One Planet Plate 2021

Criteria and Background

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1. Introduction

One Planet Plate is a guide for sustainable dietary choices for cooking in the future. Using the One Planet Plate concept and beginning in Sweden with a focus on food and dietary choices, we reach new target groups, collect recipes, influence politicians and companies, and create dissemination of knowledge.

The basic idea is that One Planet Plate enables a thorough transformation of the entire food sector by concretely showing which food can be included in a sustainable society. We have begun in Sweden, but the goal is to spread the approach and thinking to other countries where WWF is active.

This document describes the criteria and the reasoning for the One Planet Plate concept and how food service operators can verify that they meet these criteria.

2. Criteria for One Planet Plate 2021

Criteria for the Climate

For a meal that does not exceed the boundaries of the planet, we have calculated that the food may result in 590 kg of carbon dioxide equivalent, abbreviated CO_2e, per year. We have broken this down into an amount for a week's menu and an amount for a main meal (lunch or dinner). Drinks are not included:

- 0.5 kg CO2e/meal for a dinner or lunch
- 0.4 kg CO2e for a breakfast
- 11 kg CO2e/week

Criteria for Biological Diversity

To increase the biological diversity in fields of crops and reduce the risk of deforestation and land conversion globally, we have developed the following criteria for biodiversity:

- Green light in the WWF Fish Guide (in Swedish only)
- Green light in the WWF Meat Guide (in Swedish only) for meat, cheese and eggs
- For vegetables:
  - No ingredients with orange light in the WWF Veggie Guide (in Swedish only)
  - Requirements for verification of biodiversity measures in the production of the following products: cereals, canola, potatoes, onions, carrots, and rice. A certificate of organic production is an accepted form of verification.

The above are the basic criteria of One Planet Plate. The criteria are reviewed regularly. Amongst others, the One Planet Plate scientific committee, strategic council and WWF participate in the review process. WWF determines the final criteria. The review interval is usually 2-3 years under normal circumstances.

In order for the One Planet Plate to work in practice in kitchens and dining rooms, there are some additional criteria which are used when the need arises. Examples are use of One Planet Plate for buffets, composite products, spices, etc. These are determined through dialogue between WWF and the audit companies and are found in Appendix 1: Current Additions to One Planet Plate Criteria.

3. Goal, Purpose and Method

Goal and Purpose

The goal of One Planet Plate is to provide a guide for meals that stay within the planet's boundaries,[1] by creating a concept for restaurants, food service operators and recipe websites for presenting such meals. Through understanding, implementing and cooking food that meet the One Planet Plate criteria by strategic actors among food service operators, restaurant owners and recipe creators, people will have a much greater opportunity to choose food that does not exceed the planet's boundaries.

Method

The concept of One Planet Plate was created in a process involving WWF and the consulting companies U&We and Futerra. The content of One Planet Plate is based on research data that WWF has developed in working groups.

Selection of the criteria areas and levels has been made with the support of a scientific council consisting of researchers from the Swedish University of Agricultural Sciences (SLU), Stockholm Resilience Centre at Stockholm University, and Research Institutes of Sweden (RISE). A strategic council with experts in sustainability and communication has contributed to making the concept useful and providing guidelines for the meal industry.

The climate criteria data has been compiled by the Swedish consulting firm U&We and Chalmers University of Technology. The data was updated on 8 February 2019 based on new data from the IPCC for the 1.5°C target. In 2020, the climate criteria was reviewed. Neither the scientific council nor the strategic council determined that there were new facts that would require a change in the climate criteria.

The biodiversity criteria are based on a workshop held 6 December 2016 with researchers and experts from the Swedish University of Agricultural Sciences (SLU), the Stockholm Resilience Centre and Research Institute of Sweden (RISE), as well as literature reviews and interviews with Swedish and international experts. The criteria for biological diversity were reviewed in 2020. Several changes were discussed with the scientific council and the strategic council. WWF made the decision to add standards regarding biodiversity for vegetables.

[1] The "planetary boundaries" concept was developed by a group of researchers led by Johan Rockström at the Stockholm Resilience Center. The group believes that there are nine different environmental problems, each of which has its own boundary. Exceeding this boundary can lead to unintended environmental effects due to threshold effects that occur. The results of the research was presented in the journal *Nature* on 24 September 2009.

4. Background

One Planet Plate currently has two criteria areas, climate and biodiversity. Scientists have determined that these are the most important planet boundaries. Positive efforts in these two areas also have a positive impact on many other areas. The climate and biodiversity criteria complement each other as there are conflicts between the two regarding goals. A one-sided focus on climate can result in solutions devastating for biodiversity and a one-sided focus on biodiversity can lead to solutions with low production efficiency, which is negative for the climate. Such problems are avoided by having criteria for both areas.

Both criteria areas are needed to show the way to a sustainable food system. As knowledge improves and resources are added, the criteria for One Planet Plate may be expanded.

5. Climate Criteria

By setting tough climate criteria, many side effects are achieved in other areas. For example, land use is significantly reduced, which makes it possible to protect habitats with high biodiversity. The climate issue is key for the planet and there are not many initiatives today that provide a climate framework for meals. This is one of the unique aspects of One Planet Plate.

Placing an exact number on the level of climate impact a meal can have is challenging. There are many uncertainties, and the choice is inevitably value-driven. It is important to remember that the margin of uncertainty is great. Despite this, we present a specific number because we want to put our foot down and give meal suppliers, cooks and restaurants a goal and something to relate to. At the same time, we realize that this is associated with challenges. It is however the direction of development that is important and that there is a goal for the actors to strive towards.

When One Planet Plate was created, there was not yet a scenario from the UN's climate panel IPCC to limit a temperature increase to a maximum of 1.5°C. However, there was enough data from other sources to be able to make an estimate. The original climate budget for One Planet Plate was based on calculations from Chalmers University of Technology based on data by Rogelj et al.,[2] and Carbon Brief Org.[3] Data from Rogelj et al.[4] showed that the total emissions per capita to stay below a 1.5°C temperature increase with a probability of 50%, amounted to about 1.2 tons per capita per year.

[2] Rogelj et al., *Paris Agreement climate proposals need a boost to keep warming well below 2 °C.* Published in *Nature*, volume 534 30 June 2016, page 631–639.

[3] CarbonBrief.org May 19, 2016, *"Analysis: Only five years left before 1.5C carbon budget is blown"*.

[4] Rogelj et al., *Paris Agreement climate proposals need a boost to keep warming well below 2 °C.* Published in *Nature,* volume 534 30 June 2016, page 631–639.

One of the documents from the Carbon Brief[5] concludes that 400 Gton CO_2 remain to be consumed from 2011 to 2050. Converted to carbon dioxide equivalent, abbreviated to CO_2e, and taking into account that a large part was consumed between 2011 and 2015, our analysis is that 320 Gton remained to be consumed from 2015. Using a population of 8,255,000,000 people and a time frame until 2050, the result is an allowed emission per capita of 1.1 tonnes per year.

We chose to aim at this level, and also made an assumption about how much of these emissions may be allocated to food. At the time, food was estimated to account for 19–29% of greenhouse gas emissions globally[6] and in Sweden for about 25% of consumption-based emissions.[7] If other sectors succeed in becoming climate-neutral through carbon storage and efficiencies, the food system can be allocated more of the available emissions. Therefore, we chose to calculate with food accounting for 50% of an individual's greenhouse gas emissions.

Calculations with the data above resulted in the following climate budget at different temperature and probability scenarios:

	Share of food	Food emissions kg/year	Food emissions kg/week	Food emissions kg/day	Dinner/ lunch kg/meal	Breakfast kg/breakfast	Snacks/ other
Currrent level	25%	2100	40	5.8	1.7	1.4	0.9
2.0°C increase, 50% probability	50%	1200	23	3.3	1.0	0.8	0.5
2.0°C increase, 66% probability	50%	880	17	2.4	0.7	0.6	0.4
1.5°C increase, 50% probability	50%	590	11	1.6	0.5	0.4	0.2
1.5°C increase, 66% probability	50%	440	8	1.2	0.4	0.3	0.2

For the One Planet Plate climate budget, the scenario chosen is a maximum of 1.5°C warming with a 50% probability.

In the autumn of 2018, the IPCC presented a report with a climate budget for the 1.5°C target. The Swedish consulting firm U&We conducted a survey to ensure that the original climate budget was on par with this report. Using the data from U&We, based on the report from the IPCC,[8] we estimate that 378 Gton of carbon dioxide remain to be consumed from 2018 until 2050. This level meets the 1.5°C target with a 66% probability. This figure only applies to carbon dioxide, and for food we also need to add methane and nitrous oxide. The method for this is described in data from U&We, see Appendix: ”One Planet Plate verification of food budget for CO_2e based on IPCC report 1.5°C.”

Converted to carbon dioxide equivalent, and calculated using an average population up until 2050, the result is an emission margin of 2.0 tonnes of CO_2e per person per year. We then expect a deduction for public consumption and the same assumption as before that food may account for 50% of greenhouse gas emissions.

[5] CarbonBrief.org May 19 2016,”Analysis*: Only five years left before 1.5°C carbon budget is blown*.”

[6] Vermeulen, S., Campbell, B., & Ingram, J. (2012). Climate Change and Food Systems. *Annual Review of Environment and Resources, 37*, 1-496. doi:10.1146/annurev-environ-020411-130608.

[7] Naturvårdsverket https://www.naturvardsverket.se/data-och-statistik/konsumtion/vaxthusgaser-konsumtionsbaserade-utslapp-per-person/

[8] IPCC (2018) Mitigation Pathways Compatible with 1.5*°C in the Context of Sustainable Development. Chapter 2. https://www.ipcc.ch/sr15/*

In total, the calculations give a range of 0.9 - 3.6 kg CO_2e per person and day that can be allocated to food. The range shows that the margin of uncertainty is large, but also shows that the original climate budget of 1.6 kg CO_2e per person per day is well within the range.

We have therefore chosen to keep the climate criteria in this range and a climate budget of 11 kg CO_2e per week that can be allocated to food. Translated into a meal, there will be 0.5 kg CO_2e per main meal (lunch or dinner), 0.4 kg CO_2e for a breakfast and 0.2 kg CO_2e for a snack; or 1.6 kg CO_2e per person per day. We base this on the following proportions for daily meals: breakfast 25%, lunch 30%, dinner 30% and snacks and other eating 15%.

For more information on the calculations please refer to the above mentioned ”One Planet Plate verification of food budget for CO_2e based on IPCC report 1.5°C.”

Summary

To arrive at a special figure for a meal, we have, in accordance with the above, calculated that food may give rise to 590 kg CO2e per year and broken it down into a figure for a week’s menu and a figure for a main meal (lunch or dinner). Drinks not included:

- 0.5 kg CO2e/meal for dinner or lunch
  and 0.4 kg CO2e/meal for a breakfast
- 11 kg CO2e/week

Regarding buffets, etcetera, see Appendix 1: Current Additions to One Planet Plate Criteria.

Verification

Restaurants that enter into an agreement to use the One Planet Plate symbol must be able to show that meals marketed as One Planet Plate have a maximum of 0.5 kg CO2e climate impact per meal. This must be done with the help of quality-assured data, for example by using one of the climate calculation modules available for diet calculation programs or other calculation programs on the market that are approved for use by WWF. The current list of approved calculation programs is available at wwf.se/oneplanetplate (in Swedish only). The meal does not include drinks. The above also applies to recipe creators.

An audit by a certification body is carried out for all actors who want to use the One Planet Plate symbol. All actors conduct a self-audit every year, and 20% of the companies that have an agreement to use the One Planet Plate label are selected each year for a labelling audit by a certification body. The audit is described in more detail in a separate document (in Swedish only) available on the website, and must include e.g. the following steps:

- Confirmation that the material that contains the One Planet Plate label, or refers to it, shows that the requirements in the communication guidelines (see separate document) (in Swedish only) are met.
- Confirmation that the company's climate calculation for the dishes labelled with the One Planet Plate symbol have been carried out correctly and/or with an approved calculation tool.
- Review of invoices and delivery notices for the ingredients concerned to confirm that the biodiversity criteria are met.

Goals for public procurement

Purchasing targets in kg CO2e per kg of purchased food can be related to One Planet Plate's climate budget. In the report “Sustainability goals in public meals”, RISE has calculated that an approximate guideline value of 1.25 kg CO2e per kilo of food purchased from public meals corresponds to One Planet Plates' climate budget. The level depends on which meals are purchased (breakfast, lunch, snack, dinner), the proportions of the different meals, drinks and portion sizes. More about the calculations can be found in the RISE report "Sustainability goals in public meals," and in the supplementary report "Calculation methodology" (both in Swedish only).

Discussion

There are significant uncertainties in the climate data available, but WWF believes that they fulfil their purpose and can be used to point in the right direction. WWF follows with interest the quality development and welcomes an increase in the available data. To maintain relevance, the ambition is to update the One Planet Plate criteria every two to three years.

The effects of the climate criteria will be, for example:

1. As One Planet Plate sets a clear limit on the amount of greenhouse gases a meal can cause, the concept contributes to our meeting global climate goals and the Paris Agreement. The food service industry can aim towards this limit without being specifically directed what food to serve.
2. The concept also provides room for action by individuals. Creating this type of a budget gives an individual the freedom to, for example, eat low climate-impact meals during certain periods to be able to eat, for example, specially chosen beef every once in a while.
3. The amount of meat served in Sweden and many other rich countries needs to be drastically reduced to comply with the climate criteria. The content of a One Planet Plate meal does not have to be vegan or vegetarian, but the basis is largely plant-based and the amount of meat and other animal products is reduced.
4. One Planet Plate has inspired restaurants, meal suppliers, recipe creators and interested individuals to start calculating the climate impact of food. More and more actors are calculating the climate impact of meals and consider and compare meals with the One Planet Plate's climate budget. The availability of data needs to increase, as it can be difficult to find information and in many cases the level of detail of the data available is too low for the same product that might have been produced in different ways with different origins. One Planet Plate is a step towards increasing interest in the production of better data and more frequent use of such data.

6. Biodiversity

There are several ways to describe biodiversity:

- Cultivated genetic diversity: for example, different types of cereals and different local varieties.
- Functional diversity: for example, the ability of the agricultural system to deliver ecosystem services.
- Diversity of species in the landscape: for example, number of insects, birds in the environment, soil flora and fauna, etc.

Today, there is no easy scientific method to define the planet's boundaries for biodiversity. Many people who think about how biodiversity can be protected work today with land use, and especially that the area of land used to produce food must not increase as it encroaches on important natural environments and habitats. There are also ways to calculate the number of species that are extinct. Both methods present challenges. Another major challenge is that biodiversity is a local issue, and measures to protect biodiversity vary widely internationally.

When we created One Planet Plate in Sweden we identified the two most important issues regarding biodiversity that we want to influence, specifically the number of species in the agricultural landscape, and that production of meat and fish must be as sustainable as possible and not contribute to the deforestation and land conversion that takes place in the production of soybeans for feed.

In One Planet Plate we choose not to address cultivation diversity, that is, variation in the crops we eat. This does not mean that it is not important. Rather, we focus instead on the following areas:

Seafood: Seafood must have a green light in the WWF Fish Guide (in Swedish only). This means fish is produced from sustainable stocks and enables long-term consumption of fish. The amount of fish consumed is limited by the climate criteria.

Meat, cheese, and eggs: Animal products must have a green light in the WWF Meat Guide (in Swedish only). This provides added value for all types of meat, cheese and eggs as the soya is responsibly grown and does not lead to deforestation or land conversion. Most of the products that have the green light in the WWF Meat Guide are also organically produced, which drives the development of cultivation methods with reduced use of chemicals in agriculture and increases the biological diversity in feed production. Cattle and lambs certified as "*Svenskt Sigill*" ("The Swedish Seal") Natural Grazing Meat also have a green light in the WWF Meat Guide, as those animals graze valuable natural grazing land, which is very important for local biological diversity. Further, there are added values for green light products in the WWF Meat Guide that are not directly linked to biodiversity, such as responsible use of antibiotics and good animal welfare. The number of products of animal origin consumed is limited by the climate criteria.

Vegetables: In principle vegetables with the greatest sustainability challenges are not allowed in the One Planet Plate. Therefore, vegetables with an orange light in the WWF Veggie Guide (in Swedish only) are not allowed.

We have also chosen to require biodiversity measures in the production of field crops grown on a large scale that are common in meals in Sweden. This is because field-grown crops have a very large impact on biodiversity.

Since it is of great importance that meal suppliers are able to easily verify and find products that live up to the One Planet Plate criteria, crops must be organically grown. WWF welcomes additional certification systems in the future, but at present it is concluded that other than organic certification, for these field crops, there are no other sufficiently stringent requirements for biodiversity measures.

Criteria

In order to increase biodiversity in arable fields and reduce the risk of deforestation and land conversion globally, we have set the following criteria for biodiversity:

- Green light in the WWF Fish Guide
- Green light in the WWF Meat Guide for meat, cheese and eggs.
- Vegetables
  - No ingredients in the WWF Veggie Guide that are orange-light classified.
  - Required organic production of: cereals, canola, potatoes, onions, carrots and rice.

Verification

If meat, eggs or cheese are included in a One Planet Plate meal, vouchers for the purchase of products that correspond to the amount of each product must be available for verification, for example, organically certified or natural grazing meat for beef.

The food service operator must also be able to show that seafood served in a One Planet Plate meal has a green light in the WWF Fish Guide. Proof of purchase of seafood that corresponds to the green light in the Fish Guide must be available for verification for these products.

For meals that include cereals, canola, potatoes, onions, carrots or rice, vouchers for purchase of organically certified products must be able to be produced.

The meal supplier must also be able to show that no product with an orange light in the WWF Veggie Guide is included in the meal, e.g. conventional cultivation of avocados, asparagus, dates and cashews. The current list of vegetables with an orange light is available here: (in Swedish only). Worth noting is that there is always an alternative for all products with an orange light in the WWF Veggie Guide. That is, no vegetables, nuts, fruits, etc. are excluded in the One Planet Plate. If the same product is produced using a lower impact method of cultivation or mode of transport, e.g. organic farming, it will be approved for One Planet Plate. Confirmation that this is complied with is done by an auditor from a certification body approved by WWF. Detailed information about audits is available on the website (in Swedish only).

Discussion

Plant-based protein sources, such as beans and so-called vegan meat, do not have to be organically produced according to the current One Planet Plate criteria, despite a high use of pesticides. We have made the assessment that the products themselves currently contribute positively to the development of a more plant-based diet that benefits both the climate and biodiversity, and that the market availability of organic varieties is not yet sufficient to make it practical to require organic production. Requirements for organic production will likely appear in the next revision of the criteria.

Setting criteria for biodiversity that corresponds to a planetary boundary is much more complex and complicated than for the climate, not least because the impact on biodiversity takes place locally where the product or feed is grown and because the land used for production has an indirect effect on, for example, deforestation, a relationship which is very difficult to determine. We have therefore chosen to be pragmatic regarding the criteria for biological diversity and choose criteria that point towards a reduced impact on biological diversity and which at the same time can be verified for the meal supplier.

The criteria we have chosen for One Planet Plate reduce the risk that a meal contributes to deforestation or other land conversion.

In addition to these measures, one of the most important aspects a person can implement is to vary meals. This is both in terms of ingredients, for example prioritising different kinds of cereals, potatoes and tomatoes, as well as offering a variety of dishes. A varied diet in itself is a step towards increased biodiversity, but it is not possible to verify in a concept like the One Planet Plate

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