worldwide, we drive action towards sustainable, efficient and equitable water use, build communities to escalate change in river basins, share knowledge and train practitioners to solve the world's water crises.

As the global leader in Water Footprint Assessment, we find solutions using a common methodology that interlinks water related issues and leads to strategic action for water stewardship, resource efficiency, fair allocation and good governance. Our data, tools and Global Water Footprint Standard bridge sectors and viewpoints, illuminate the path towards integrated water resource management and accelerate progress towards sustainable development.

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## Context

Water is a crucial resource for every business. A business's water footprint is a measurement of the total water consumed to produce the goods and services it provides. In a hotel business it is a combination of the water used in accommodations and support facilities – laundry, kitchen, leisure areas, etc. – and the water used throughout the supply chain of all products and services provided in the hotel, such as meals, linens, etc .

Understanding hotels' water footprint is to understand where water is important to the hotel business and how it relates to the services and products provided.

Radisson Blu is one of Carlson Rezidor Hotel Group's leading global hotel brands and has launched the BLU PLANET initiative which specifically focuses on measures addressing water conservation and protection.

In September 2015 Radisson Blu hotels are launching the new Blu Super Breakfast, with a focus on superior quality and 20% less food waste. Carlson Rezidor Hotel Group is therefore expecting that this new breakfast will also have lower carbon and water footprints.

To understand how much the water footprint of the current and new Blu Super Breakfasts are, Carlson Rezidor Hotel Group invited the Water Footprint Network (WFN) to undertake the calculations of the two breakfasts' water footprints.

The current report presents the results of the water footprint calculations of the 2014 and the 2015 Blu Super Breakfast for the Radisson Blu hotel in Zurich, to support Carlson Rezidor Hotel Group understanding the importance of their initiative to reduce their hotels' indirect water footprint.

## Data and method

### 1.1 Water footprint calculation method

The water footprint is an indicator of freshwater use that looks not only at direct water use of a consumer or producer, but also at the indirect water use. The water footprint can be regarded as a comprehensive indicator of freshwater resources appropriation, next to the traditional and restricted measure of water withdrawal.

The water footprint of a product is the volume of freshwater used to produce the product, measured over the full supply chain. It is a multidimensional indicator, showing water consumption volumes by source and polluted volumes by type of pollution and tells us how much pressure that product has put on freshwater resources.

The water footprint of a product varies according to the geographic origin of the products' ingredients and processes used for its preparation. In food and beverage products, agricultural raw materials and their geographic origin play a crucial role on the product's total water footprint.

The three components of a water footprint:

Green water footprint is water from precipitation that is stored in the root zone of soil and evaporated, transpired or incorporated by plants. It is particularly relevant for agricultural, horticultural and forestry products.

Blue water footprint is water that has been sourced from surface or groundwater resources and is either evaporated, incorporated into a product or taken from one body of water and returned to another, or returned at a different time. Irrigated agriculture, industry and domestic water use can each have a blue water footprint.

Grey water footprint is the amount of fresh water required to assimilate pollutants to meet specific water quality standards. The grey water footprint considers point-source pollution discharged to a freshwater resource directly through a pipe or indirectly through runoff or leaching from the soil, impervious surfaces, or other diffuse sources.

### 1.2 Data used and assumptions

To estimate the water footprint of both breakfasts, Radisson Blu provided the amount purchased per client of each product. The company also provided, when known, the ingredients and their origin for each product. When unknown, general recipes were assumed. The water footprint of the ingredients was obtained from the WaterStat database (Mekonnen et al. 2011).

The data used to calculate the water footprint of each breakfast, Super Blu and current, are listed in Annex I along with data assumptions.

The water footprint of each breakfast was calculated per cover (i.e. guest per day) so that results can be compared currently and also in future analysis. The calculations considered all products served for each breakfast and the average quantities purchased by the hotel per cover.

## Results

### 1.3 Water footprint results

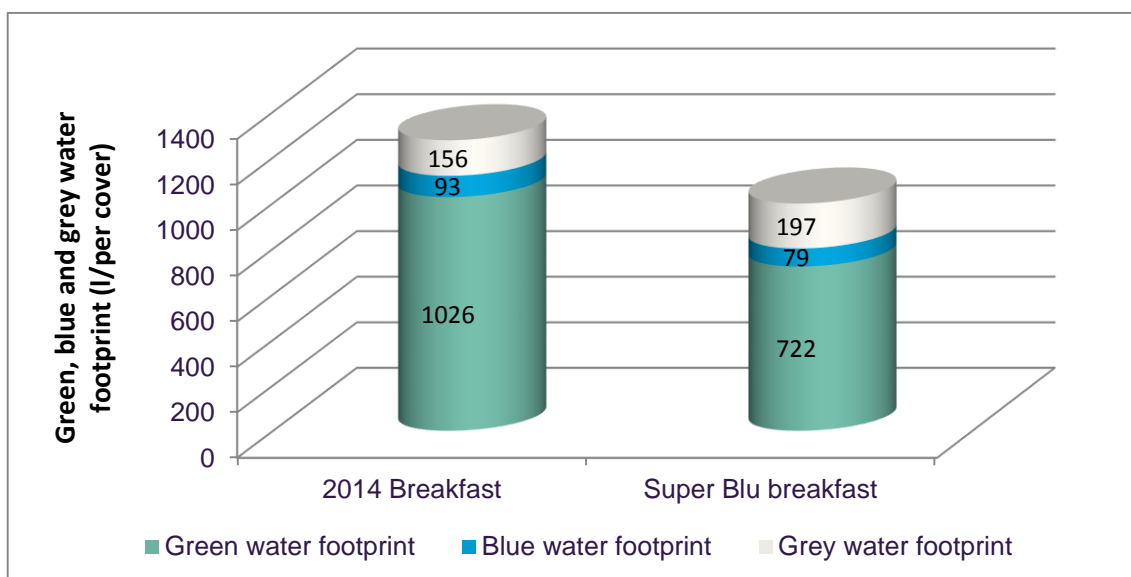
The total average water footprint of the 2014 Breakfast per cover is 1,275 litres and the 2015 Super Blu Breakfast water footprint is 997 litres. The 278 litres difference represents a 22% reduction in the Zurich Radisson Blu breakfast water footprint (

Figure 1).

With regards to the three water footprint components, the biggest share of both breakfast's water footprint is green water footprint (80% and 72% for the 2014 and the 2015, respectively), associated with the crops used in the breakfast products as ingredients, for instance, flour or sugar, or as animal feed for the meat products.

The grey water footprint share is 12% and 20%, respectively; and blue water footprint is only 7% and 8% in the 2014 and 2015 Super Blu Breakfast, respectively.

**Figure 1 – Green, blue and grey water footprints of Zurich Radisson Blu Breakfasts (litres per cover)**



## 1.4 Product categories contribution

In the 2014 Breakfast, the products that contributed more significantly to the breakfast's total water footprint were those in the **hot drinks** and **jams & spreads** categories, which, added with **cold cuts** made up almost half (49%) of the total water footprint (Figure 2 and Figure 3).

In the Super Blu Breakfast the **cold cuts** category has the most significant contribution to the total water footprint (18%), followed by **juices** and **hot drinks** which together represent 50% of the total water footprint.

The lowest water footprint contributors in both breakfasts are dry fruits, sauces (others category), vegetables, fruits and cereals categories.

**Figure 2 - Product categories' relative contribution to the water footprint of the 2014 and the Super Blu Breakfasts (in percentage)**

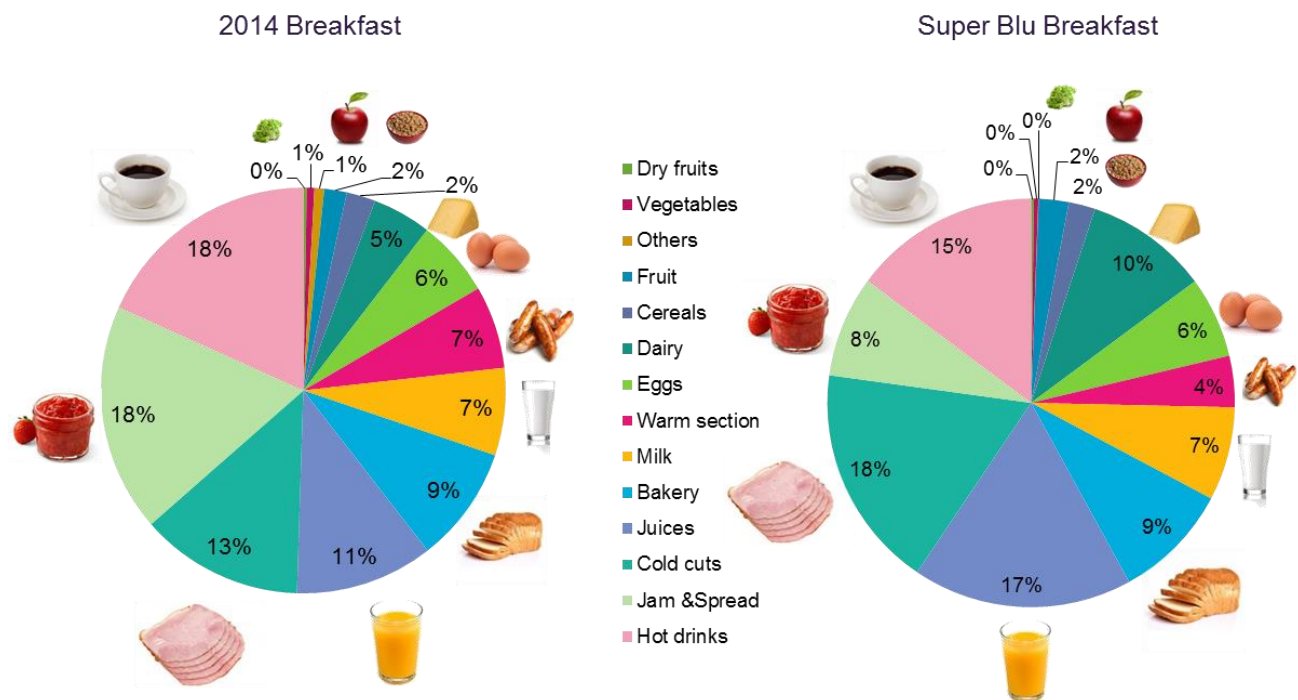
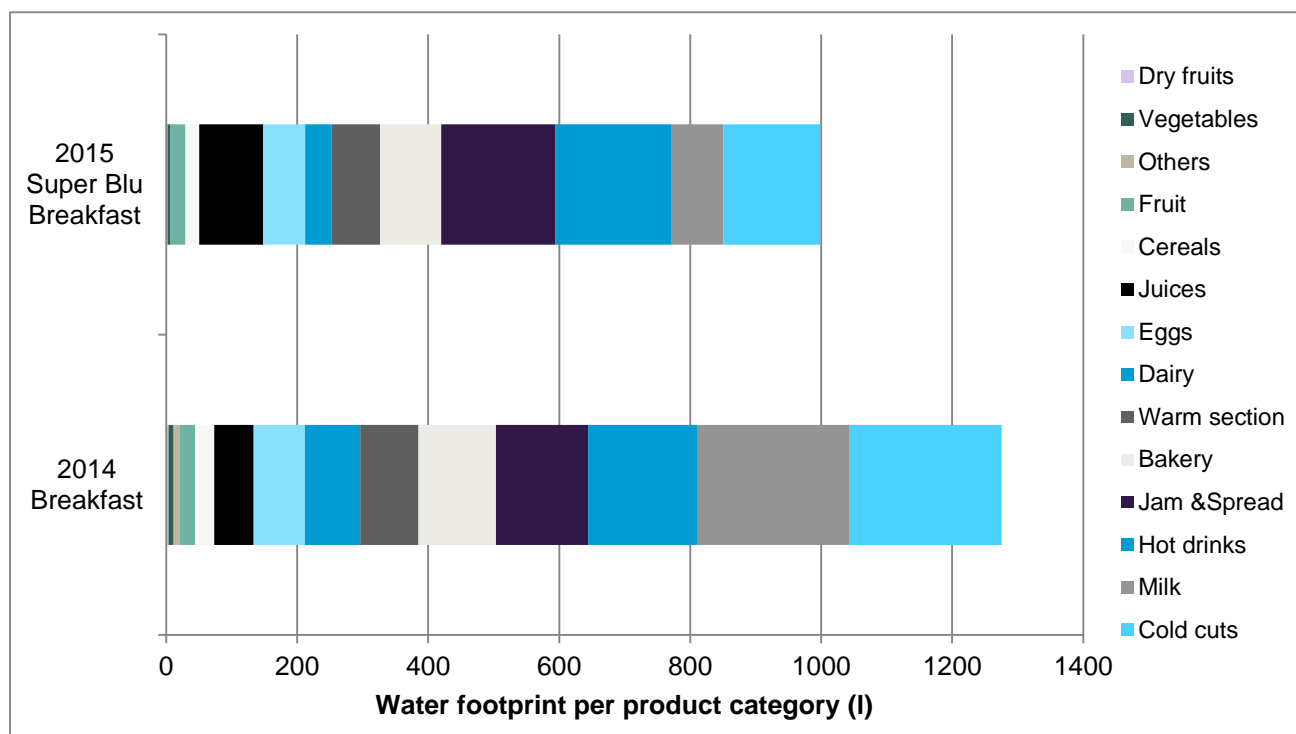


Figure 3 – Product categories’ contribution to the water footprint of the 2014 and the Super Blu Breakfasts (litres)



## 1.5 Changes with major impacts on water footprint reduction

The 22% reduction in the water footprint of Zurich Radisson Blu hotel breakfast is mainly linked to the reduction of the water footprint of milk and cold cuts followed by dairy products (Table 1). The most important factor contributing to the water footprint reduction is the amount of food weight per cover, which is also linked to the reduction in food waste of the new breakfast. This has had an important contribution in the reduction of the WF of dairy. However, the water footprint per cover for products such as juices, jam & spread and hot drinks has increased in the Super Blu breakfast. In the case of juices and jam and spreads, its increase is linked both to an increase in the amount of these products per cover and to an increase in the water footprint per gram of these products compared to the products used in the 2014 breakfast. For example, the larger amount of butter included in the new breakfast compared to the old one increases the water footprint of the jams and spreads category. In the case of fruits and hot drinks, the increase in their WF per cover is linked to the higher amount of products from these categories used in the new breakfast. The water footprint per unit for fruits and hot drinks in the Super Blu Breakfast is lower than the 2014 Breakfast.



**Table 1 - Changes in the water footprint of the 2014 and Super Blu Breakfasts per product category**

Product category	Change in breakfast water footprint from 2014 to the Super Blu Breakfast	Difference between the 2014 and the Super Blu Breakfast water footprints (litres)
Bakery	↓ 22%	-26,37
Eggs	↓ 18%	-14,15
Others	↓ 98%	-9,60
Juices	↑ 62%	+37,50
Cold cuts	↓ 37%	-85,43
Warm section	↓ 17%	-15,01
Cereals	↓ 29%	-8,57
Fruit	↑ 3%	+0,72
Dry fruits	↓ 36%	-1,24
Jam & Spread	↑ 24%	+33,28
Milk	↓ 65%	-151,76
Dairy	↓ 52%	-43,66
Vegetables	↓ 55%	-4,30
Hot drinks	↑ 6%	+10,11
<b>TOTAL</b>	<b>↓ 22%</b>	<b>-278,48</b>

## 1.6 Geography

For both breakfasts most of the products are sourced locally and therefore 35% of both breakfasts' water footprints lie in Switzerland. Brazil is the second country with a higher share of both breakfasts' water footprint due to coffee, sugar and soya ingredients. Germany, due to its proximity holds 11% of the water footprint of both breakfasts - Figure 4 and Figure 5.

Figure 4 – Geographic distribution of the water footprint of the 2014 Breakfast

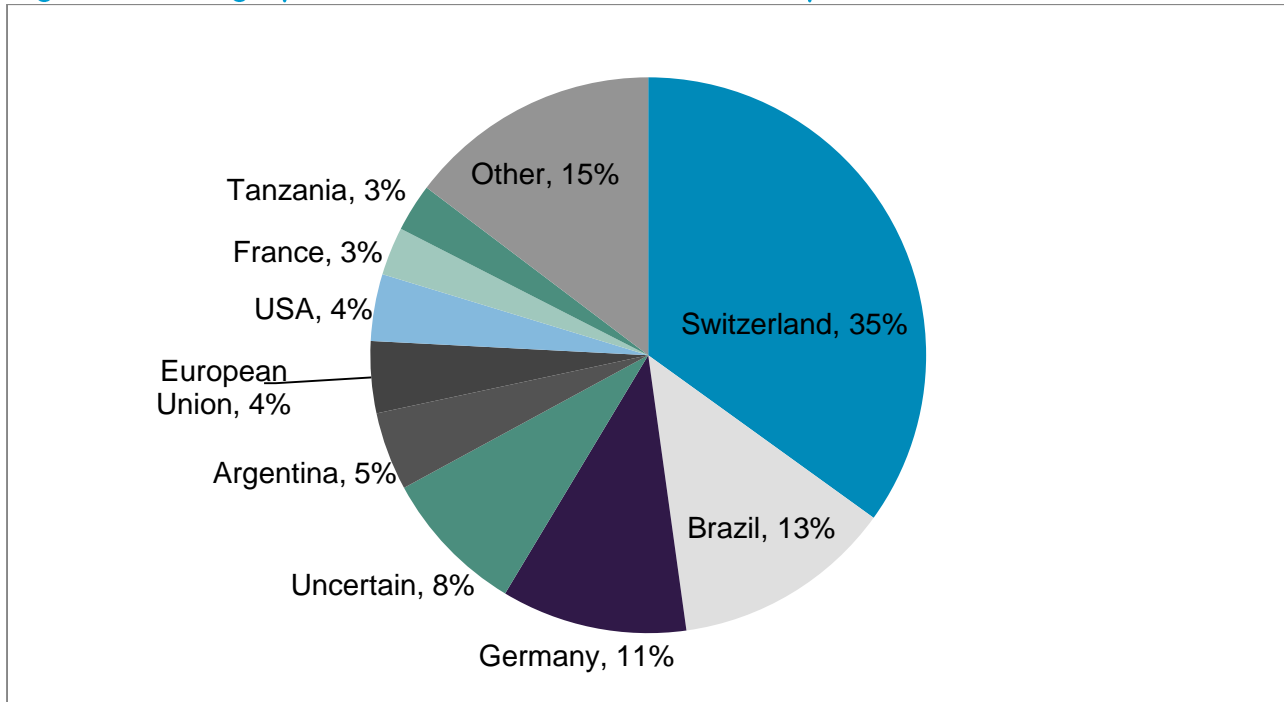
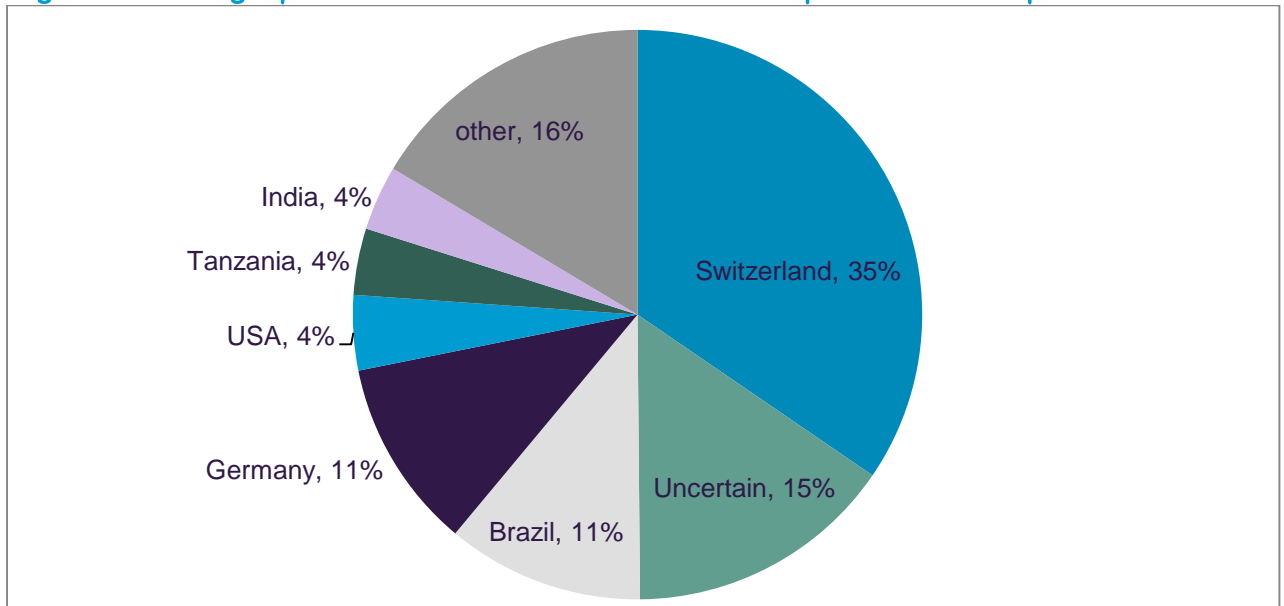


Figure 5 – Geographic distribution of the water footprint of the Super Blu Breakfast



The difference between the two breakfasts in terms of the locations where the water footprint lies, are not very significant. However it is important to note, that an important share of the water footprint lies in unknown regions (8% of the 2014 and 15% of the Super Blu breakfast water footprint).

The geographic origin of products is important in terms of assessing a water footprint sustainability and what actions can be taken to reduce the water footprint and improve water sustainability in future. The environmental sustainability of the water footprint of a product is assessed through the evaluation

of the blue water scarcity and the water pollution levels<sup>1</sup> in the river basins where the product is produced.

Water scarcity levels in Switzerland, Brazil and Germany are low, except for three river basins in Brazil where annual average monthly water scarcity is moderate or significant.

However, water pollution levels due to Nitrogen reaching fresh water from agriculture are moderate in Brazil and significant and severe both in Switzerland and Germany.

A comprehensive and detailed geographic sustainability assessment is out of the scope of the current assignment. However, these above mentioned considerations about blue water scarcity and the water pollution levels in some of the key regions where the Super Blu breakfast products are produced, highlight the importance of understanding the breakfast water footprint sustainability.

Worth mentioning is also the fact that around 15% of the Super Blu Breakfast products have unknown origin. Mapping a supply chain and understanding where goods are produced is key in terms of water-related business risk management. It is also a crucial aspect of any business water stewardship journey, since only by knowing where goods are coming from and how they are produced, is it possible to assess their sustainability and promote sustainable and efficient water resources management.

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<sup>1</sup> Blue water scarcity in a river basin is defined as the ratio of the total of blue water footprint in the catchment to the blue water availability of the catchment; Water pollution level is defined as the fraction of the waste assimilation capacity consumed, and it is the ratio of the total grey water footprints in a catchment to the actual runoff of that catchment. Blue water scarcity and water pollution levels in world's river basins can be checked using the Water Footprint Assessment Tool available at: <http://waterfootprint.org/en/resources/interactive-tools/water-footprint-assessment-tool/>

## Closing remarks

Changes in the Zurich Radisson Blu breakfast show that the Super Blu Breakfast will contribute to the reduction of the hotel’s indirect water footprint. By simply reducing food waste and changing a few items in the menu, the Super Blu Breakfast initiative represents a 22% reduction of the hotel’s breakfast water footprint. Considering the number of guests that can stay in one hotel over a year, and if this is rolled out across all Radisson Blu hotels, the number of total guests per year, this 22% reduction becomes a significant reduction in the impact that Radisson Blu hotels are having on freshwater resources. Understanding the water footprint of Super Blu Breakfast and how it has decreased by reducing the amount of food waste and changing some of its components, is an important first step for Radisson Blu in its water stewardship journey. It has even greater value as it can help raise awareness among hotel customers of the issues of water sustainability and the value of reducing one’s water footprint.

Corporate water stewardship, according to the CEO Water Mandate, comprises a journey through a series of steps that build on each other and deepen the engagement with water stewardship:



With this initiative, Radisson Blu has begun its water stewardship journey, one that can continue to develop over time to include further water footprint reductions in hotels’ direct operations and supply chain, and deeper understanding of the local watershed context. With these learnings, the Carlson Reizdor Group can take action toward improving the sustainability of its hotels and thereby reducing water-related business risks.

## Annex I: Assumptions used for the calculation of the Radison Blu 2014 Breakfast and new Super Blu Breakfast water footprint

This annex presents the main assumptions made when calculating the breakfasts' water footprint.

Unless specified, the same composition and origin of the ingredients was assumed in 2014 and 2015 for the same ingredient. When several origins for one product were provided (e.g. coffee from BRA/UG) a direct average of both origins was made, not weighed. In absence of water footprint data for the product of the country specified (e.g. mint from India) the global average for the product (mint) was used.

In absence of specific ingredient and quantities detail, general recipes have been assumed; e.g. mayonnaise or bakery products.

Specific assumptions are explained in the following paragraphs organized per product category.

1. *Coffees and teas*, the grams per cover is estimated including the milk and water forming part of the product. General ratios for coffee making are 1g of coffee per 16.7 ml water. This is the distribution assumed for all straight coffees (filter, freshly brewed, espresso and doppio coffees). For coffee specialties (cappuccino and latte machiato) the indicated proportions were Coffee specialties: for 200gr we calculate 12gr coffee powder, 130ml milk and 70ml water. No water footprint data for camomile was found. The global average of mint and berries was used.
2. *Dairy products*: Lactose free and common yogurt have been assumed having the same water footprint. Cheeses' water footprint has been assumed based on animal species, country of origin and farming type. Fruit yogurt has been assumed with an 8% of fruits. The world average water footprint for general fruits was assumed.
3. *Jam & spread*: In the case of margarine from vegetable oils, Swiss line oil has been assumed. The composition of Nutella has been assumed as 55% sugar, 15% palm oil, 13% hazelnuts, 7.4% cocoa and 8.7% milk. For sugar, cocoa and milk, world average water footprint has been assumed. For hazelnuts, the European average has been assumed. In the case of palm oil, the water footprint of Indonesian production has been assumed. In jams, along with the specified amount and origin of the sugar the world average water footprint for general category of fruits has been assumed. A 23% of sugar from Swiss sugar beet and 30% of sugar from Brazilian sugarcane was assumed.
4. *Fruits election*: For seasonal fruits, during 6 months local Swiss fruits are bought. The rest of the year fruits are bought from other origin. The world average for general category fruits has been taken for half of the product. For the Swiss fruits, an average of plum, apple, pear, apricot and cherry has been assumed following indications from the company.
5. *Cereals*: In the case of the Bircher Muesli includes yogurt a 55% of yogurt was considered, 30% oats and 5% of dried fruit, dried nuts and hazelnuts. For the water footprint of the products, it was assumed a Swiss origin for the yogurt and dried fruit, German origin for the oats and European averages for the rest of the ingredients. The rest of the mueslis are

composed of 40% oat and w42% wheat and varied percentages of sugar, nuts or fruits as specified.

6. *Warm dishes:* In the case of meat sausages, their water footprint was considered based on the animal species and country of origin. Baked beans were considered as composed of 66% beans from Brazilian origin and 33% tomato from Spanish origin. For fried vegetable rice 80% rice, 5% eggs from Swiss origin and 15% of Swiss vegetables general category was assumed. In the case of the vegetarian quiche, a general recipe composed of 8.1% onions, 15% Swiss vegetables general category, 27.5% cheese, 15 wheat flour refined, 8% mushrooms, 14.3% eggs and 26.4% milk was assumed. All products were assumed of Swiss origin except for the eggs, which were assumed originated from France.
7. *Cold cuts:* In the case of specific cold cuts, their water footprint was considered based on the animal species and country of origin. Assorted cuts are composed of 60% pork meat, 35% beef or veal meat and 25% pork fat. % pork meat and 20% pork fat originating from the same country as the pork meat.
8. *Juices* In the case of juices, when they were made out of concentrate, a third of the final weight is considered added water after the concentration, and was added. This condition does not apply to freshly pressed juices. Multivitamin cocktail, was considered as a fruit mixture, with the following composition: 35% Apple / 25% Orange / 15% Peach / 10% Apricot / 10% Pineapple / 5% Lemon. In all cases, since the origin was unknown the world average water footprint of all ingredients was considered.
9. *Others products:* In the case of hot smoked salmon, no water footprint was considered since the fished from wild origin. No water footprint for general various sauces (HP, Tabasco, etc.) because of their small relevance in terms of grams per cover. The general recipes for ketchup, mayonnaise and mustard were considered, with their ingredients from USA origin. The percentages are presented in the following table.

Product	Ingredient	Percentage
Ketchup	Tomato paste	25
	corn syrup	25
	vinegar	25
	water	20
	onion powder	3
	garlic powder	3
Mustard	Mustard seeds	22
	vinegar	22
	white wine	22
	water	30
	onion powder	4
Mayonnaise	plant oils	80
	egg	8
	water	4
	vinegar	5
	sugar	3

10. *Bakery products*: Unless specified, general recipes and composition was assumed. The percentages and origins are presented in the following table. When no origin for cereals, milk or eggs in bakery was specified Switzerland was assumed.

Product	Ingredients	Origin	Percentage of ingredient in the product (%)
Croissant	Wheat flour refined	CH	75
	Lineoil	USA	7
	eggs	EU	4
	Palm oil	Indonesia	7
	butter	DE	7
Lye croissant	Wheat flour refined	CH	75
	Lineoil	USA	7
	eggs	EU	4
	Palm oil	Indonesia	7
	butter	DE	7
Whole grain croissant	Wheat flour whole grain	CH	89.5
	Lineoil	USA	2.9
	eggs	EU	1.9
	Palm oil	Indonesia	2.9
	butter	DE	2.9
Chocolate croissant	Wheat flour refined	AUT/DE	51
	Lineoil	USA	5
	eggs	EU	4
	Palm oil	Indonesia	5
	butter	DE	5
	chocolate	World Average.	18
	sugar	World Average.	12
Pastries	Wheat flour refined	AUT/DE	59
	Lineoil	USA	9
	eggs	EU	4
	Palm oil	Indonesia	7
	sugar	World Average.	12
	butter	DE	9
	Danish	Wheat flour refined	AUT/DE
Lineoil		USA	7.5
eggs		EU	4
Palm oil		Indonesia	7.5
sugar		World Average.	7
butter		DE	7

Baguette	Wheat flour refined	CH	56
	water	CH	44
Mini Muffins mix	Wheat flour refined	AUT/DE	69
	Lineoil	USA	5
	eggs	EU	4
	Palm oil	Indonesia	5
	butter	DE	5
	sugar	Uncertain	12
Finnish rolls	Wheat flour refined	CH	58
	eggs	EU	6
	milk	World Average.	16
	sugar	World Average.	11
	butter	CH	9
Swedish rolls	Wheat flour refined	CH	58
	eggs	EU	6
	milk	World Average.	16
	sugar	World Average.	11
	butter	CH	9
Butterweggli	Wheat flour refined	CH	89
	eggs	EU	4
	butter	?	7
Kaiserbrötchen	Wheat flour refined	CH	55.6
	water	Uncertain	22
	milk	Uncertain	22
Pretzel	Wheat flour refined	CH	62
	water	CH	12
	milk	World Average.	13
	sugar	World Average.	4
	butter	CH	7
Lye roll	Wheat flour refined	AUT/DE	62
	eggs	World Average.	12
	milk	World Average.	13
	sugar	World Average.	4
	butter	CH	7
Low carb roll	Wheat flour refined	CH	33
	eggs	World Average.	40



	milk	World Average.	16
	sugar	World Average.	11
Raisin roll	Wheat flour refined	CH	51
	eggs	EU	6
	milk	World Average.	16
	sugar	World Average.	11
	butter	CH	9
	raisins	World Average.	7
Root loaf	Wheat flour refined	CH	50
	eggs	EU	4
	water	CH	36
	<i>roots and tubers</i>	CH	10
Toast	Wheat flour refined	AUT/DE	64
	water	CH	36
	solid fat (Butter)	CH	0.01
Finnish loaf	Wheat flour refined	CH	28
	Rye flour	RU	19
	butter	CH	6
	Buttermilk	CH	23
	molasses	CH	5
	water	CH	19
Whole grain loaf	Wheat flour whole grain	AUT/DE	96
	eggs	EU	4
Loaf with seeds	Multicereal - wholemeal flour	CH	55
	sugar brown not refined	CH	2
	sunflower oil	EU	1
	water	CH	35.5
	linseeds	PO	2
	poppy seeds	EU	2.5
	sunflower seeds	EU	2
Swiss whole grain loaf	Wheat flour refined	CH	35
	Multicereal - wholemeal flour	CH	19
	sugar brown not refined	CH	2
	sunflower oil	CH	2
	water	CH	36
	linseeds	GE	2
	poppy seeds	GE	2
	sunflower seeds	CH	2
Crispbread	Rye wholeflour	RU	33
	water	CH	50
	linseeds	GE	8

	sesame	GE	8
Pancake	Wheat flour refined	AUT/DE	80
	milk	CH	10
	eggs	FR	10
Waffles	Wheat flour refined	CH	35
	Butter	DE	13
	eggs	CH	10
	milk	CH	17
	water	CH	17
	sugar	EU	7

