23 April 2012

# Food Guide Project – technical report

This report has been prepared so as to provide a record of information that supported the content used in the educators and consumers communication tools.

## 1. Take out information from the literature review

- Need for food guide.
  Food based dietary guidelines, supported by food guides, are important components of national communication plans on healthy eating.
- A food guide is a tool that is used to transmit complex, scientific information in a simple easily understood way to the general public. Food guides should be used in the correct context and in the correct way.

- Criteria for food guide.
  A food guide for use in South Africa must support the FBDG.
- Food promoted in the guide must be available in the country.

- Other country info.
  Some countries have used food guides for many years, some of which have been recently updated; building on the past guides.
- Many countries have recently developed food guides, often in parallel with the process to develop FBDG.
- Some countries have more than one food guide in use – recognised as a disadvantage.
- The number of food groups illustrated in a food guide differ from country to country.
- The size of portions of foods illustrated in food guides varies, as does terminology to describe them.

- Research.
  The amount of research undertaken to develop and test understanding of these guides varies widely.

- Communication.
  Widespread dissemination of the food guide is needed.

- Content.
  Some food guides specify quantities in the guide, others in supporting documentation.
- Some countries are able to base their food guides on country specific dietary goals.
- Food guides may or may not; illustrate physical activity, address energy restriction, apply nutrient density principles, be available for diverse population groups.
- There are many stakeholders who have differing roles and responsibilities regarding food guides.

## 2. The food guide will:

- Use a graphic symbol to represent the overall food guidance system.
- Define and communicate specific nutritional guidance messages by supporting the 'Guidelines for healthy eating' through multiple channels and materials.
- Provide quantitative information in support documentation, including portion size guidance.
- Not be used as a standalone educational tool; it is designed to support nutrition education done using the 'Guidelines for healthy eating'.
- Focus on overall health promotion.
- Address total diet.
- Be consistently used to convey consistent messages to the public. Adaptations should be made as needed for individualised therapeutic diets.
- Be is based on the principles of food based dietary guidance, namely:
    - The guidelines should be practical for the general public to implement.
    - Foods should be affordable and available to most people.
- The guidelines should be understandable to the general public.
- Visuals that support the guidelines should be readily understood.
- Guidelines must be culturally acceptable; they should be based on current food habits.
- Guidelines should be formulated in a positive way.
- They should be sustainable.
- They should be environmentally friendly.

It is recognised that South Africa has not had a national food guide in the past, thus the visual and supporting materials will be developed from a zero base.

It is recommended that:

- The Guidelines for Healthy Eating and Food Guide should be used by all people who are providing consumers with information on healthy eating. Adaptations to supportive text and food examples can be made to emphasise needs of specific groups of people, such as those with hypertension.
- The Food Guide should include commonly consumed foods and understandable portion size suggestions.
- Guiding principles (code of conduct) for the use of the food guide are developed. These should ensure that the messages of the 'Guidelines for healthy eating' and the food guide are not distorted by individuals, organisations or companies. They should allow for flexibility so as to encourage widespread use of the food guide.
- Adaptation of the guide in the hopes of 'improving it' is not permitted as this could sacrifice clarity, consistency and credibility.
- The design has two versions: a monochrome, line drawing style and drawings in full colour. Photographs are not recommended because of the difficulty of portraying processed food without including a brand.

## 3. Objectives of food guide

The South African food guide will support nutrition education done using the 'Guidelines for healthy eating' (the Food Based Dietary Guidelines for children over the age of 5 and adults).

The food guide:

- Is a simple graphic that brands food guidance messages and materials to remind and assist the public to follow advice in the 'Guidelines for healthy eating'.
- Focuses on promotion of overall health; it is not intended to suggest therapeutic diets to treat specific diseases.
- Addresses the total diet, with information on variety, proportion and moderation.
- Promotes the consumption of nutrient dense foods.
- Must provide information to allow the public to consume the amount of food to meet, but not exceed, energy needs.
- Must be understood by the public.

## 4. Communication goals

The communication goals are to

- Make consumers aware of the guidelines for healthy eating, which are science based and applicable to South Africa
- Encourage consumers to make positive food choices
- Educate consumers about food choices and amounts to eat.

The food guide will

- Use a graphic symbol to represent the overall system
- Define and communicate specific nutritional guidance messages by supporting the 'Guidelines for healthy eating' through multiple channels and materials.

## 5. Total diet approach

The food guide unit numbers have been calculated using a total diet approach. Information is provided for eating plans at three different energy levels, this aims to meet energy and nutrient requirements of people, recognising that energy needs vary. The information does not include a food group for 'other' foods, but encourages people to make best choices most days of the week, and reduce starchy food intake when other foods are eaten.

## 6. Exchange calculation

| GROUP | PROTEIN | FAT | SAT FAT | CHO | ENERGY |
|---|---|---|---|---|---|
| STARCH<br>1 slice bread | 3 | 1 | - | 18 | 400<br>(300 – 400) |
| VEG<br>½ cup 100g | 1 | 0 | - | 5 | 100 |
| FRUIT<br>150g | 1 | 0.5 | - | 21 | 400 |
| BEANS<br>75g cooked | 7 | 2 | - | 12 | 400 |
| Chicken, beef fish, eggs | 26 | 10 | 0 – 4.6<br>except cheese | - | 800 |
| MILK<br>200 low fat | 7 | 4.5 | | 10 | 450 |
| OIL<br>5ml | - | 5 | - | - | 200 |
| Sugar<br>5ml | | | | 6 | 100 |

## 7. Food group food examples, unit size macronutrient information

| Food | Code | Weight g | Unit | Energy kJ | Protein g | Fat g | CHO g | Sat fat g | Fibre g |
|---|---|---|---|---|---|---|---|---|---|
| STARCHY FOODS 350 – 450kJ | | | | | | | | | |
| Bread brown | 4002 | 35 | 1 slice | 325 | 3 | 0.7 | 15.4 | tr | 2.3 |
| Porridge soft | 4254 | 125 | ½ cup | 271 | 1.5 | 0.4 | 14.3 | tr | 0.6 |
| Maize meal, dry | 4072 | 25 dry | | 387 | 2.2 | 0.6 | 20.4 | tr | 0.9 |
| Potato with skin boiled | 8046 | 100 | 1 medium | 354 | 1.9 | 0.1 | 16.7 | tr | 2 |
| Sweet potato | 3903 | 125 | 1 medium | 389 | 1.25 | 0.1 | 18.8 | tr | 2.5 |
| Rice white cooked | 4040 | 65 | ½ cup | 350 | 1.8 | 0.2 | 17.9 | tr | 0.3 |
| Pasta cooked | 4062 | 75 | ½ cup | 442 | 3.6 | 0.5 | 20 | tr | 1.2 |
| Cereal breakfast | | 30 | Varies about ½ cup | 404 | 1.9 | tr | 20.7 | tr | 0.8 |
| Crackers savoury | 4027 | 25 | 2 - 4 | 412 | 2.9 | 2.2 | 18 | tr | 0.5 |
| Cut corn | 4132 | 75 | ½ cup | 371 | 2.4 | 0.6 | 16.1 | tr | 2 |
| Barley cooked | 4211 | 65 | ½ cup | 332 | 1.8 | 0.3 | 15.5 | tr | 2.3 |
| Wheat cooked | 4042 | 80 | ½ cup | 291 | 2.5 | 0.4 | 12.6 | tr | 2.1 |
| Four in one soup mix raw | 3503 | 25 | 25g 2 Tbsp | 365 | 3.7 | 0.5 | 14.6 | 0.1 | 3 |
| Popcorn, popped | 4163 | 25 | 2 cups | 477 | 2.5 | 5.5 | 11.8 | 0.8 | 3 |
| Flour | 4076 | 25 | 25g 50ml 4 tbsp | 378 | 4.1 | 0.2 | 18.8 | tr | 0.7 |
| Samp, cooked | 4043 | 100 | ½ cup | 388 | 2.2 | 0.2 | 21.5 | tr | 0.8 |

| Food | Code | Weight g | Unit | Energy kJ | Protein g | Fat g | CHO g | Sat fat g | Fibre g |
|---|---|---|---|---|---|---|---|---|---|
| VEGETABLES AND FRUIT vegetables 100 - 200kJ Fruit 400kJ | | | | | | | | | |
| Beetroot | 8004 3698 | 80 | Half cup cooked | 173 | 1.5 | tr | 6.4 | tr | 2.2 |
| Butternut | 3759 | 105 | | 247 | 1.6 | 0.1 | 10.7 | tr | 2 |
| Pumpkin | 8069 4164 | 105 | | 97 | 0.7 | 0.1 | 2.9 | tr | 1.6 |
| Cabbage | 8066 | 70 | | 73 | 0.7 | tr | 2.2 | tr | 1.3 |
| Carrot | 8067 3757 | 75 | | 122 | 0.7 | tr | 3.8 | tr | 2.3 |
| Onion | 8083 | 85 | | 163 | 0.8 | tr | 7.4 | tr | 1.3 |
| Tomato | 8059 | 100 | | 91 | 0.9 | 0.2 | 2.9 | tr | 1.1 |
| Spinach | 8071 3413 | 90 | | 121 | 2.4 | 0.3 | 1.8 | tr | 2.3 |
| *Imifino* | 4210 | 70 | | 155 | 2.4 | 0.3 | 1.7 | tr | 4.9 |
| Green beans | 8002 | 80 | | 110 | 1.4 | tr | 2.1 | tr | 2.6 |
| Apple | 7001 3532 | 150 | 1 medium piece of fruit, ½ large piece of fruit, ½ cup chopped fruit | 401 | 0.3 | 0.2 | 19.5 | tr | 3.5 |
| Banana | 7009 | 100 | | 382 | 1.3 | 0.3 | 18.8 | o.1 | 1.7 |
| Mango | 7026 3556 | 100 | | 303 | 0.6 | 0.2 | 15.3 | tr | 1.5 |
| Orange | 7031 | 180 | | 410 | 1.4 | 0.2 | 16.6 | tr | 5.8 |
| Paw paw | 7034 | 70 | | 130 | 0.3 | tr | 6 | tr | 1.2 |
| Grapes | 7020 | 90 | | 270 | 0.6 | tr | 13.2 | tr | 2 |
| Fruit salad | 7060 | 105 | | 243 | 0.6 | 0.1 | 10.1 | tr | 2.6 |
| DRY BEANS, SPLIT PEAS, LENTILS AND SOY 350 – 550kJ | | | | | | | | | |
| Soy mince, dry | 3527 | 30 | 3 Tbsp | 391 | 5.8 | 1.7 | 12.8 | tr | 2.2 |
| Soy milk | 2737 | 250 | 250 | 373 | 7 | 4.8 | 1.3 | 0.5 | 3.3 |
| Tinned beans in sauce | 3504 | 135 | ½ cup $^{1}/_{3}$ tin | 525 | 6.5 | 0.7 | 24 | 0.2 | 10.4 |
| Dry beans cooked | 3515 | 75 | 1 heaped ladle | 439 | 5.3 | 0.5 | 14.6 | tr | 6.2 |
| Lentils cooked | 3509 | 75 | ½ cup | 365 | 6.8 | 0.3 | 11 | tr | 4.1 |

| Food | Code | Weight g | Unit | Energy kJ | Protein g | Fat g | CHO g | Sat fat g | Fibre g |
|---|---|---|---|---|---|---|---|---|---|
| CHICKEN, FISH, EGGS, MEAT 600 – 800kJ | | | | | | | | | |
| Fish white | 2530 | 150 | 1 large piece | 693 | 34.8 | 2 | 0 | 0.4 | 0 |
| Fish high fat flesh | 2503 | 125 | 1 small piece | 701 | 25 | 6.8 | 0 | 2 | 0 |
| Chicken, no skin | 1559 | 100 | 1 medium breast | 668 | 29.4 | 4.6 | 0 | 1.3 | 0 |
| Meat, lean cooked | 4367 | 80 | Size palm | 765 | 21.6 | 10.7 | 0 | 4.6 | 0 |
| Eggs hens | 1001 | 100 | 2 large | 616 | 12.6 | 10.4 | 1.2 | 3 | 0 |
| Liver, chicken | 2970 1567 | 100 | 3 | 634 | 24.4 | 5.5 | 0.9 | 1.8 | 0 |
| Cheese yellow | 0016 | 40 | cube $30mm^3$ | 677 | 10 | 13.2 | 0.5 | 8.4 | 0 |
| Cheese cottage | 0017 | 120 | 125ml | 461 | 13.1 | 5 | 0 | 0.1 | 0 |
| Mopani worms dried | 4250 | 40 | | 691 | 22.6 | 5.8 | 1.1 | - | - |
| LOW FAT MILK AND MAAS 350 – 450kJ | | | | | | | | | |
| Maas, low fat | 2787 | 200 | 200 | *take as for low fat milk* | | | | | |
| Yoghurt, low fat | 0020 | 100 | 100 | 375 | 3.8 | 1.5 | 15 | 0.9 | 0 |
| Milk, low fat | 0069 | 200 | 200 | 426 | 6.7 | 4 | 9.8 | 2.6 | 0 |
| FATS AND OILS 150 - 250kJ | | | | | | | | | |
| Tub margarine | 6521 | 5 | 5ml | 153 | tr | 4.1 | 0 | 0.8 | 0 |
| Sunflower, canola, olive oil | | 4 | 5ml | 150 | - | 4 | - | 0.5 | 0 |
| Walnuts | 6004 | 10 | 12ml | 268 | 1.4 | 6.2 | 1.4 | 0.6 | 0.5 |
| Peanuts | 6001 | 10 | 12ml | 243 | 2.6 | 4.9 | 1 | 0.6 | 0.8 |
| Peanut butter | 6509 | 10 | 1 tsp (h) | 246 | 2.4 | 5 | 1.5 | 1 | 0.6 |
| Avocado | 7132 | 20 | small slice | 204 | 0.3 | 4.7 | 0.4 | 0.9 | 1.1 |
| Olives | 7134 | 40 | 8 olives | 206 | 0.3 | 4.3 | 1.2 | 0.6 | 1.3 |
| SUGAR 100kJ | | | | | | | | | |
| Sugar | 9012 | 6 | 1 tsp h | 96 | 0 | 6 | 0 | 0 | 0 |
| Jam | 9008 | 10 | 1 tsp h | 111 | tr | 7 | 0 | 0 | 0 |

## 8. Volume illustration calculation

The circle diameters, and % contribution to the total area based on volume (what the consumer sees), were adjusted for practical reasons. The calculation is as follows:

| Food group | Food Guide Circle diameter cm | Food Guide % area | Calculated % eating pattern A |
|---|---|---|---|
| Starch | 8 | 37.6 | 60 |
| Veg and fruit | 7 | 28.8 | 21 |
| Dry beans | 4 | 12.6 | 5 |
| Chicken, fish, eggs | 4 | 12.6 | 3 |
| Milk | 4 | 12.6 | 8 |
| Oil | 3 | 7.1 | 1 |

## 9. Formulae calculations eating plans

| Food Group | Units | CHO (g) | PROT (g) | FAT (g) | Energy (kJ) |
|---|---|---|---|---|---|
| **Starches** | 1 | 18 | 3 | 1 | 400 |
| **Vegetables** | 1 | 5 | 1 | 0 | 100 |
| **Fruits** | 1 | 21 | 1 | 0.5 | 400 |
| **Dry beans etc** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 1 | 0 | 26 | 10 | 800 |
| **Milks** | 1 | 10 | 7 | 4.5 | 450 |
| **Oil** | 1 | 0 | 0 | 5 | 200 |
| **Sugar** | 1 | 6 | 0 | 0 | 100 |

| **6500a** | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 8 | 144 | 24 | 8 | 3200 |
| **Vegetables** | 3 | 15 | 3 | 0 | 300 |
| **Fruits** | 1 | 21 | 1 | 0.5 | 400 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 1 | 0 | 26 | 10 | 800 |
| **Milks** | 1 | 10 | 7 | 4.5 | 450 |
| **Oil** | 4 | 0 | 0 | 20 | 800 |
| **Sugar** | 2 | 12 | 0 | 0 | 200 |
| **Total grams** | | 214 | 68 | 45 | 327 |
| **Total kJ** | | 3638 | 1156 | 1665 | **6550** |
| **% kJ** | | **55.54** | **17.65** | **25.42** | |

| 6500b | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 5 | 90 | 15 | 5 | 2000 |
| **Vegetables** | 3 | 15 | 3 | 0 | 300 |
| **Fruits** | 2 | 42 | 2 | 1 | 800 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F M, E** | 2 | 0 | 52 | 20 | 1600 |
| **Milks** | 1 | 10 | 7 | 4.5 | 450 |
| **Oil** | 4 | 0 | 0 | 20 | 800 |
| **Sugar** | 2 | 12 | 0 | 0 | 200 |
| **Total grams** | | 181 | 86 | 52.5 | 319.5 |
| **Total kJ** | | 3077 | 1462 | 1942.5 | **6550** |
| **% kJ** | | **46.98** | **22.32** | **29.66** | |

| 8400a | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 11 | 198 | 33 | 11 | 4400 |
| **Vegetables** | 3 | 15 | 3 | 0 | 300 |
| **Fruits** | 1 | 21 | 1 | 0.5 | 400 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 1 | 0 | 26 | 10 | 800 |
| **Milks** | 1 | 10 | 7 | 4.5 | 450 |
| **Oil** | 6 | 0 | 0 | 30 | 1200 |
| **Sugar** | 6 | 36 | 0 | 0 | 600 |
| **Total grams** | | 292 | 77 | 58 | 427 |
| **Total kJ** | | 4964 | 1309 | 2146 | **8550** |
| **% kJ** | | **58.06** | **15.31** | **25.10** | |

| 8400b | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 7 | 126 | 21 | 7 | 2800 |
| **Vegetables** | 3 | 15 | 3 | 0 | 300 |
| **Fruits** | 2 | 42 | 2 | 1 | 800 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 2 | 0 | 52 | 20 | 1600 |
| **Milks** | 2 | 20 | 14 | 9 | 900 |
| **Oil** | 6 | 0 | 0 | 30 | 1200 |
| **Sugar** | 6 | 36 | 0 | 0 | 600 |
| **Total grams** | | 251 | 99 | 69 | 419 |
| **Total kJ** | | 4267 | 1683 | 2553 | **8600** |
| **% kJ** | | **49.62** | **19.57** | **29.69** | |

| 8400c | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 5 | 90 | 15 | 5 | 2000 |
| **Vegetables** | 4 | 20 | 4 | 0 | 400 |
| **Fruits** | 2 | 42 | 2 | 1 | 800 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 2 | 0 | 52 | 20 | 1600 |
| **Milks** | 3 | 30 | 21 | 13.5 | 1350 |
| **Oil** | 6 | 0 | 0 | 30 | 1200 |
| **Sugar** | 6 | 36 | 0 | 0 | 600 |
| **Total grams** | | 230 | 101 | 71.5 | 402.5 |
| **Total kJ** | | 3910 | 1717 | 2645.5 | **8350** |
| **% kJ** | | **46.83** | **20.56** | **31.68** | |

| 10500a | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 15 | 270 | 45 | 15 | 6000 |
| **Vegetables** | 3 | 15 | 3 | 0 | 300 |
| **Fruits** | 1 | 21 | 1 | 0.5 | 400 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 1 | 0 | 26 | 10 | 800 |
| **Milks** | 1 | 10 | 7 | 4.5 | 450 |
| **Oil** | 8 | 0 | 0 | 40 | 1600 |
| **Sugar** | 6 | 36 | 0 | 0 | 600 |
| **Total grams** | | 364 | 89 | 72 | 525 |
| **Total kJ** | | 6188 | 1513 | 2664 | **10550** |
| **% kJ** | | **58.65** | **14.34** | **25.25** | |

| 10500b | | | | | |
|---|---|---|---|---|---|
| **Food Group** | **Units** | **CHO (g)** | **PROT (g)** | **FAT (g)** | **Energy (kJ)** |
| **Starches** | 10 | 180 | 30 | 10 | 4000 |
| **Vegetables** | 5 | 25 | 5 | 0 | 500 |
| **Fruits** | 2 | 42 | 2 | 1 | 800 |
| **Dry beans** | 1 | 12 | 7 | 2 | 400 |
| **C, F, M, E** | 2 | 0 | 52 | 20 | 1600 |
| **Milks** | 2 | 20 | 14 | 9 | 900 |
| **Oil** | 8 | 0 | 0 | 40 | 1600 |
| **Sugar** | 6 | 36 | 0 | 0 | 600 |
| **Total grams** | | 315 | 110 | 82 | 507 |
| **Total kJ** | | 5355 | 1870 | 3034 | **10400** |
| **% kJ** | | **51.49** | **17.98** | **29.17** | |