



World Food  
Programme

SAVING  
LIVES  
CHANGING  
LIVES

# Fill the Nutrient Gap Namibia

*Recommendations developing workshop – Tuesday 27<sup>th</sup> July 2021*

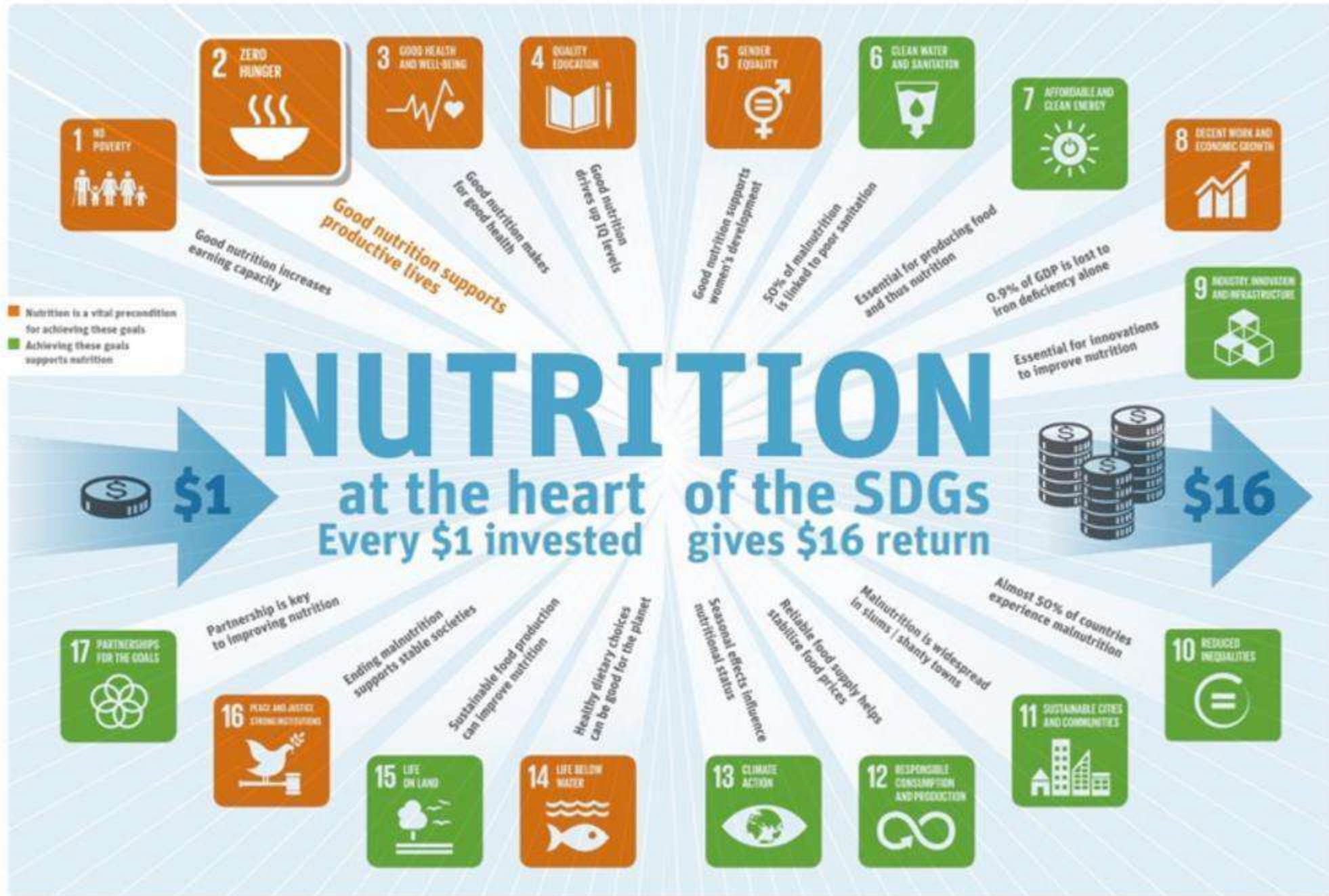
*Main findings on agricultural supply, fortification & private sector*



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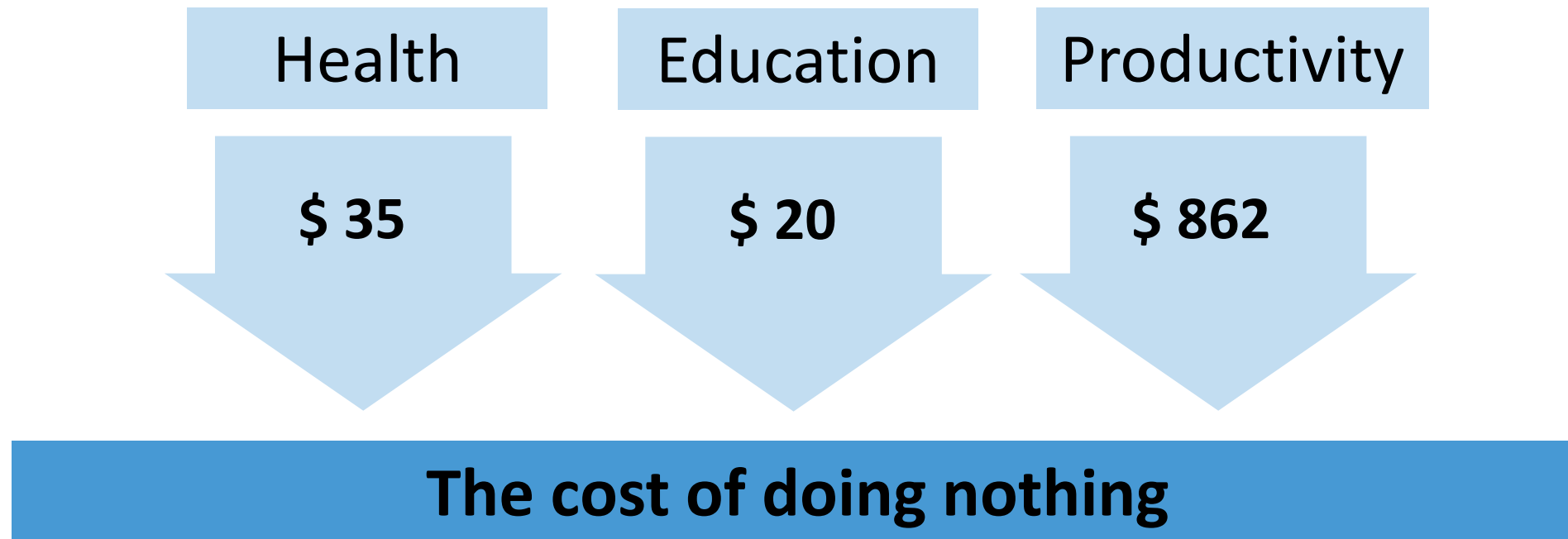






# Undernutrition costs the Namibian economy ca. \$917m every year – 6.3% of GDP

## The impact of undernutrition on...



# Ending all forms of malnutrition...

## What does it take?



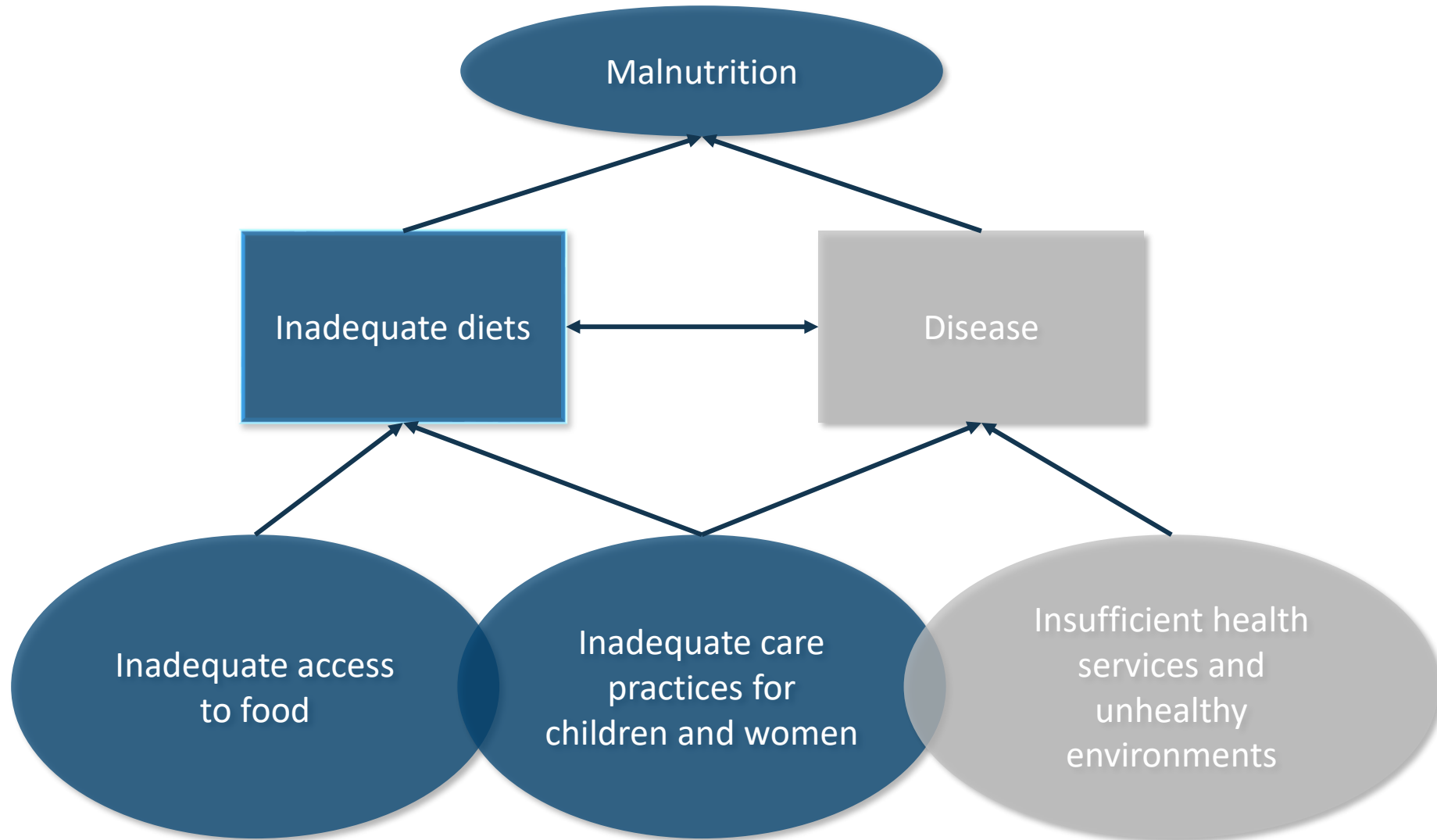
Life cycle

Multiple  
sectors

Nutrition  
specific

What is the **right 'mix'** for a **specific context**?

# A healthy diet that meets nutrient requirements Is a prerequisite for preventing malnutrition.



# Recognising the need for shared understanding of issues, context and solutions, the Fill the Nutrient Gap (FNG) aims to:

- Identify the barriers to adequate nutrient intake.
- Explore options for improving access to nutritious diets.



Specific target groups in a specific context



Multi-sectoral input and involvement



Food systems based approach

# Two components of the analysis



## Secondary data analysis and review

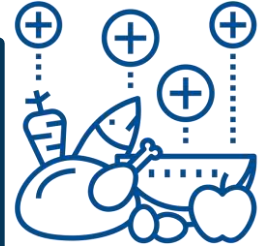


Characterize the food system & identify possible entry points

## Linear programming on Cost of the Diet



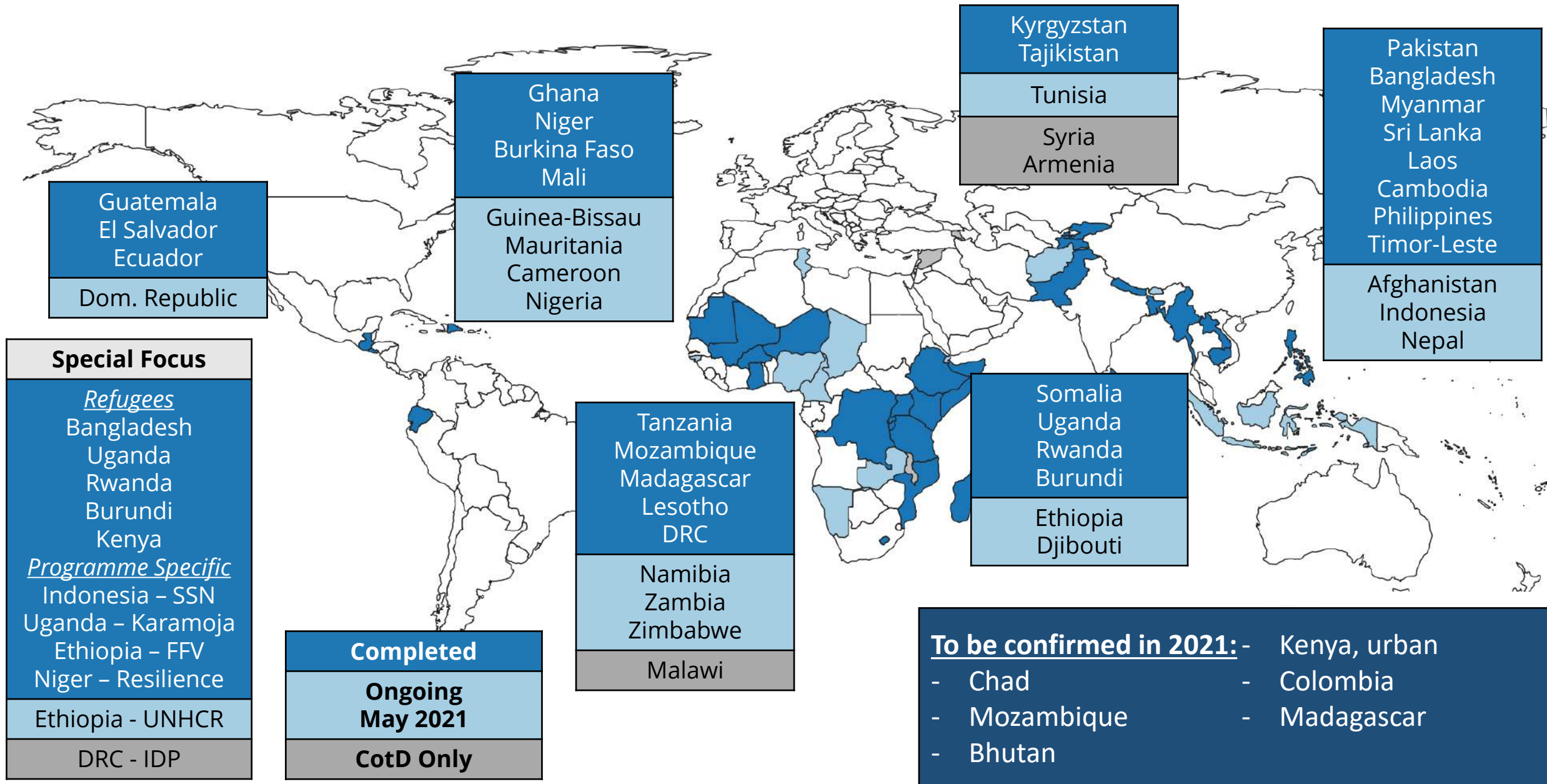
Estimate the minimum cost and affordability of a nutritious diet



1. Understand the challenges
2. Model interventions to improve access and affordability of nutritious diets
3. Inform a prioritization of interventions across sectors

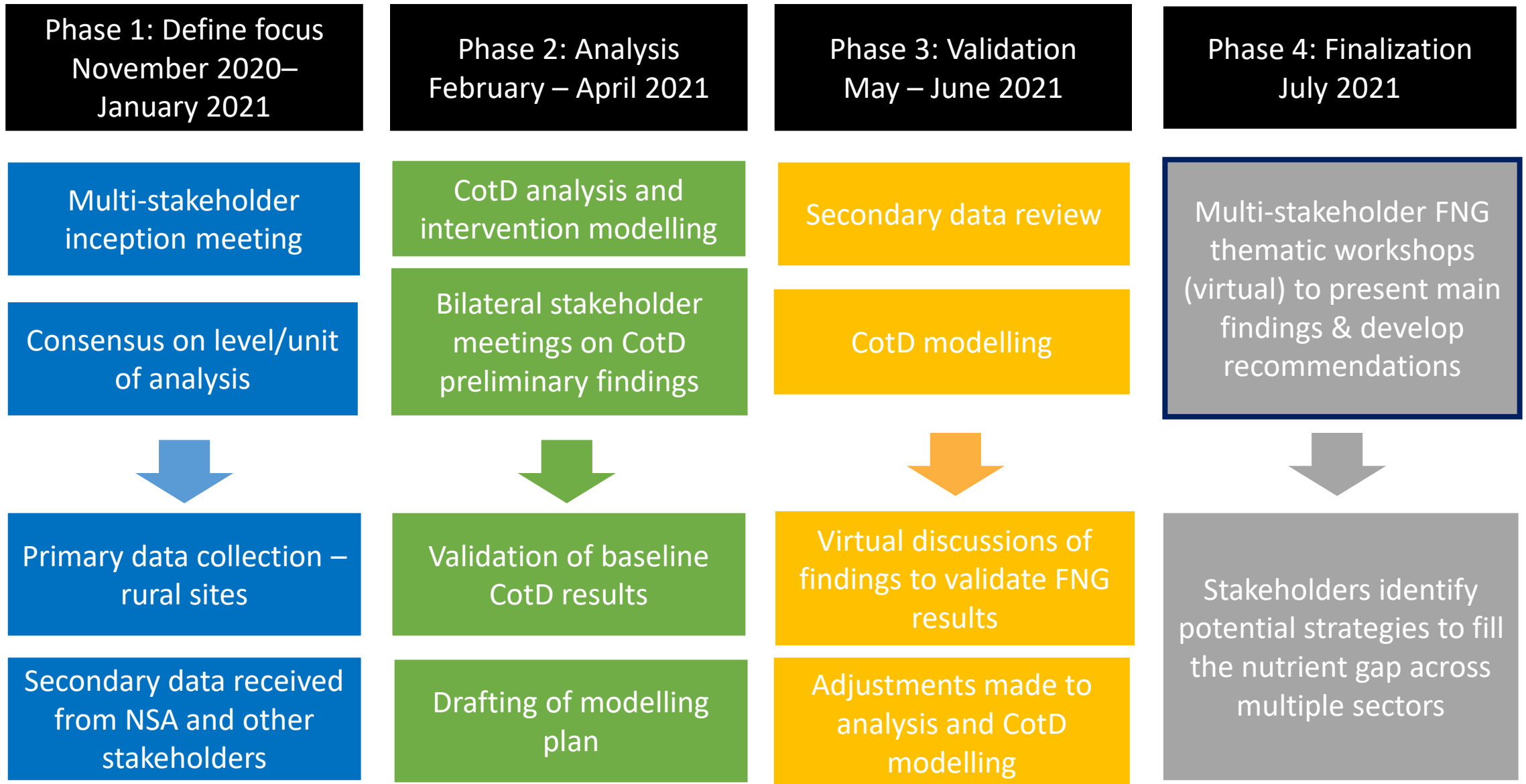


# Where we work: FNG Around the World



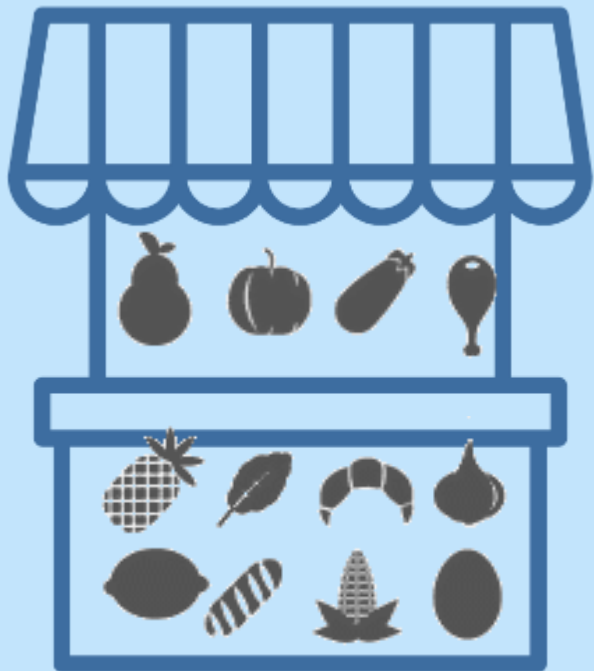


# FNG Engagement Process in Namibia



# Cost of the Diet estimates the cost of meeting nutrient requirements using locally available foods

**Market Survey  
Data: Food  
prices and  
Availability**



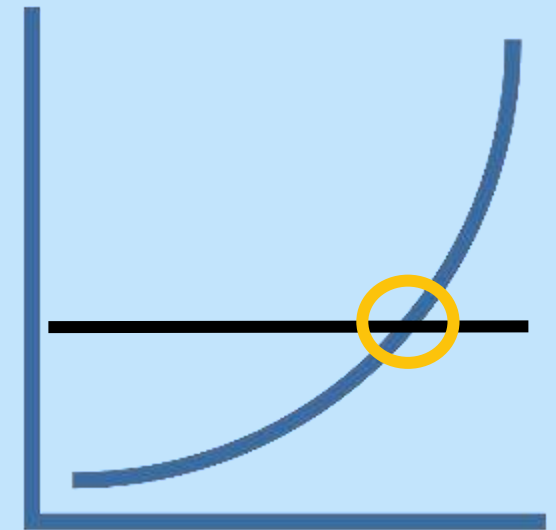
**Linear Programming  
used to optimise  
food combinations  
and model diets**



**Lowest cost food  
combination  
meeting nutrient  
requirements of  
model household**



**Diet cost compared  
to household food  
expenditure to  
estimate how many  
could afford it**



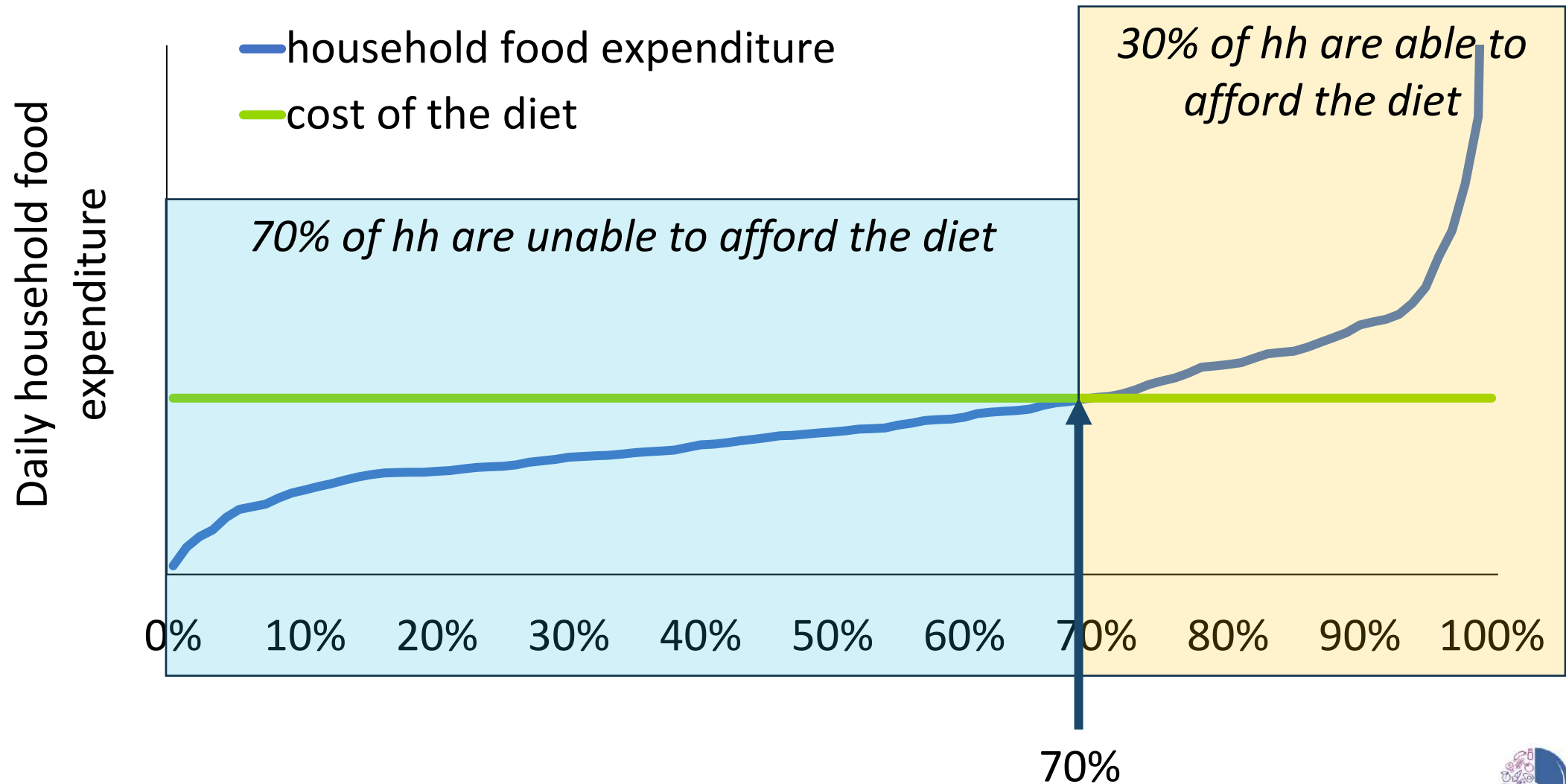
# Size and composition of a model household

## 5 person household

1. Child 6-23 months (breastfed)
2. School-age child
3. Adolescent girl
4. Breastfeeding woman
5. Adult man



# How we calculated non-affordability of a nutritious diet (example)





# Sources of price data used in the Cost of the Diet analysis

## Food Prices

January 2021

### CPI Data

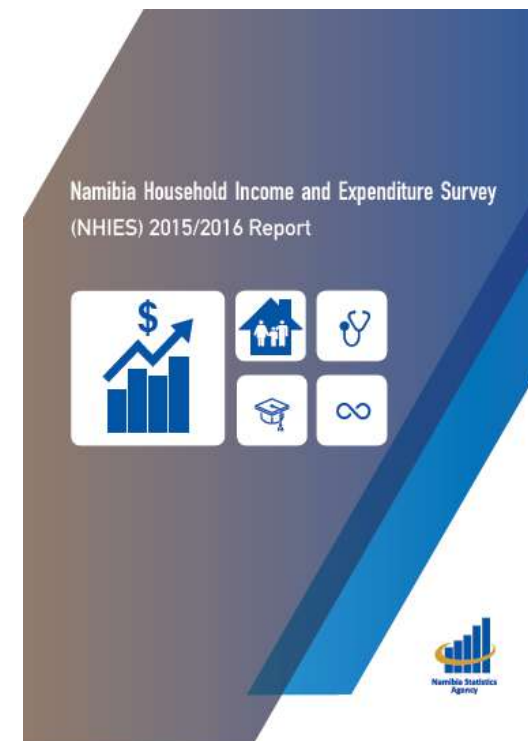
- Used to capture the average situation in the country
- Nationally representative
- Mostly representative of urban access
- 8 major towns

### Rural Price Data

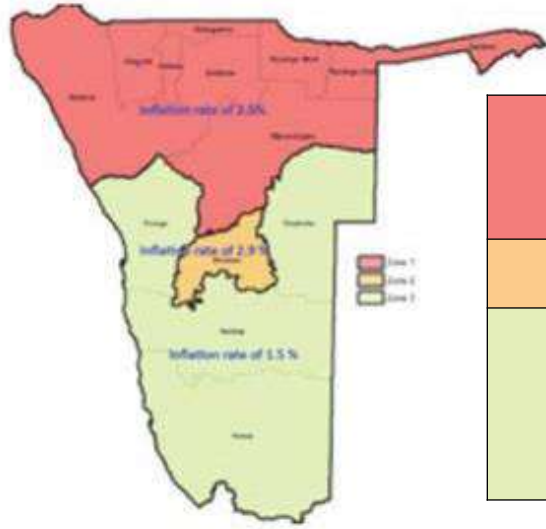
- Used to gather insights into the rural, remote situation in Namibia
- Oversampling of rural areas
- Convenience and purposive sample
- 25 rural sites surveyed

## Food Expenditure

2015-16 adjusted to January 2021



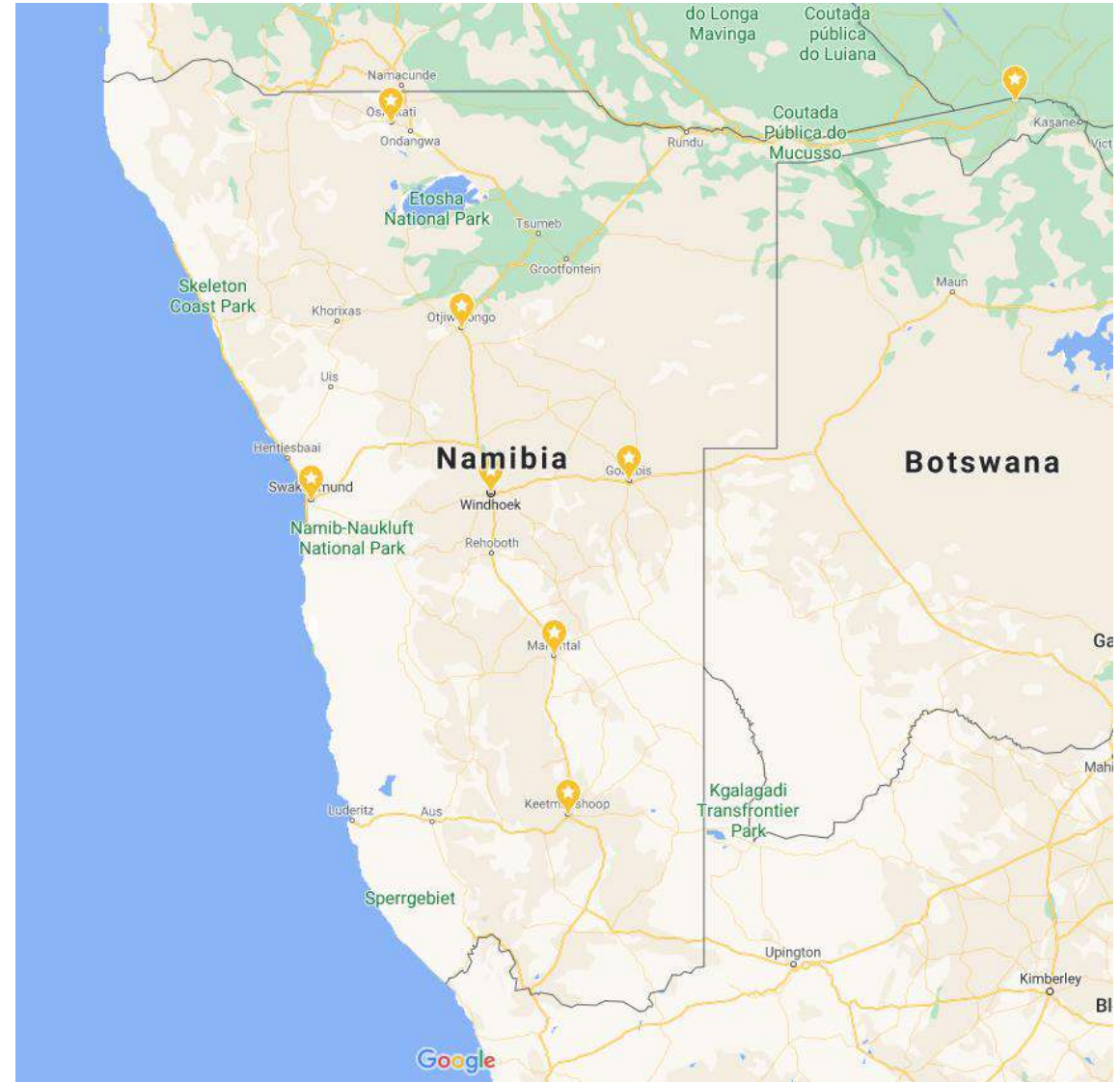
# Consumer Price Index data covers eight towns over three zones



<b>ZONE 1</b>	Oshakati
	Katima Mulilo
	Otjiwarongo
<b>ZONE 2</b>	Windhoek
	Swakopmund
<b>ZONE 3</b>	Gobabis
	Keetmanshoop
	Mariental

## CPI Data

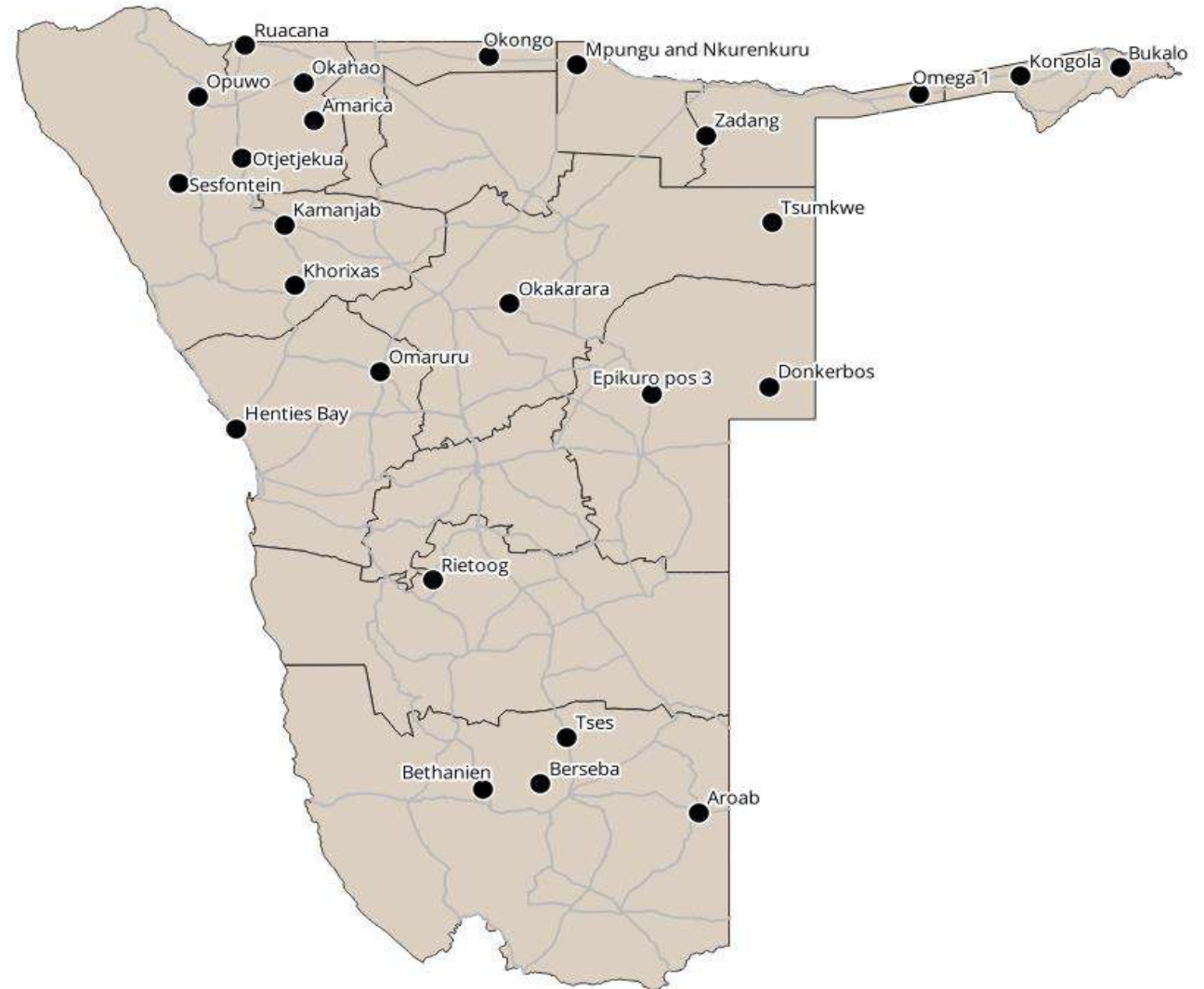
- Used to capture the average situation in the country
- Nationally representative
- Mostly representative of urban access
- 8 major towns



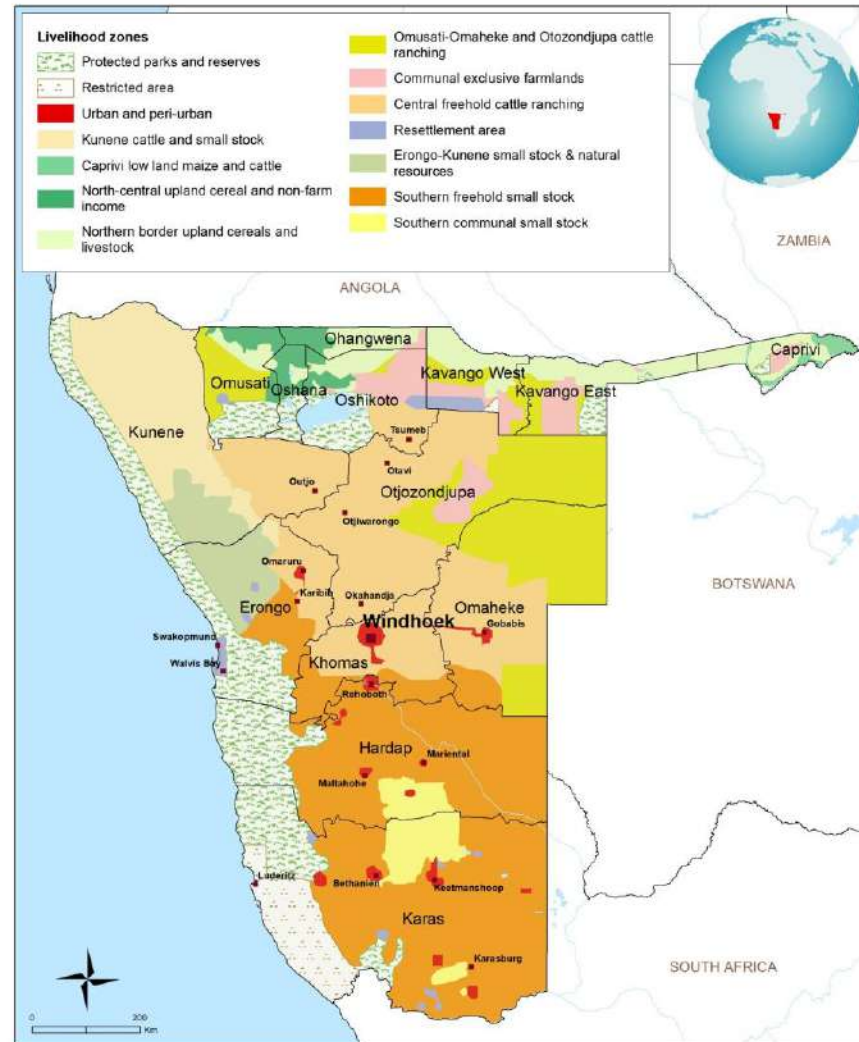
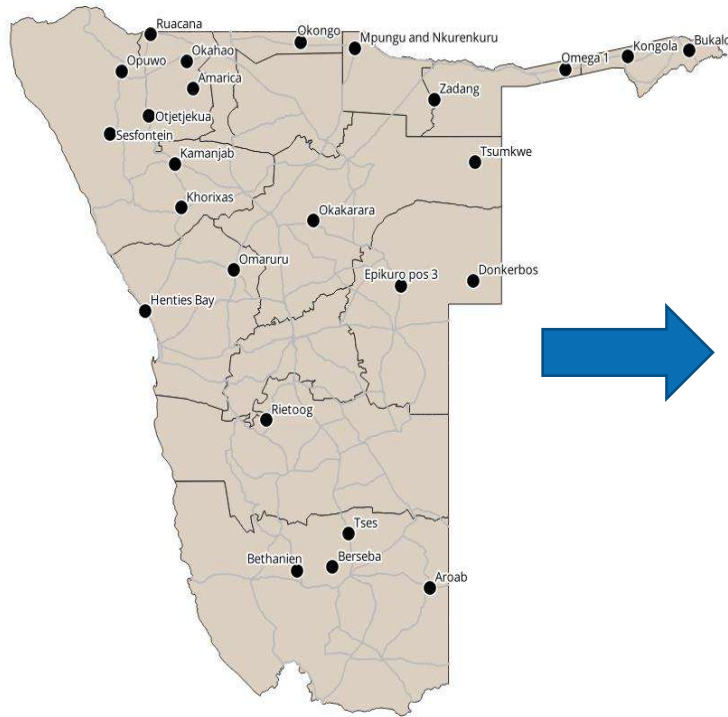
# Primary food price data were collected from twenty-five rural sites

## Rural Price Data

- Used to gather insights into the rural, remote situation in Namibia
- Oversampling of rural areas
- Convenience and purposive sample
- 25 rural sites surveyed



# Primary food price data were aggregated by livelihood zone according to GPS coordinates

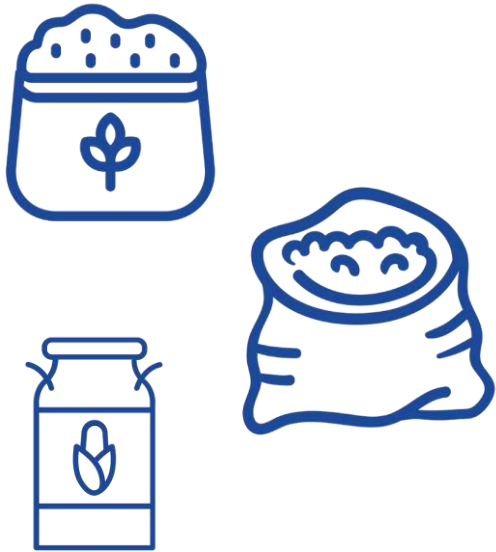


LHZ	Livelihood zone name	Town or village name
1	Kunene cattle and small stock	<i>Opuwo</i>
		<i>Sesfontein</i>
2	Omusati-Omaheke-Otjozondjupa cattle ranching	<i>Otjetjekua</i>
		<i>Amarika</i>
		<i>Zadang</i>
		<i>Khorixas</i>
		<i>Tsumkwe</i>
		<i>Okakarara</i>
		<i>Donkerbos</i>
		<i>Berseba</i>
4	Southern communal stock	<i>Tses</i>
5	Central freehold cattle ranching	<i>Kamanjab</i>
		<i>Omaruru</i>
		<i>Epikuro pos 3</i>
6	Southern freehold small stock	<i>Rietoog</i>
		<i>Bethanien</i>
		<i>Aroab</i>
7	Northern border upland cereals and livestock	<i>Ruacana</i>
		<i>Okahao</i>
		<i>Okongo</i>
		<i>Bukalo</i>
		<i>Kongola</i>
		<i>Omega 1</i>
		<i>Mpungu and Nkurenkuru</i>
P	Protected park area /urban/peri-urban	<i>Henties Bay</i>



# Cost of the Energy Only and Nutritious diets

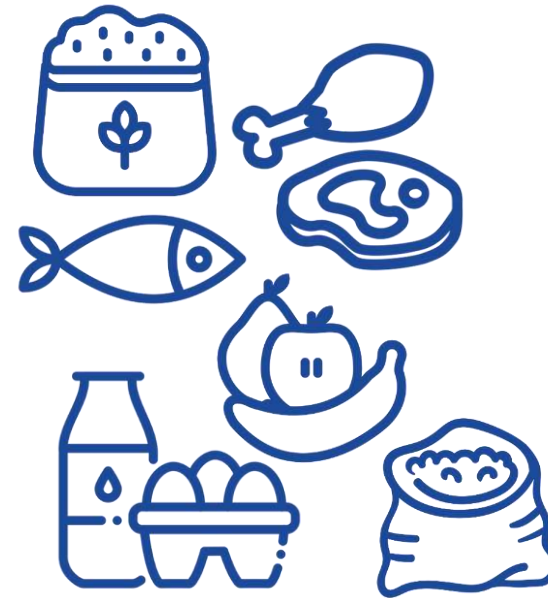
## Energy Only Diet



Made up of energy dense foods, with 1 or 2 food groups:

- Maize
- Oil
- Wheat flour

## Nutritious Diet



Made up of nutrient-dense and staple foods, multiple food groups:

- Legumes
- Vegetables
- Fish
- Meat
- Eggs
- Dairy
- Grains

# Staple-Adjusted Nutritious Diet

## WHAT IT IS

- An economic benchmark of the lowest possible cost to meet nutrient needs
- Based on what is available in markets
- Selection meets nutrient needs and has lowest possible cost
- Adjusted to reflect basic local staple food preferences

## WHAT IT IS NOT

- **Does not reflect current dietary habits**
- **Not designed to provide recommendations of what people should eat:**
  - **ingredients not selected to make a nice recipe**
  - **only most optimal foods are selected – little variation**

# Adjusting nutritious diets to reflect staple food preferences

*Millet*



*Maize*



*Sorghum*



*Wheat flour*



# Adjusting nutritious diets to reflect staple food preferences

## Urban assessments (CPI)

Region	CPI towns	Staple 1	Staple 2
Zambezi	Katima Mulilo	<i>Maize</i>	
Oshana	Oshakati	<i>Maize</i>	<i>Sorghum</i>
Otjozondjupa	Otjiwarongo	<i>Maize</i>	
Khomas	Windhoek	<i>Maize</i>	<i>Millet</i>
Omaheke	Gobabis	<i>Maize</i>	
Erongo	Swakopmund	<i>Maize</i>	
Hardap	Mariental	<i>Maize</i>	<i>Wheat flour</i>
Karas	Keetmanshoop	<i>Maize</i>	<i>Wheat flour</i>

*Millet*



*Maize*



*Sorghum*



*Wheat flour*

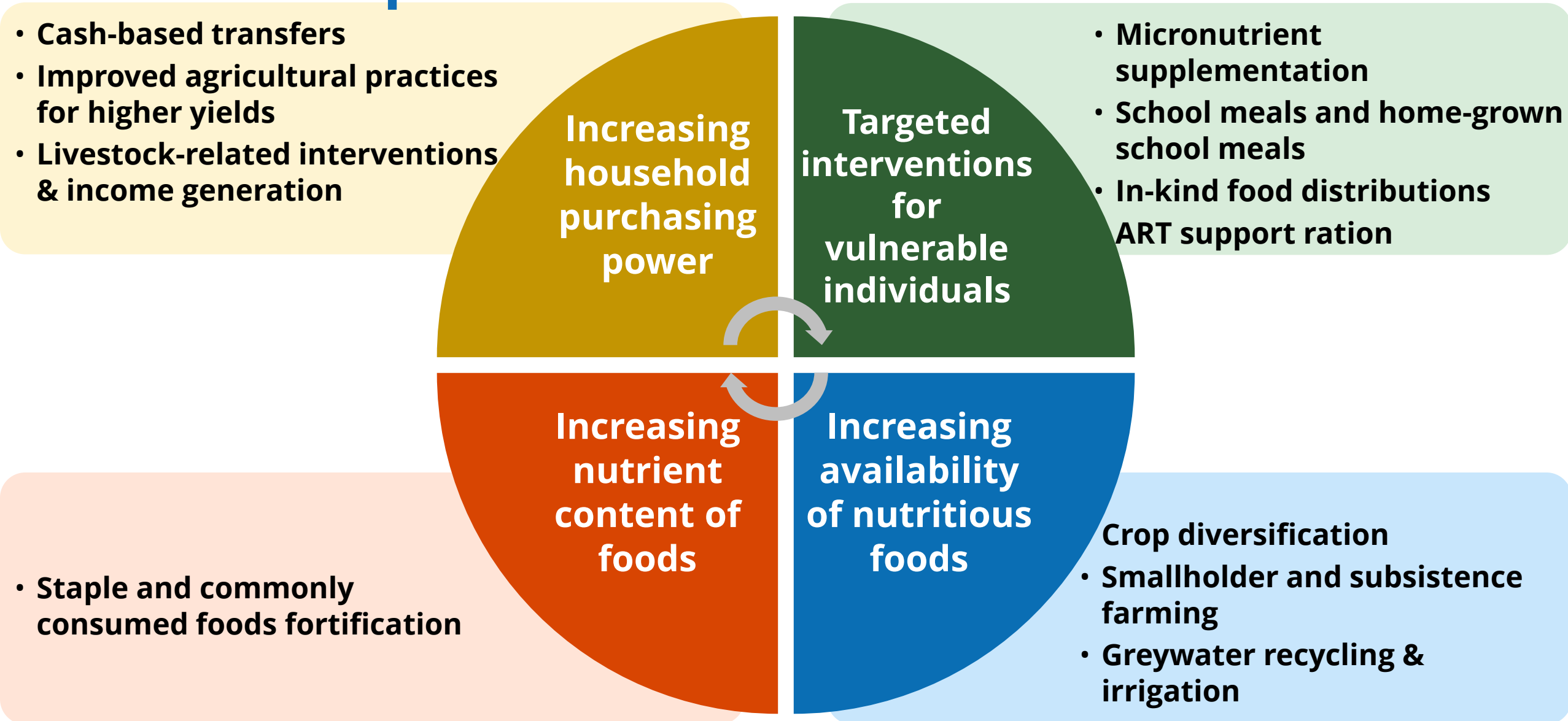


## Rural assessments (primary data)

DC team	Region	Town	Staple 1	Staple 2
1	Omusati	Otjetjekua	<i>Millet</i>	
	Kunene	Opuwo	<i>Maize</i>	<i>Wheat flour</i>
	Omusati	Ruacana	<i>Millet</i>	
	Omusati	Okahao	<i>Millet</i>	
	Omusati	Amarica	<i>Millet</i>	
	Ohangwena	Okongo	<i>Millet</i>	
2	Zambezi	Bukalo	<i>Maize</i>	
	Zambezi	Kongola	<i>Maize</i>	
	Zambezi	Omega 1	<i>Maize</i>	
	Kavango West	Mpungu / Nkurenkuru	<i>Millet</i>	<i>Maize</i>
	Kavango East	Zadang	<i>Maize</i>	<i>Millet</i>
3	Kunene	Kamanjab	<i>Maize</i>	<i>Wheat flour</i>
	Kunene	Sesfontein	<i>Maize</i>	<i>Wheat flour</i>
	Kunene	Khorixas	<i>Maize</i>	<i>Wheat flour</i>
	Erongo	Omaruru	<i>Maize</i>	<i>Wheat flour</i>
	Erongo	Henties Bay	<i>Maize</i>	<i>Wheat flour</i>
4	Otjozondjupa	Tsumkwe	<i>Maize</i>	
	Otjozondjupa	Okakarara	<i>Maize</i>	
	Omaheke	Donkerbos	<i>Maize</i>	
	Omaheke	Epukiro pos 3	<i>Maize</i>	
5	Hardap	Rietoog	<i>Maize</i>	<i>Wheat flour</i>
	Karas	Berseba	<i>Maize</i>	<i>Wheat flour</i>
	Karas	Bethanien	<i>Maize</i>	<i>Wheat flour</i>
	Karas	Aroab	<i>Maize</i>	<i>Wheat flour</i>
	Karas	Tses	<i>Maize</i>	<i>Wheat flour</i>



# Interventions from different sectors could improve access to nutritious diets



## **The lowest cost nutritious diet**

The nutritious diet could cost on average 103 Namibian Dollars for a 5 person household per day.

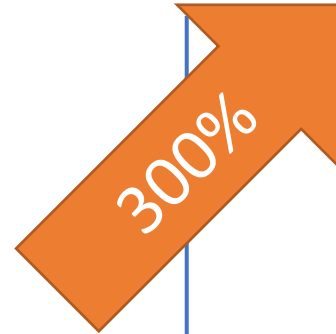
It can be up to four times more expensive to meet nutrient requirements within Namibia, depending on location.

# A nutritious diet is three times more expensive than a diet that meets only energy needs



Minimum cost of the  
**energy-only** diet  
**31 N\$**  
per household per day

*Rural sites range 20 – 68 N\$*



Minimum cost of the  
**nutritious** diet  
**99 N\$**  
per household per day

*Rural sites range 62 – 246 N\$*



# The nutritious diet includes fresh foods from several different food groups

## Energy Only

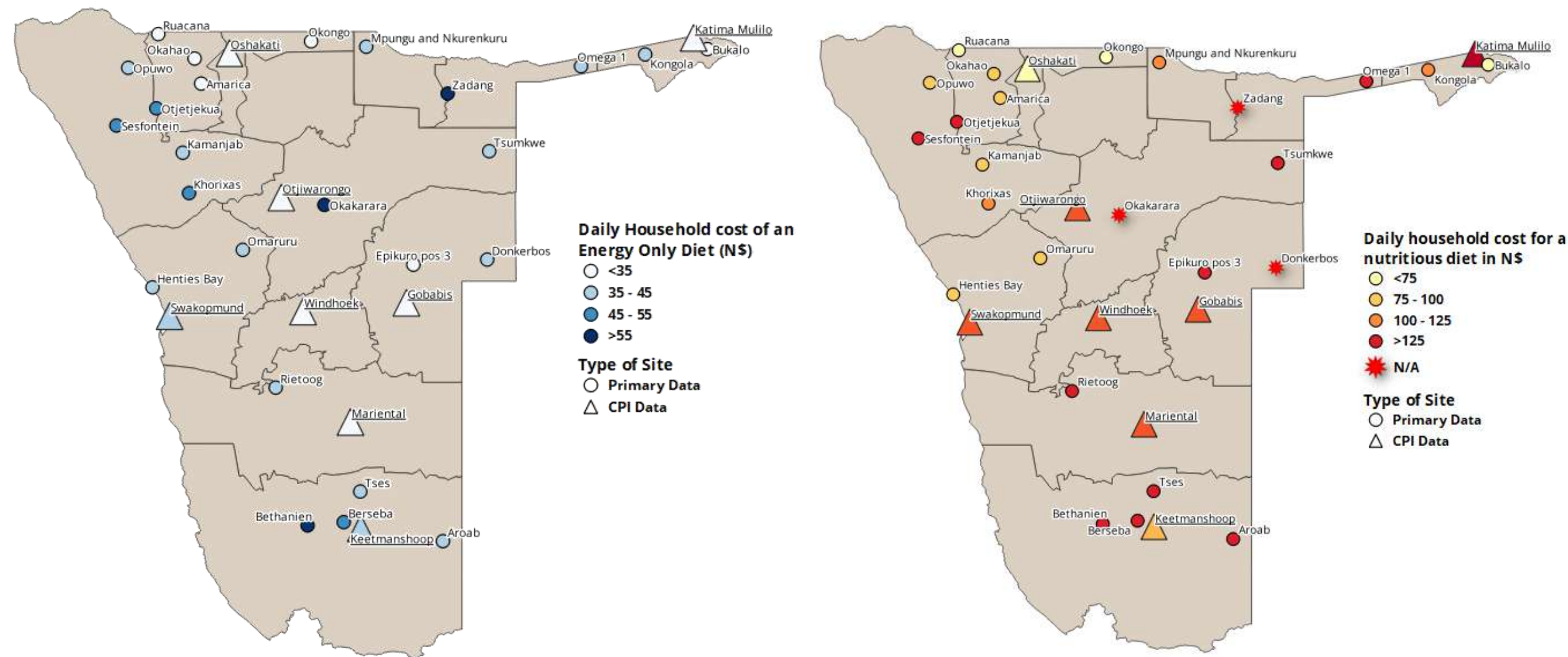


## Nutritious Diet



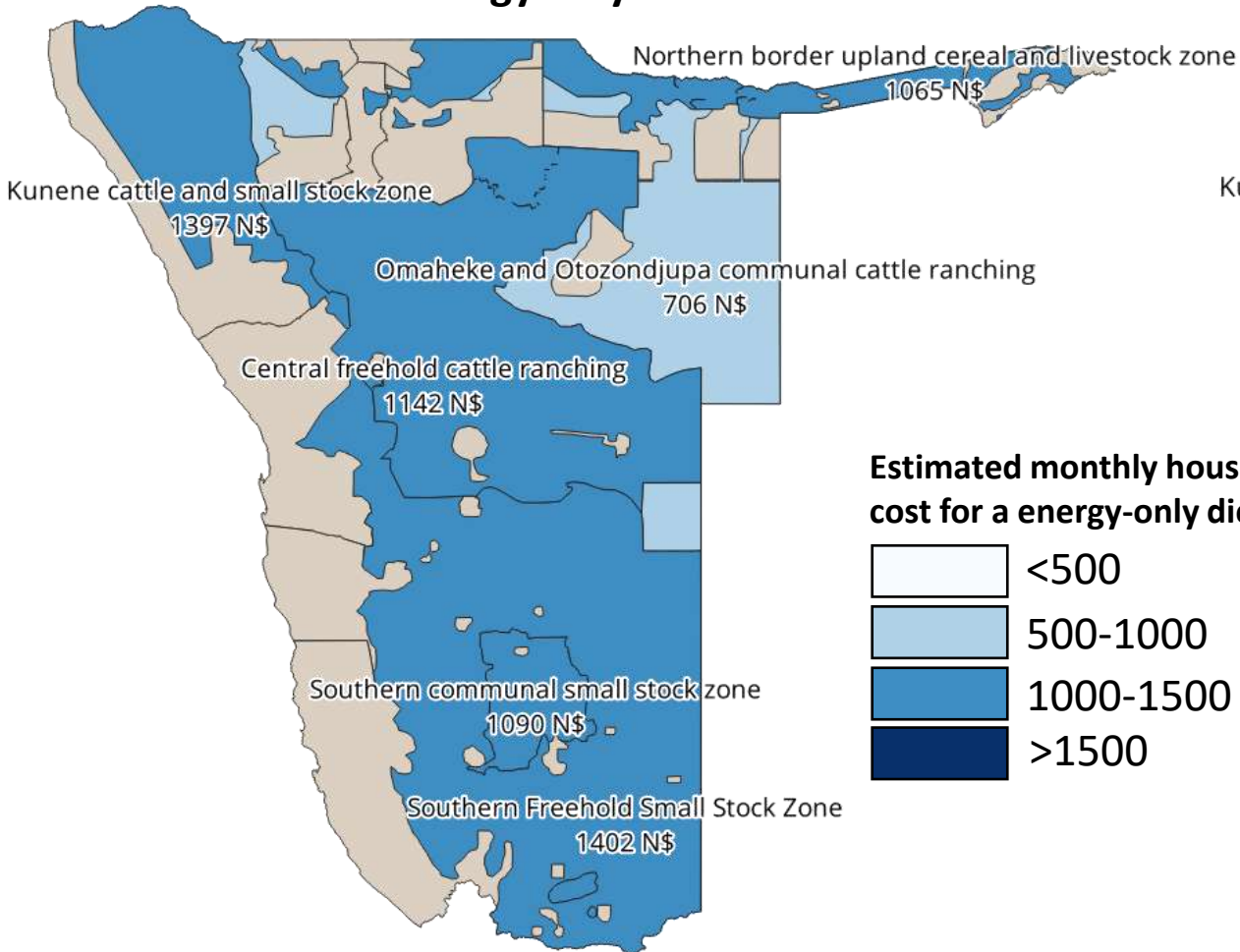


# The cost of both diets are lowest in the North and more expensive in remote areas

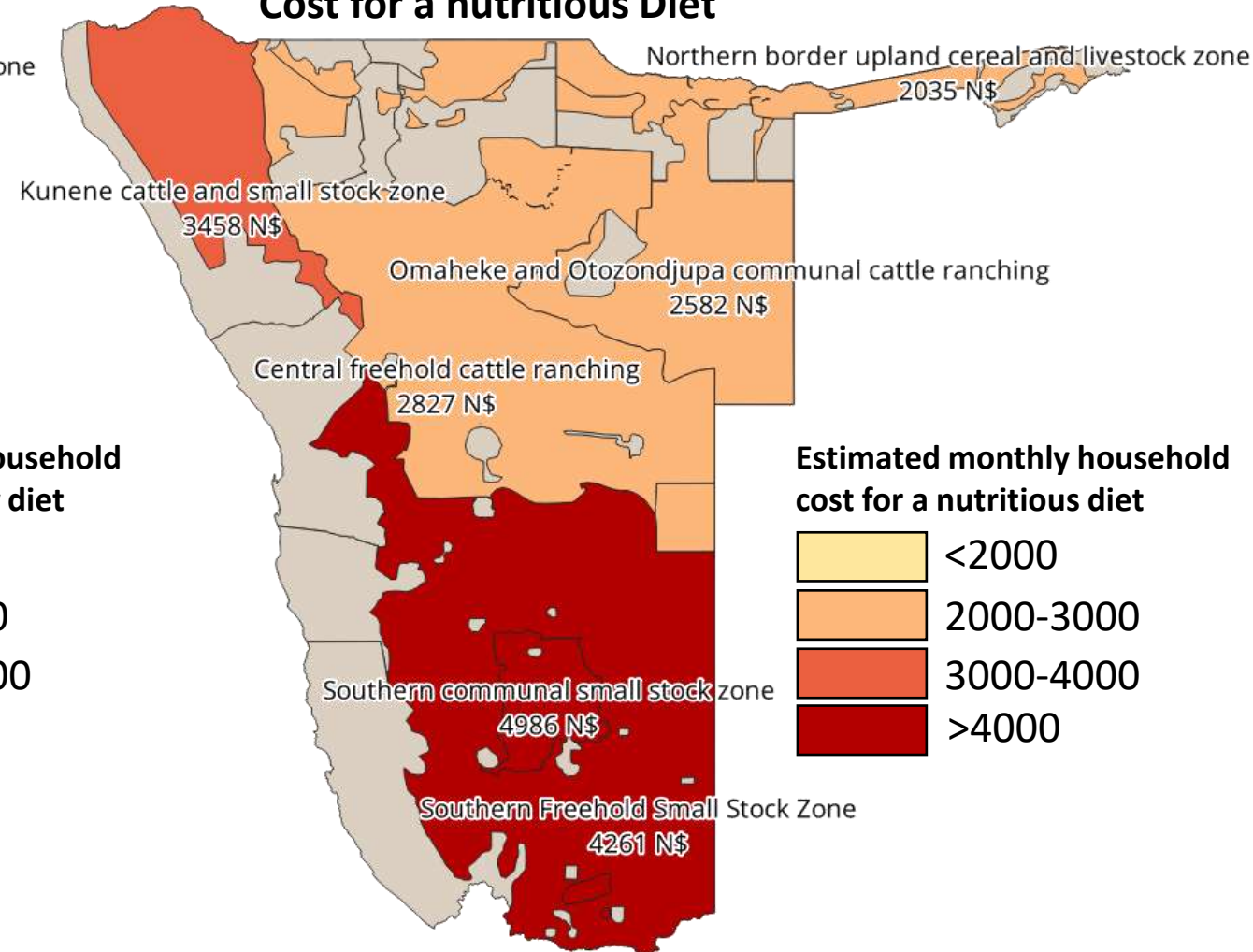


# Meeting Nutrient needs is more expensive in Southern and Kunene Livelihoods

## Cost of an energy only diet



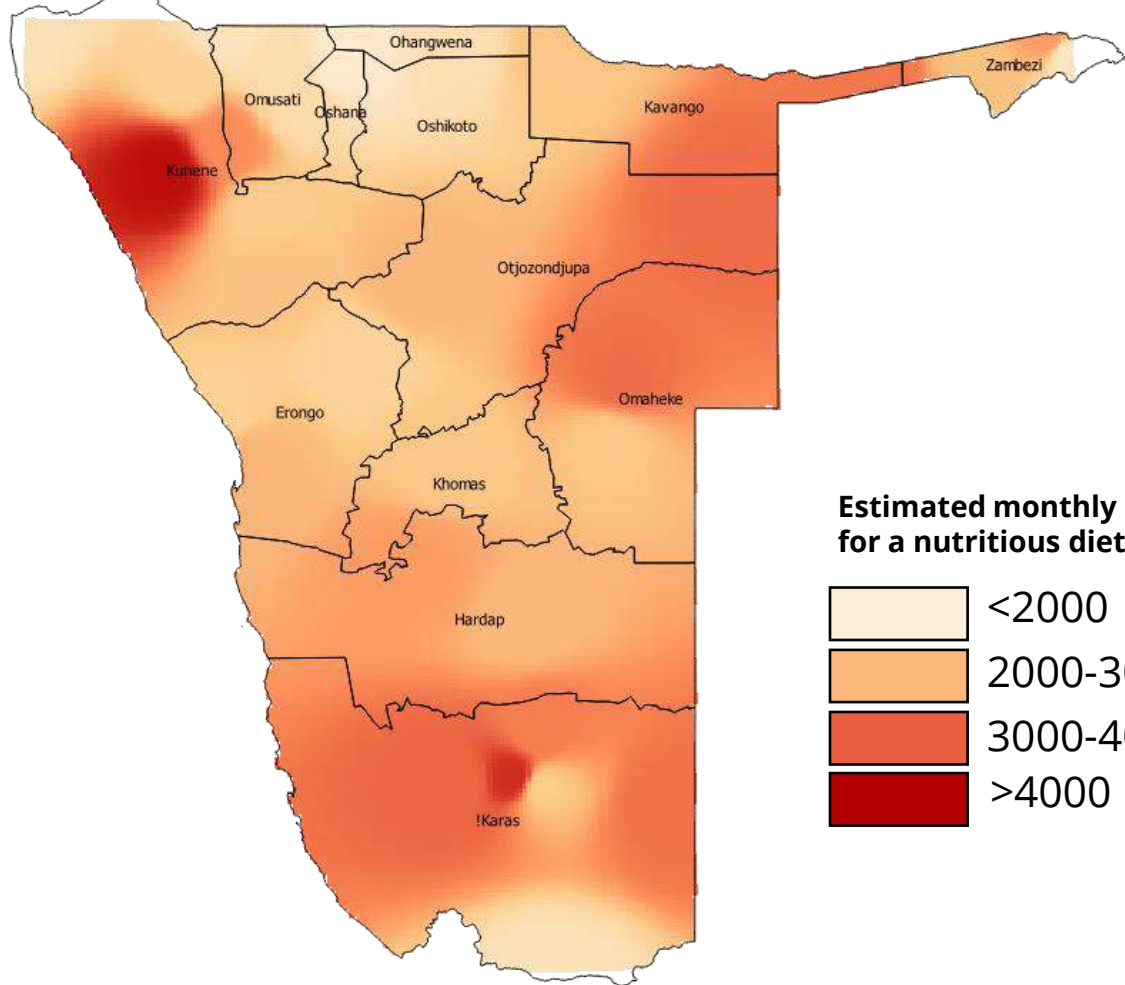
## Cost for a nutritious Diet



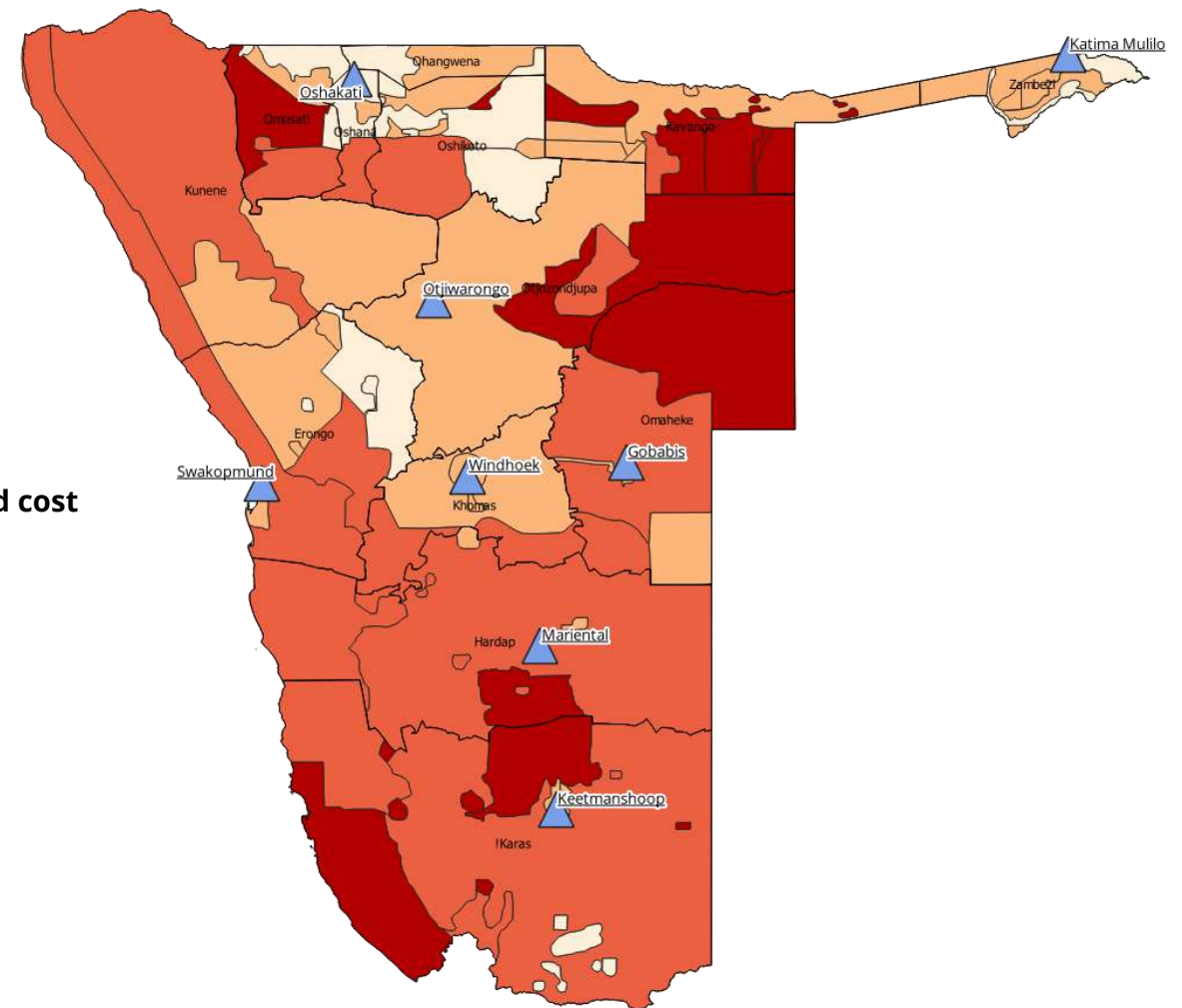
Note: CotD analysis based primary food prices averages, regrouped based on livelihood zones boundaries

## Interpolation allows us to generate more granular distribution and derive average cost by livelihood

## Interpolated Cost Distribution

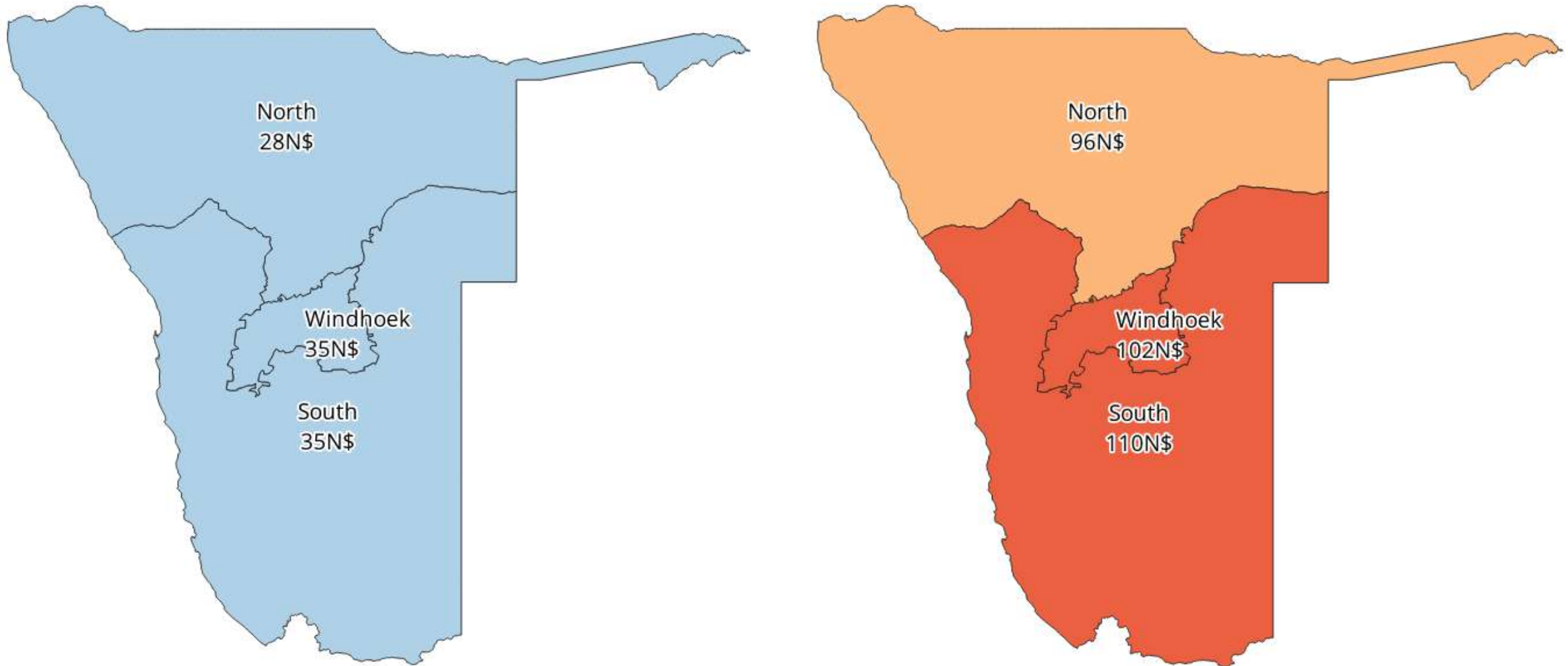


### Estimated Average Cost by Livelihood Zone





# The southern CPI zone has on average higher prices for a nutritious diet than the other two areas





FNG

Key Message 3

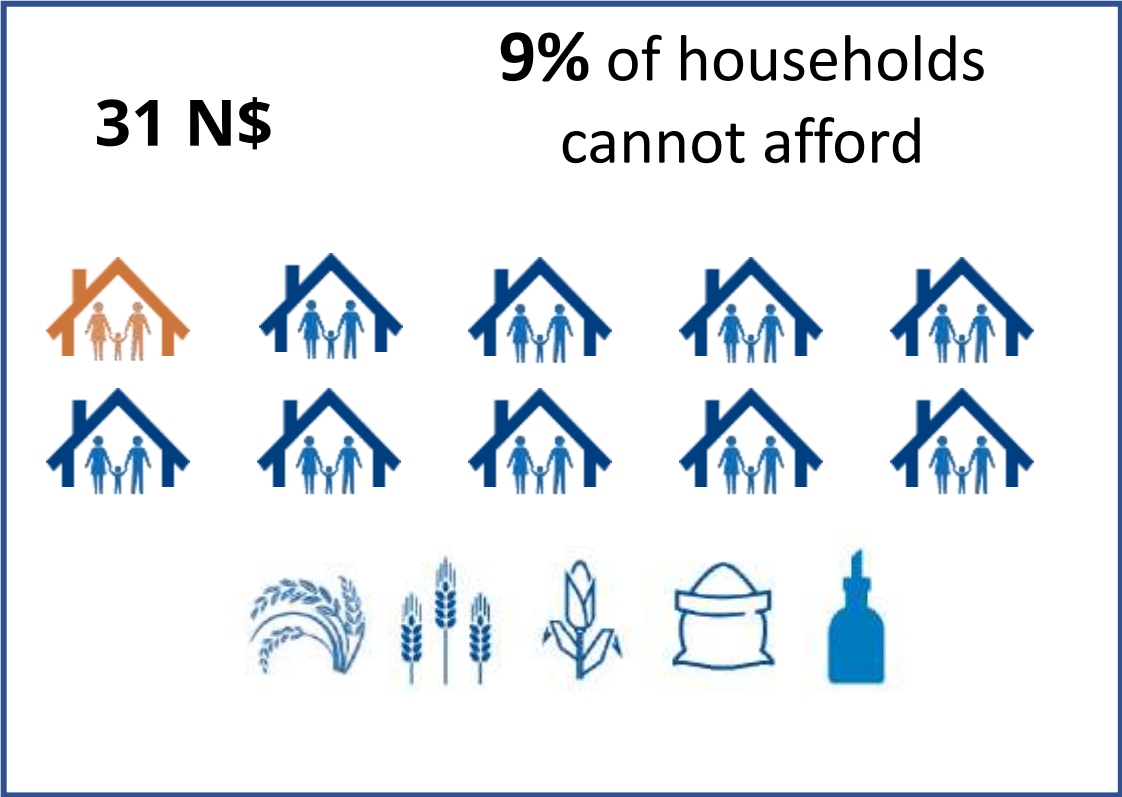
## Economic access to a nutritious diet

Currently, at least one in three households would not be able to afford the nutritious diet.

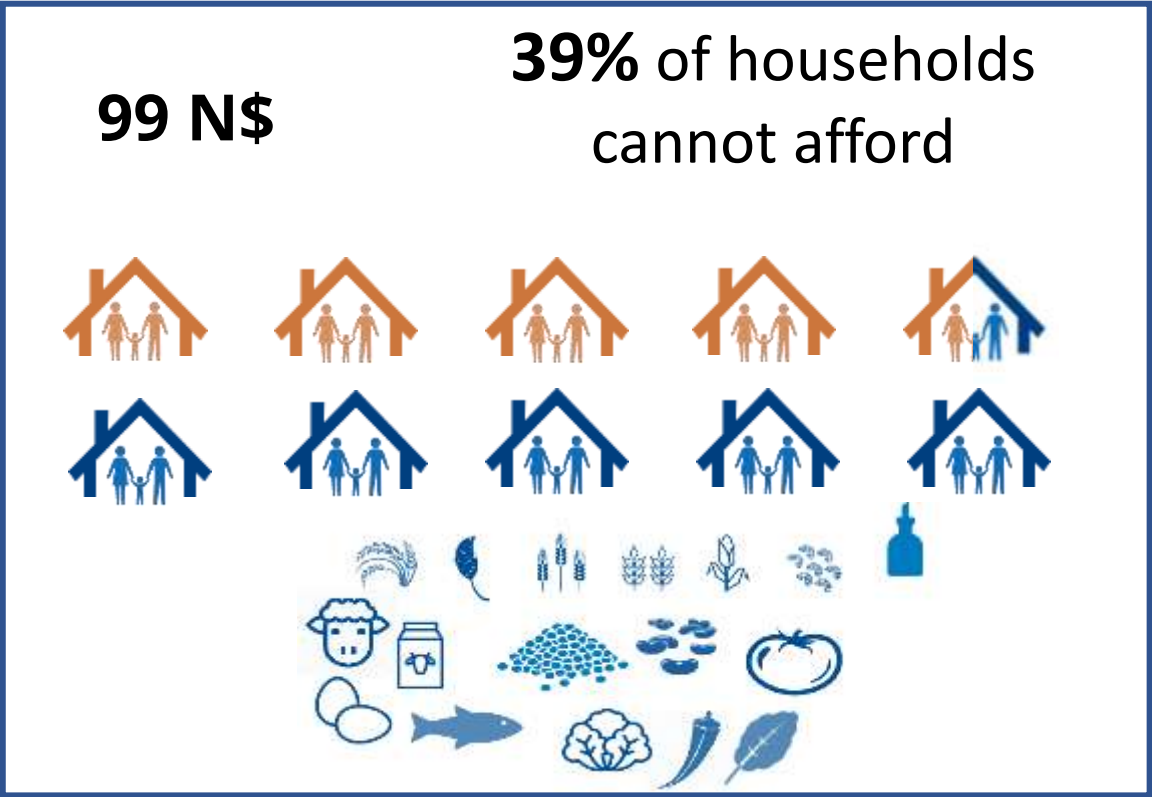
Rural households are most at risk of being unable to afford the diet, with non-affordability higher than 70% in certain provinces.



# One in three households would be unable to afford the lowest cost nutritious diet



Energy-only Diet



Nutritious Diet

CotD 2021, CPI data; NHIES 2015-16 (weights based on population of CPI cities)

# A household in Namibia is missing at least....

Lowest Quintile  
(20%)

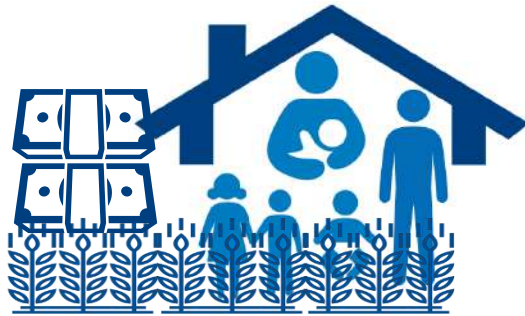


1761 N\$/ month

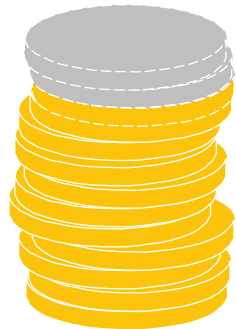


(56% of total cost)

Second Quintile  
(40%)

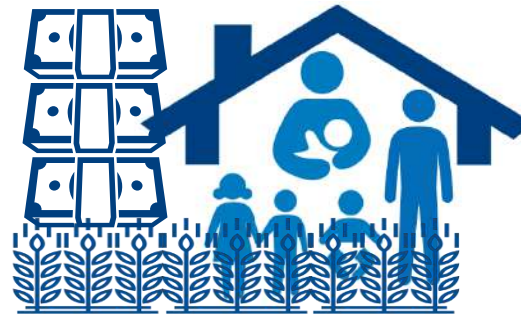


454 N\$/ month



(26% of total cost)

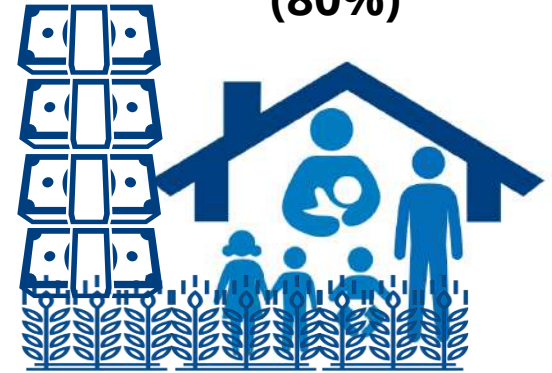
Third Quintile  
(60%)



*no gap*

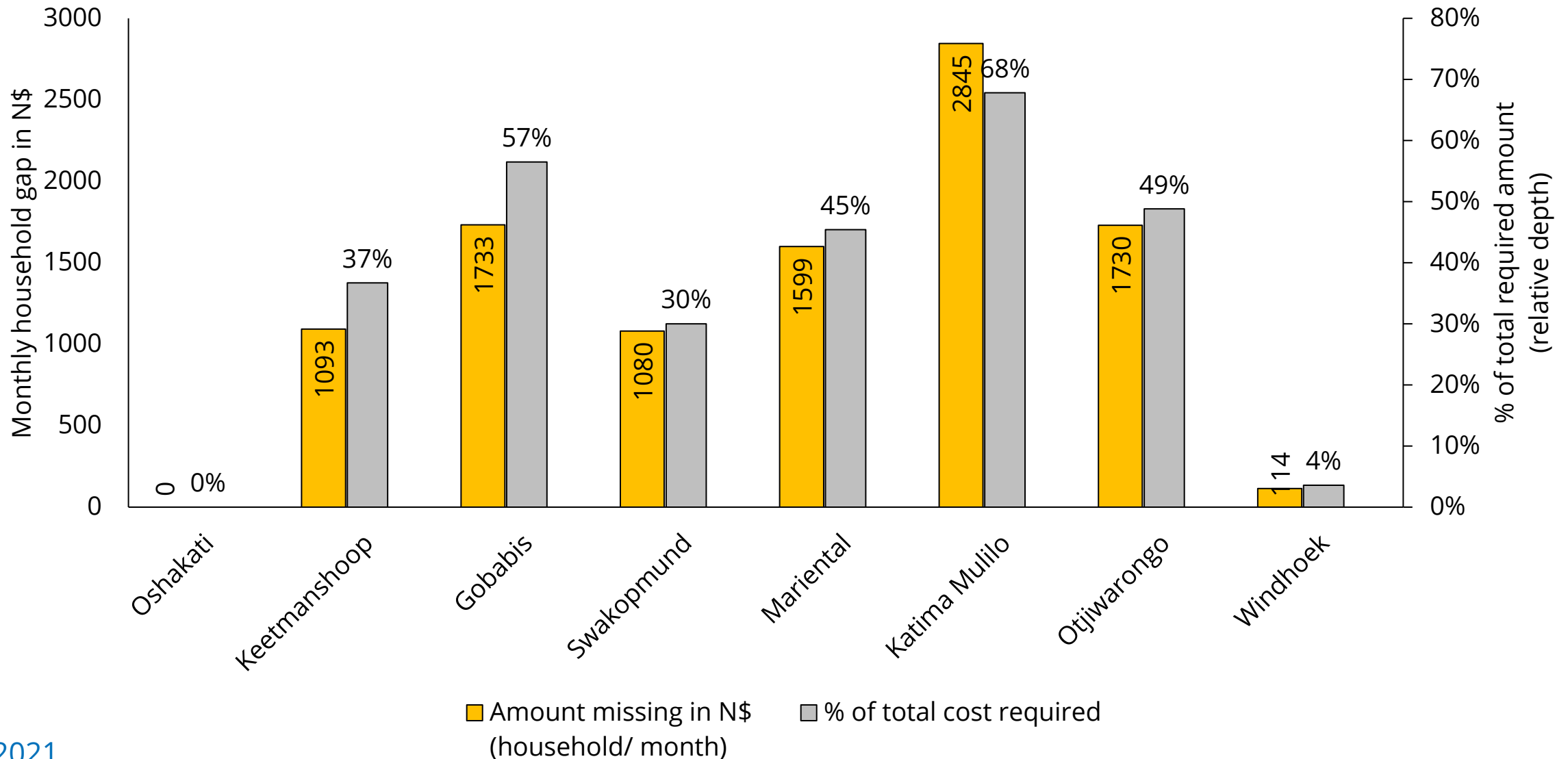


Fourth Quintile  
(80%)

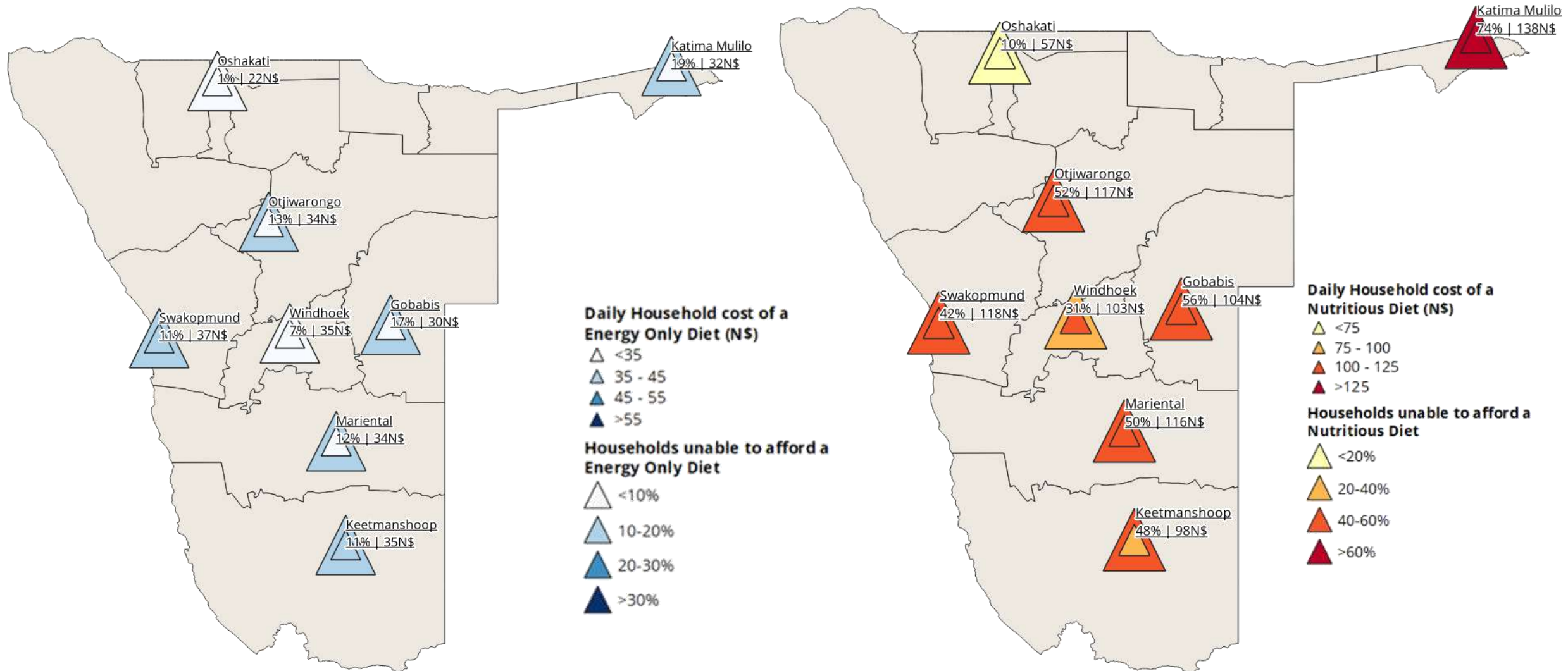


## ...to buy a minimum cost nutritious diet

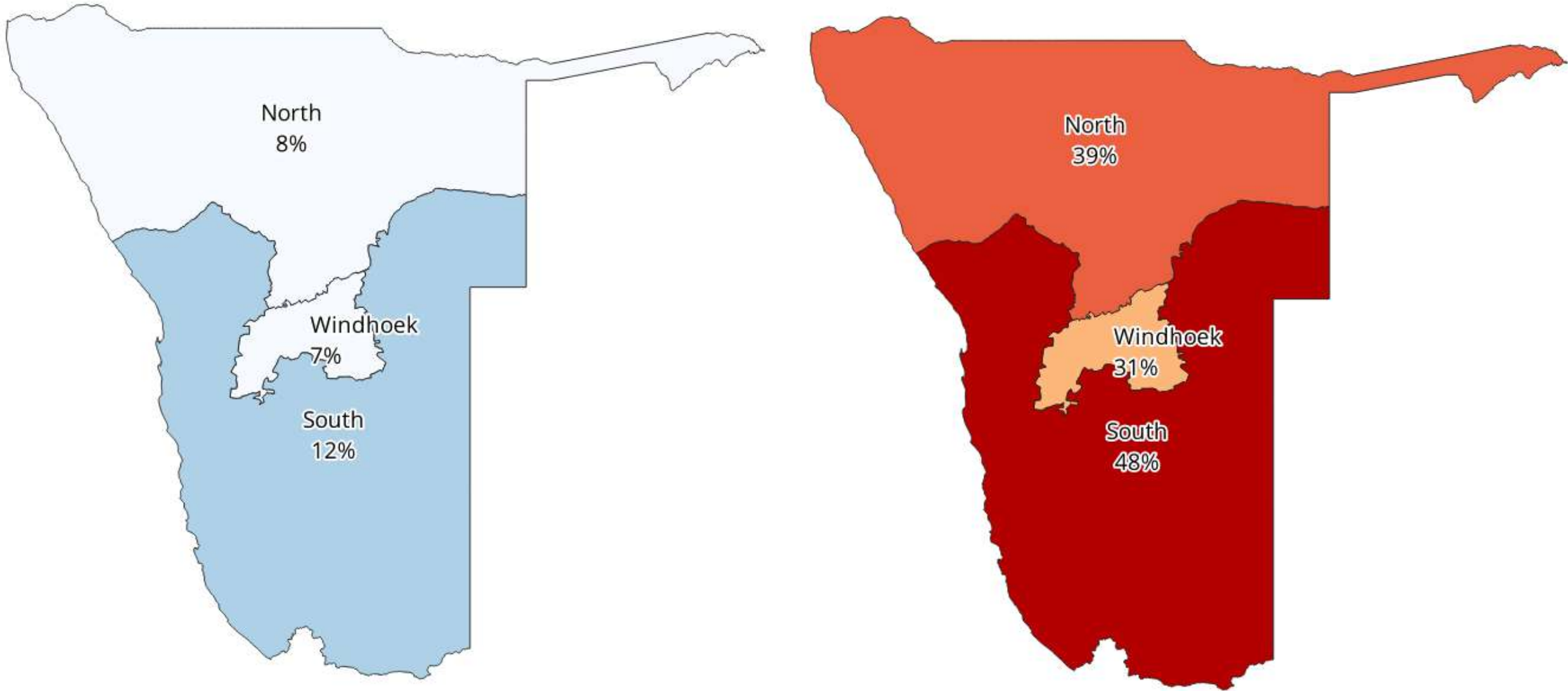
# In some towns the poorest 30% are missing more than half of total amount needed in



# Analysis of CPI data shows variation in cost and non-affordability across the country

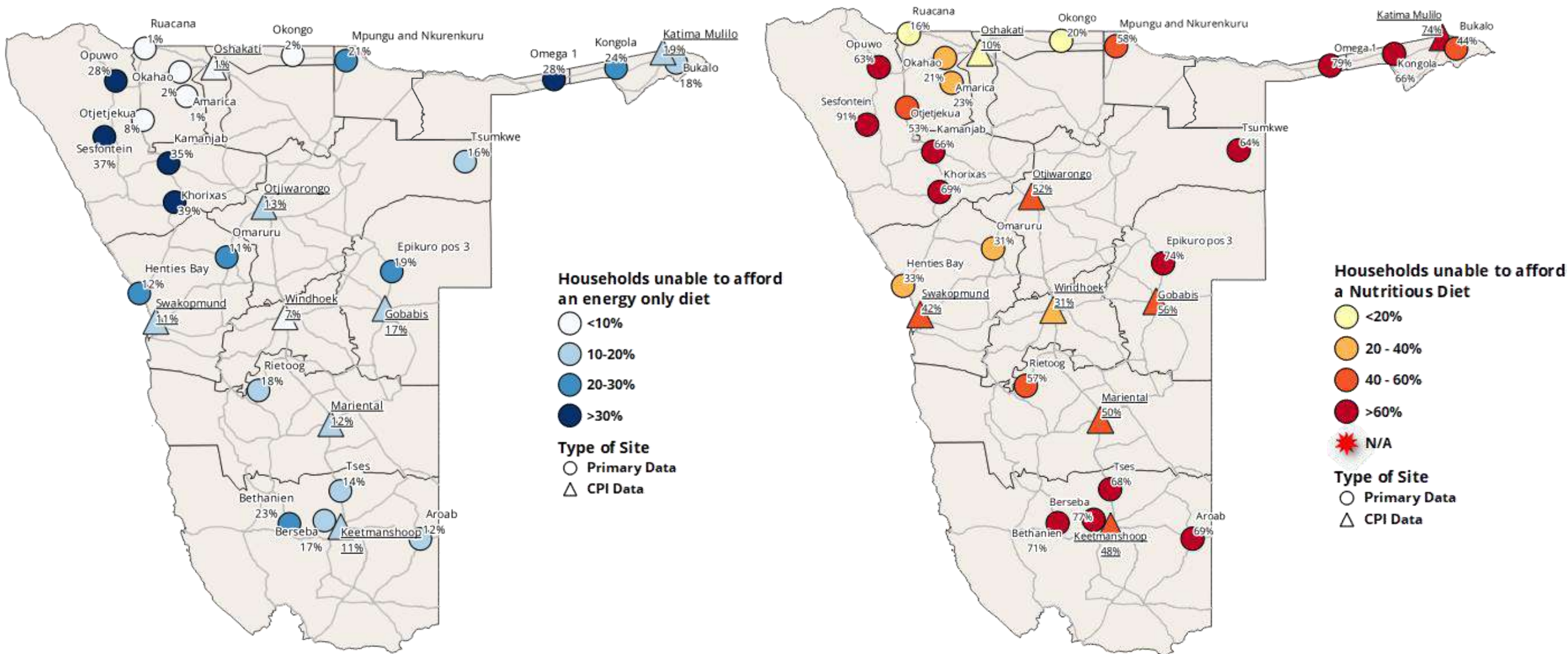


# Non-affordability is highest in the south, due to higher food prices and lower income or food expenditure

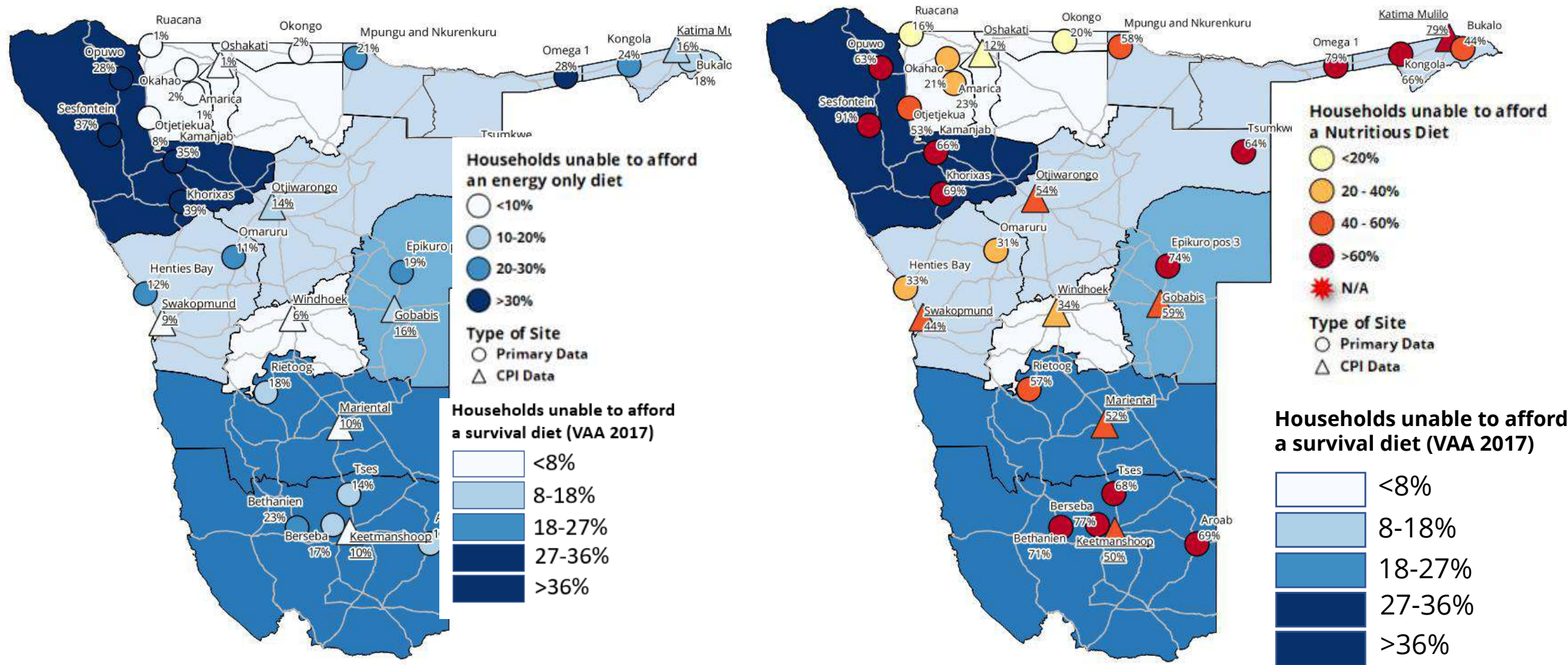




# Non-affordability for both diets is lowest in Oshakati and Windhoek, highest in Katima Mulilo



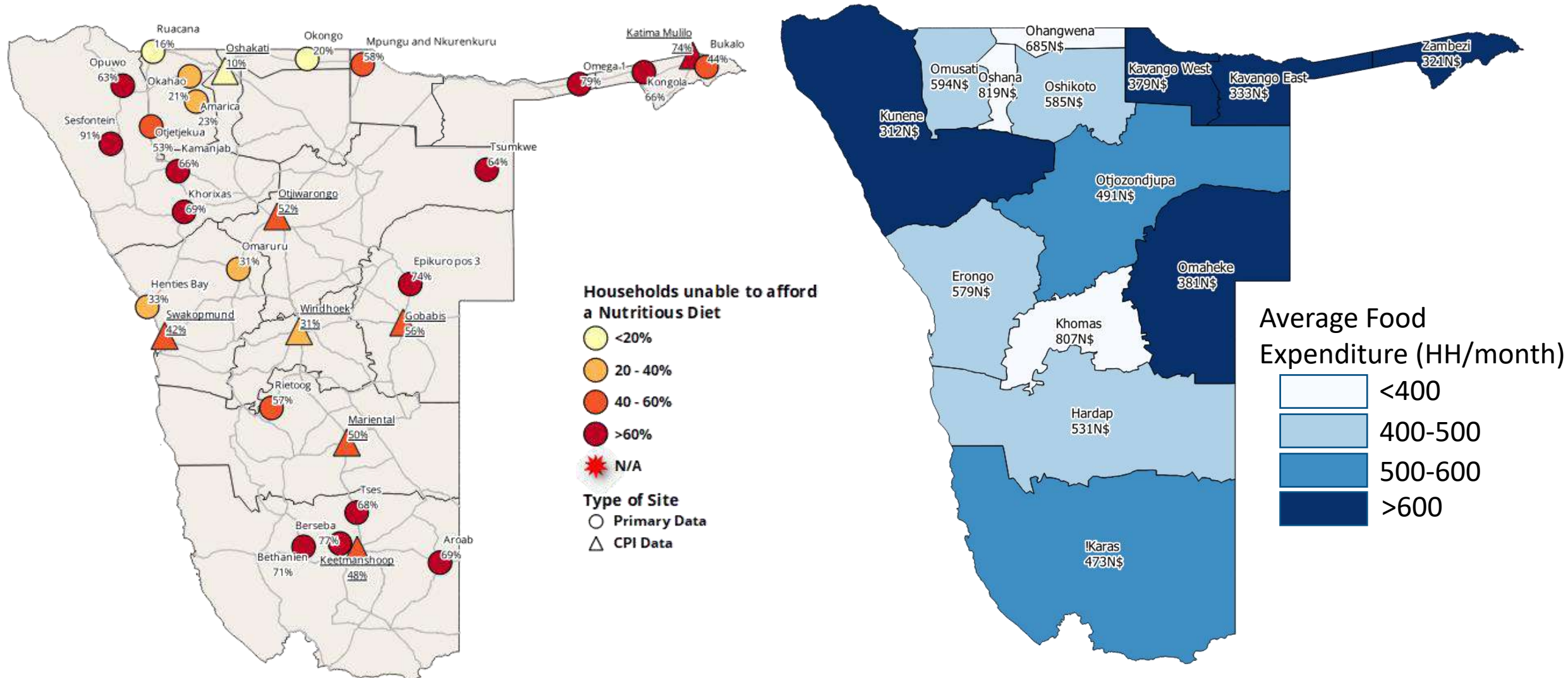
# Non-affordability of both diets is higher in areas where more households cannot afford a survival diet





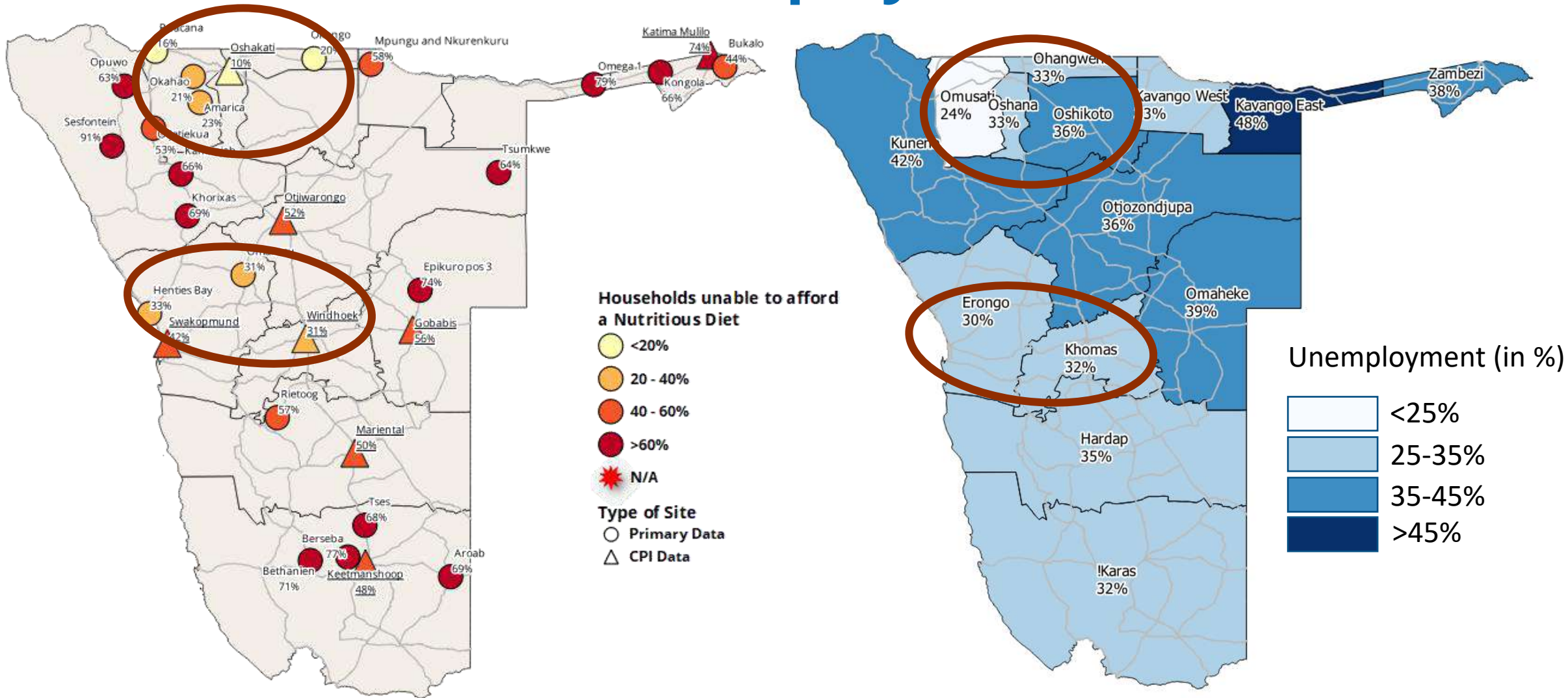


# Non-affordability is to a large degree determined by food expenditure





# Non-Affordability is lowest in areas with lower unemployment







FNG

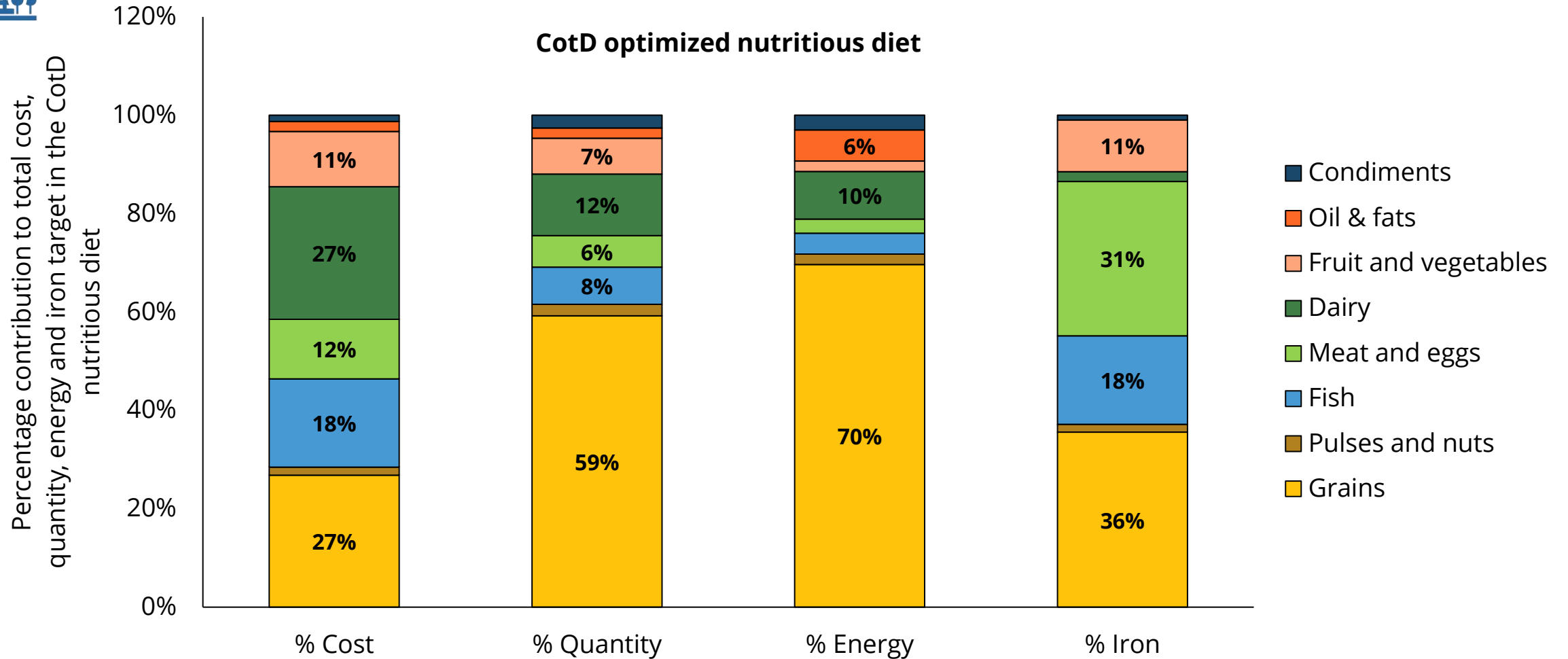
Key Message 4

## Diet Composition

Fresh, nutritious foods contribute the most towards covering micronutrient needs and make up the bulk of the cost of the nutritious diet.

Current food expenditure patterns indicate that households are not consuming sufficient quantities of fruits and vegetables.

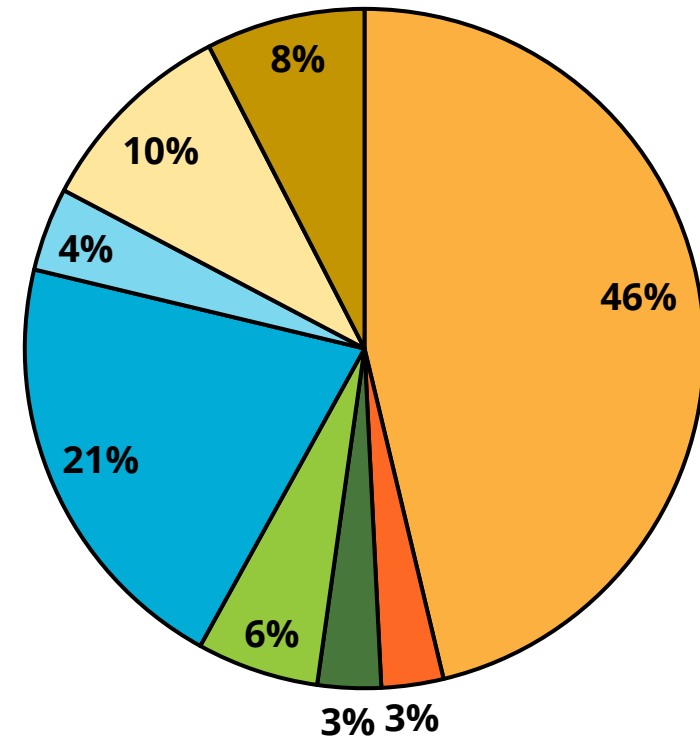
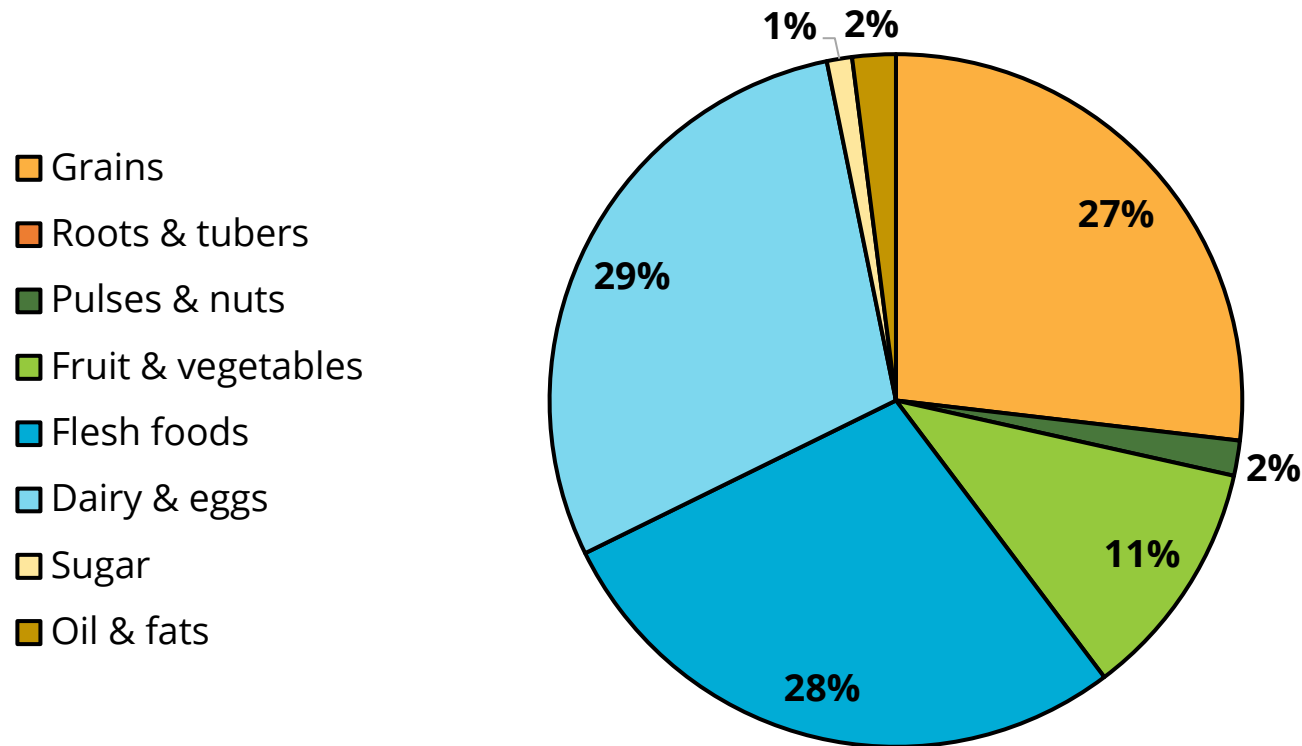
# Cereals cover most of dietary energy, but only a quarter of cost – animal source foods make up a bigger portion of the cost



# Almost half of households' food budget is spent on grains

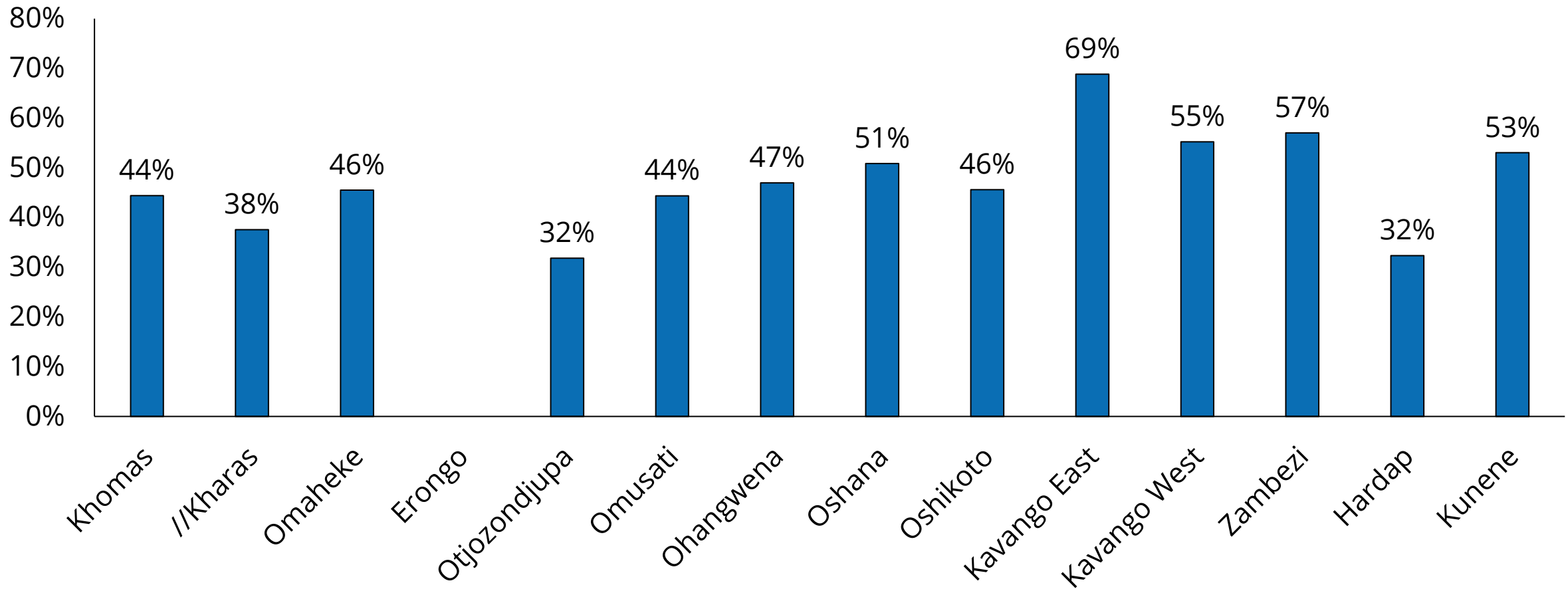
% of the Cost of the Nutritious Diet  
(average monthly cost **N\$ 3,131 / household**)

Expenditure in % of the most vulnerable households  
(VAA 2020, **N\$ 1,242 / household/ month**)

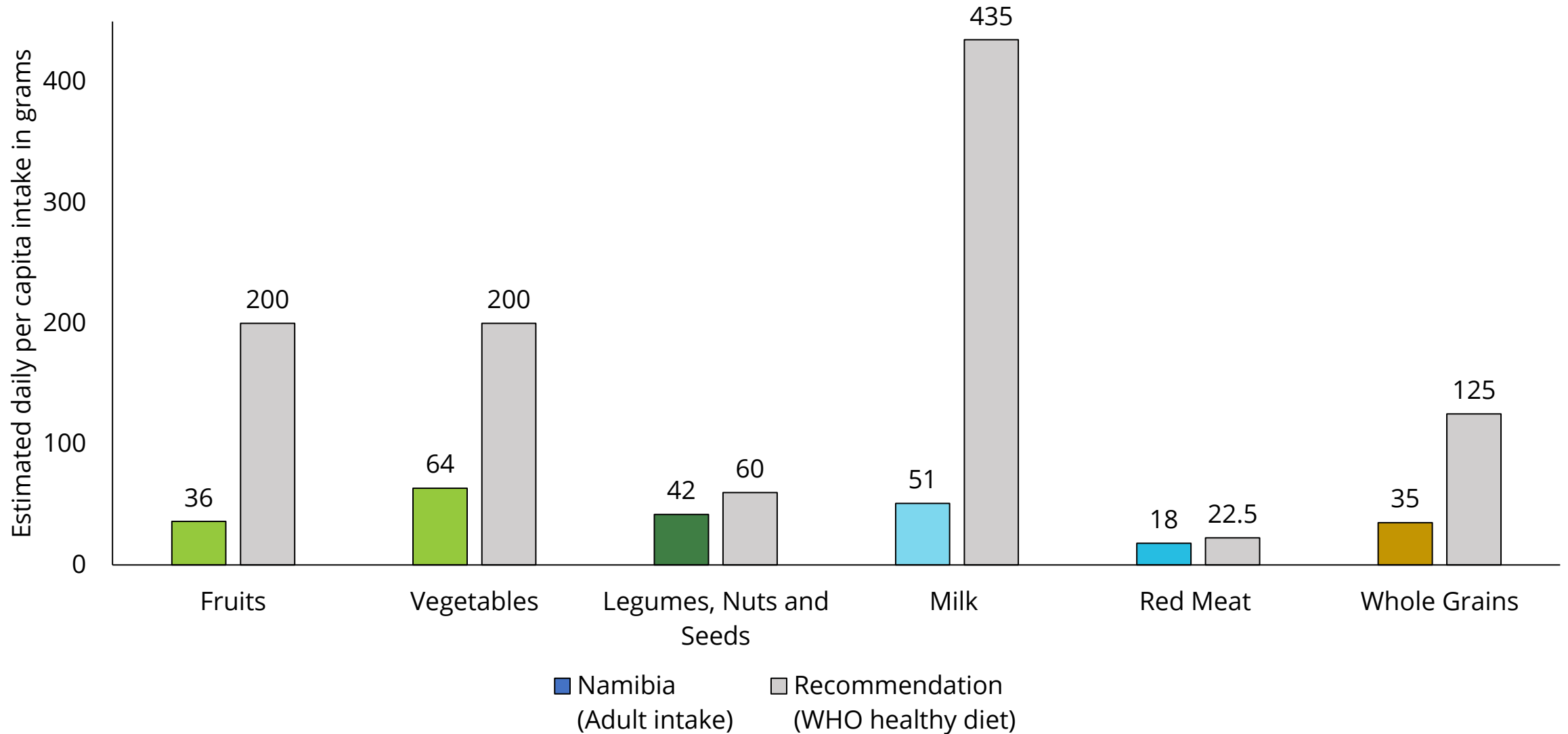


# Vulnerable households spend up to 70 percent of their total food expenditure on grains

Percentage of total food expenditure spent on cereals (VAA only)



# Intakes of micronutrient-dense and protein-rich foods are generally below recommended levels

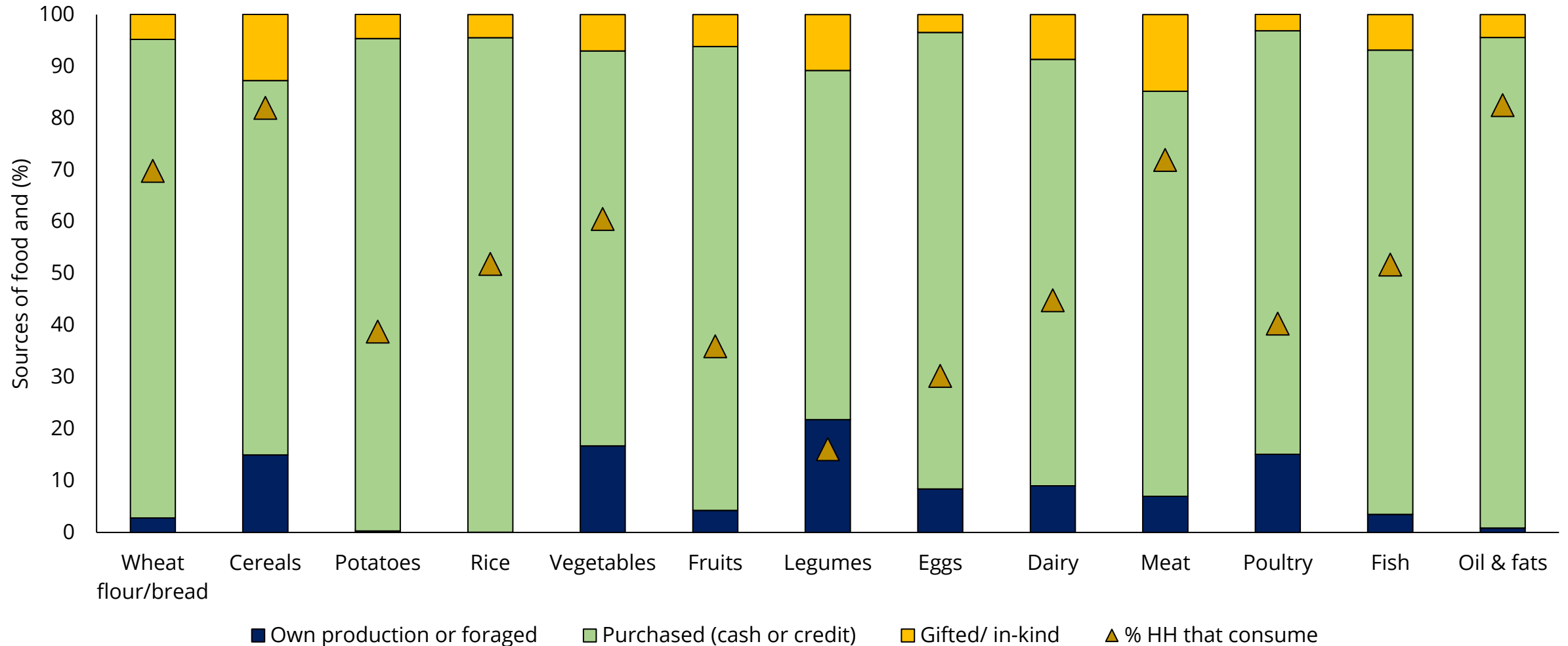




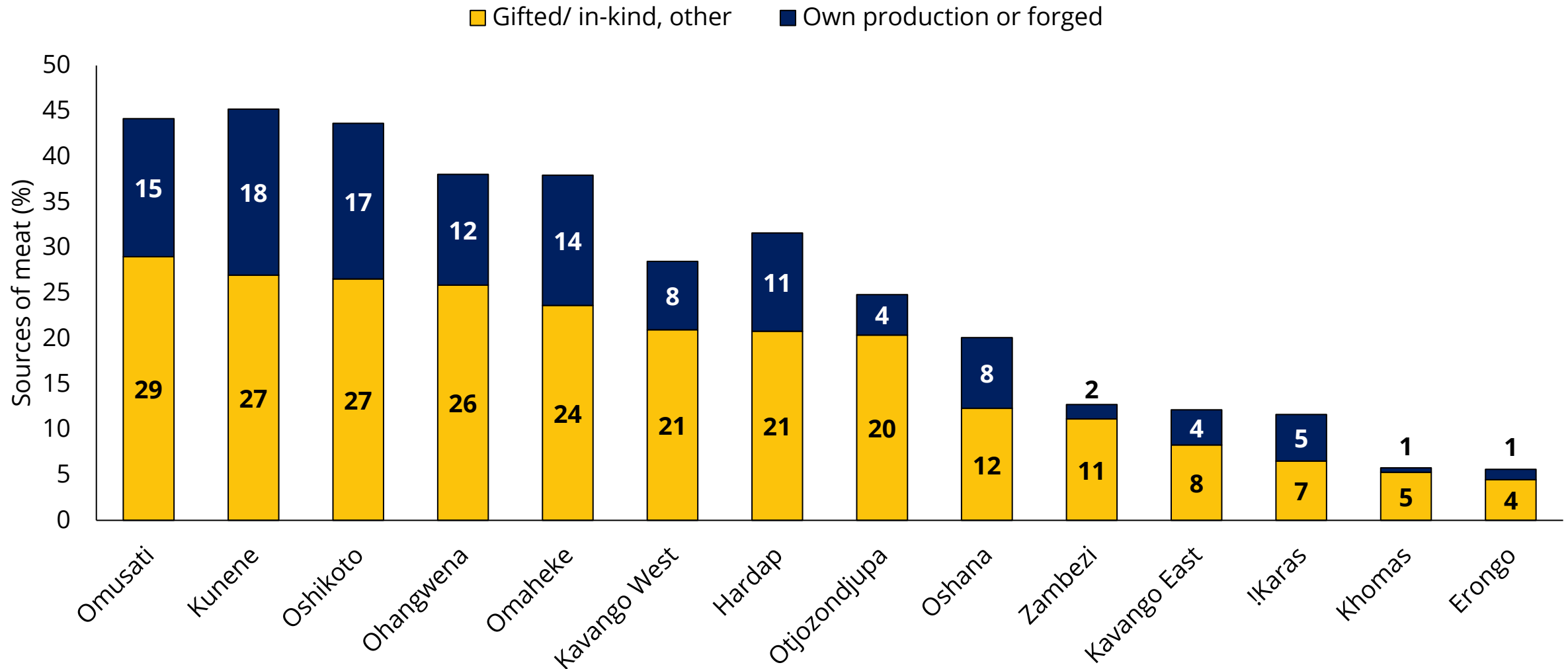
# In addition to consumption, availability is also far below recommended levels for fruits and vegetables



# Most households purchase their food, however, there is variation across regions and food groups

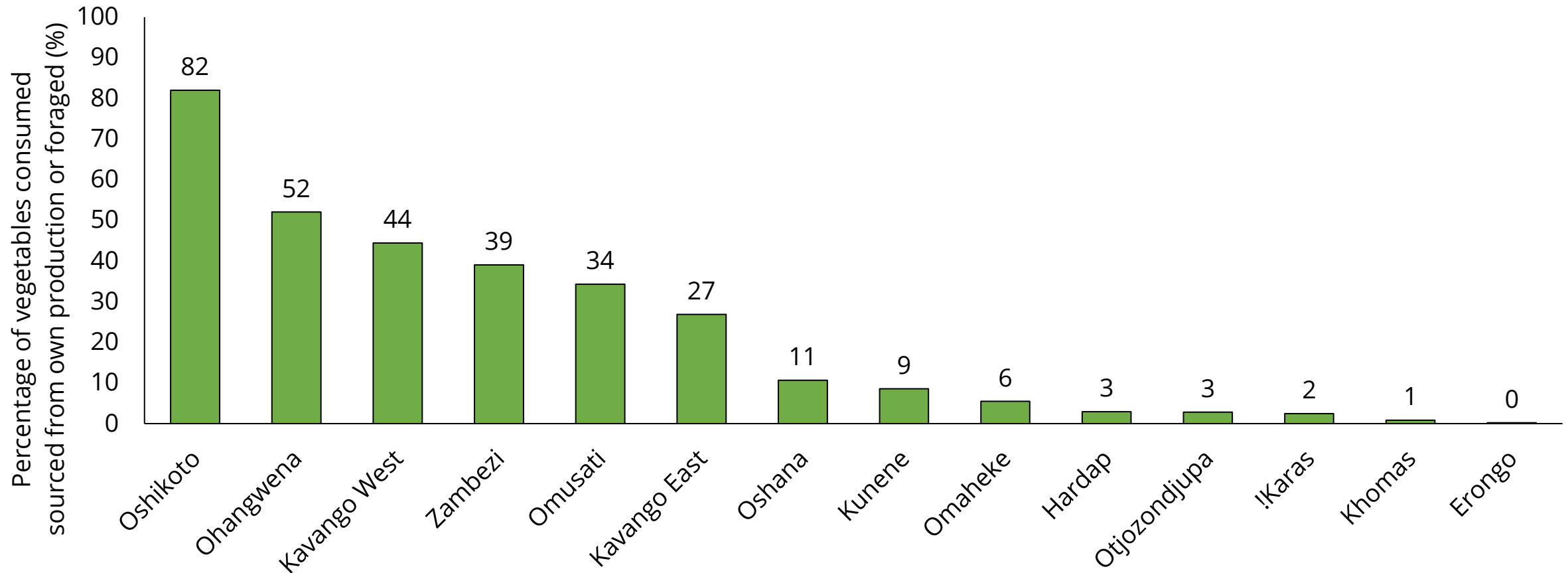


# For some regions, a large proportion of meat consumption comes from gifts or own production



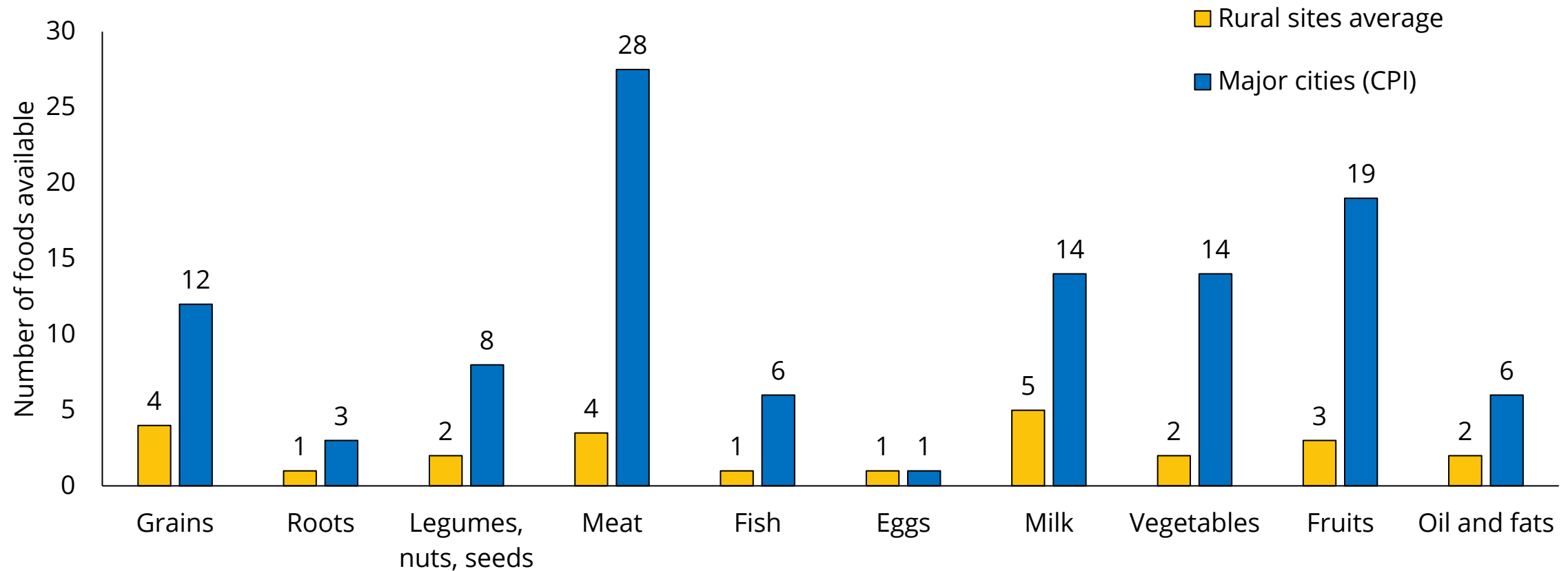
# The contribution of home-grown vegetables to overall consumption is more significant in northern regions

Percentage of vegetables sourced from home consumption or foraged (%)

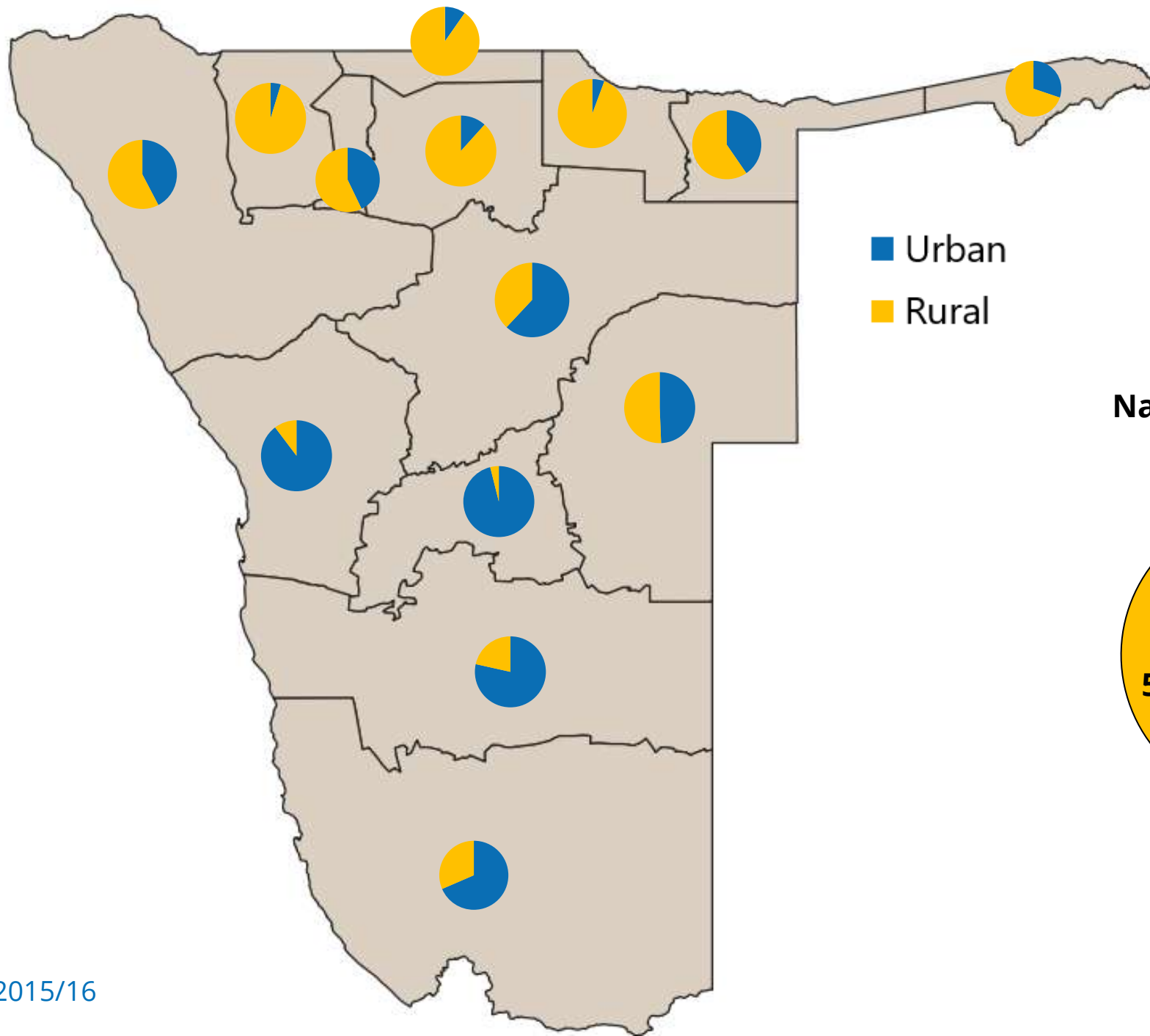


# A greater variety of foods across all food groups are available in urban centres

Number of food items by food group available (median)

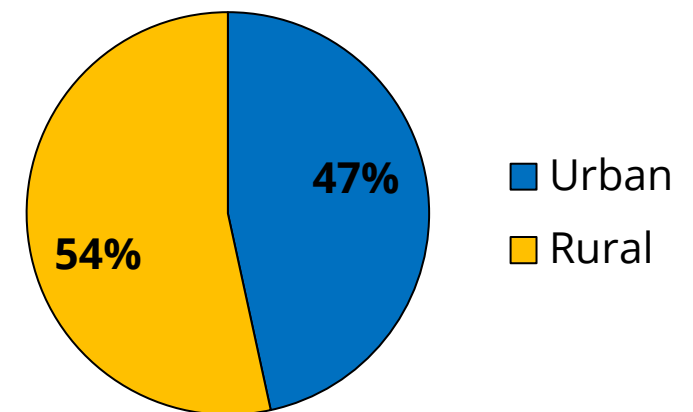




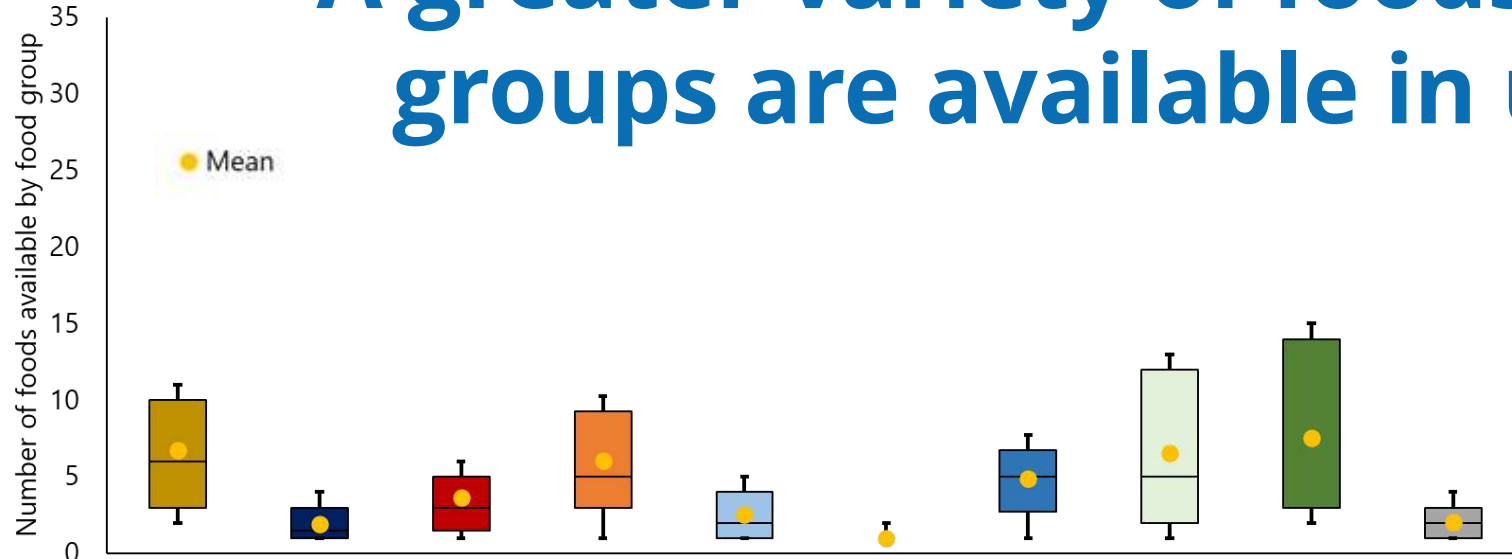


■ Urban  
■ Rural

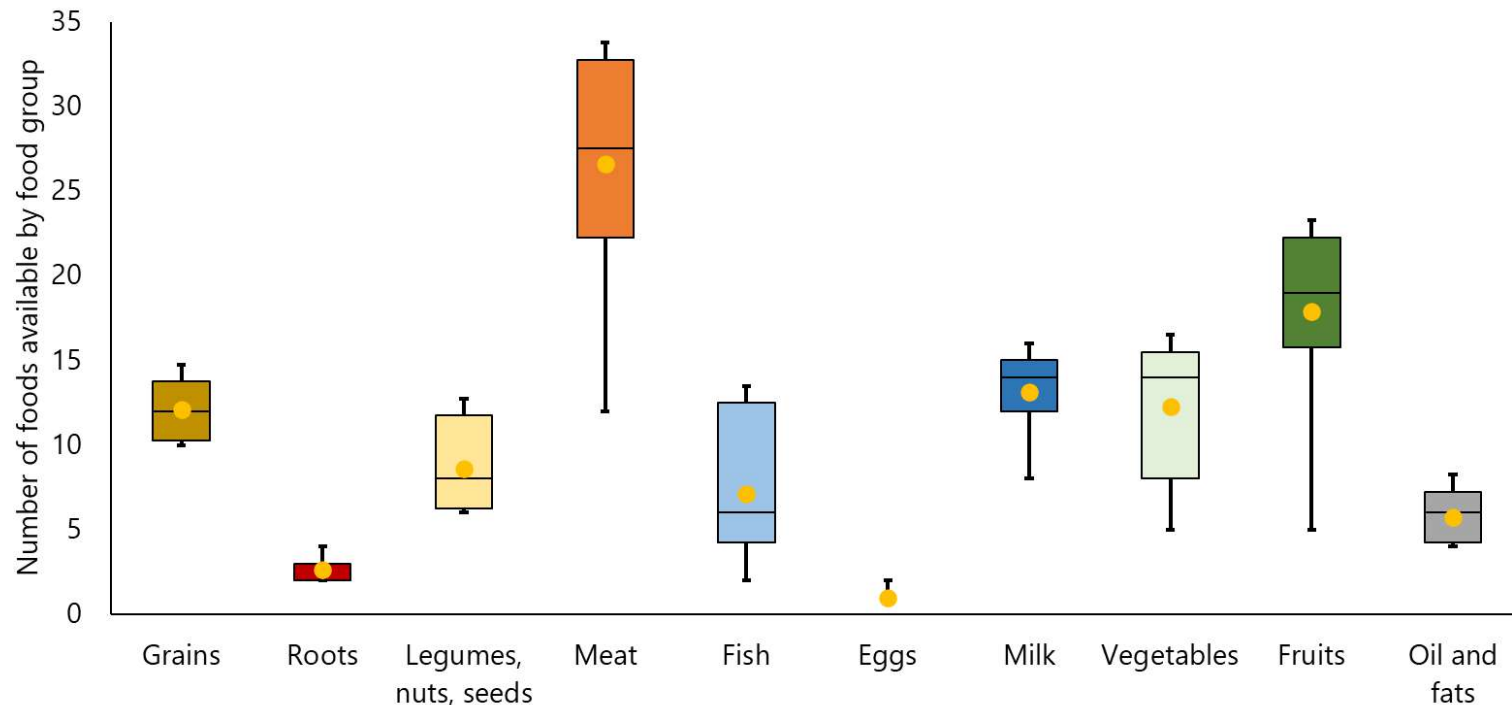
**National average - urban  
vs rural population**



# A greater variety of foods across all food groups are available in urban centres



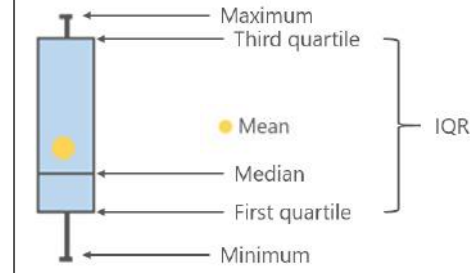
Rural sites



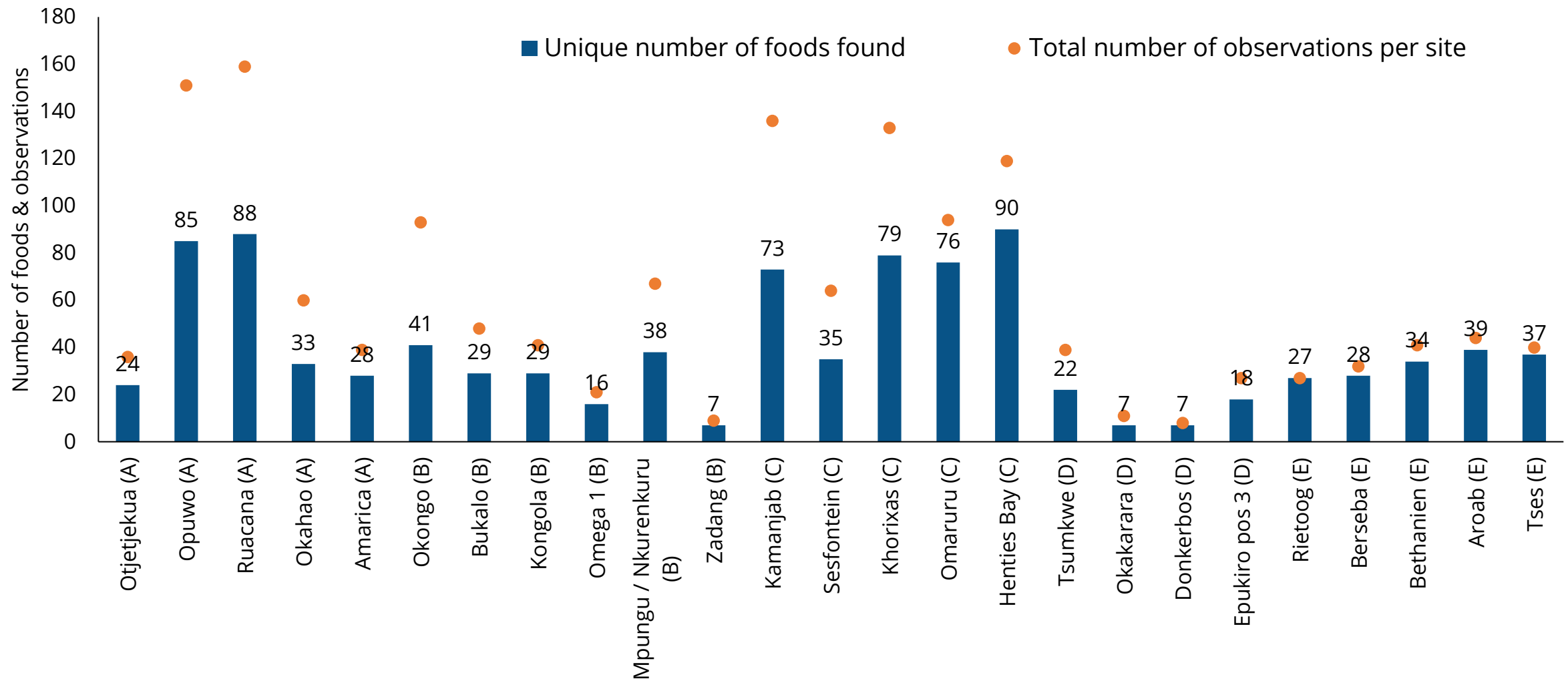
Urban sites



Tip for the reader:



# Number of foods found at data collection sites varied between 7 and 90 commodities

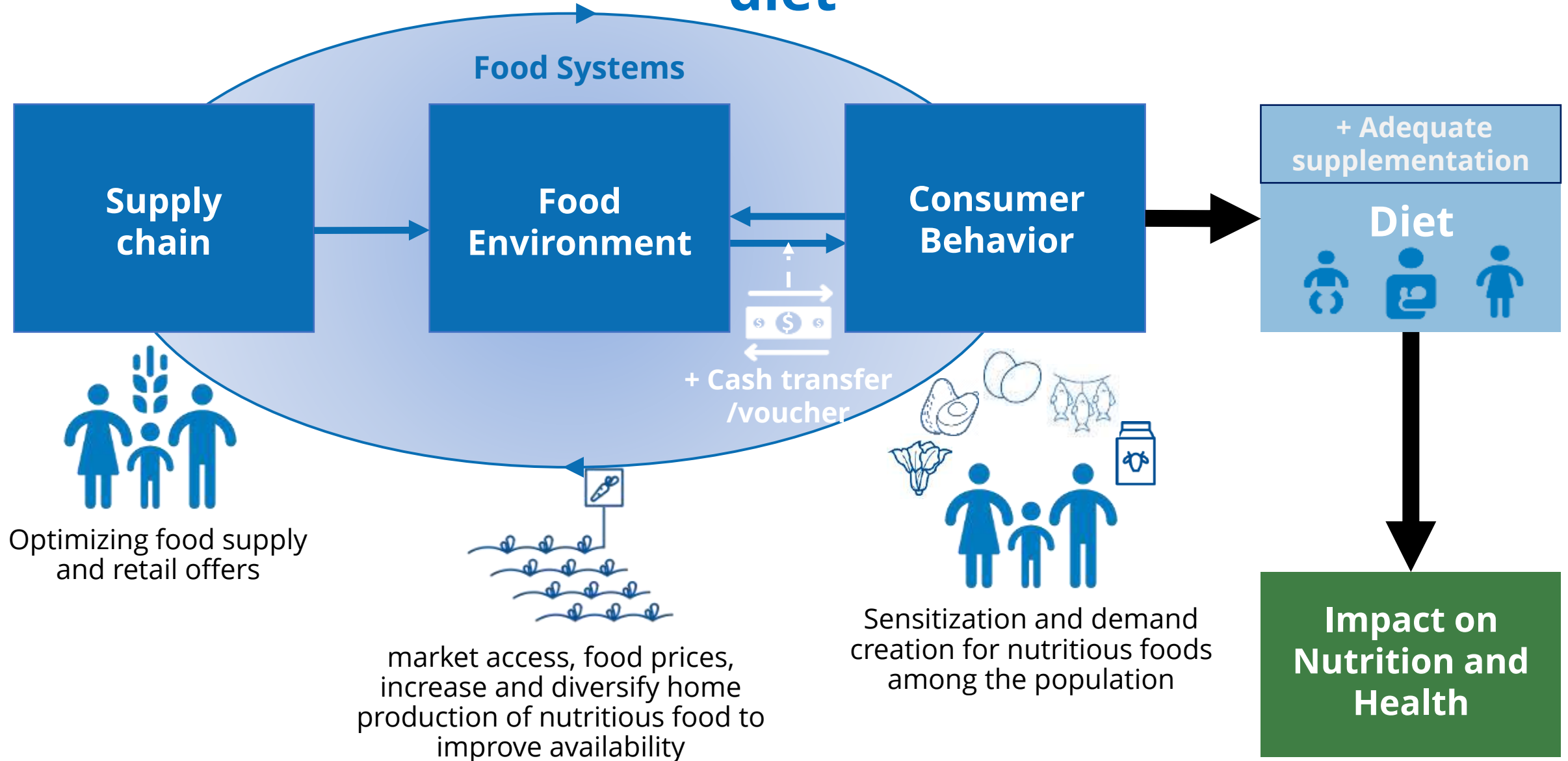


# Agriculture and Homestead Production

Although most households live at least partly off agriculture, the agricultural sector contributes only a small fraction to GDP.

Nutrient-dense foods are not widely produced and main domestic supply are staples.

# A food systems approach for a nutritionally adequate diet



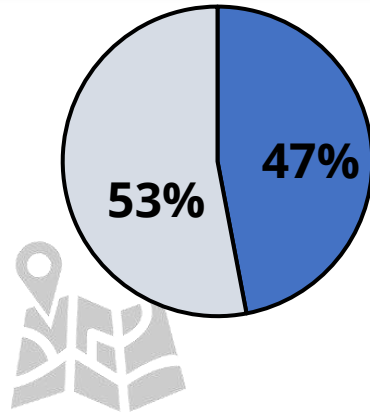


# Agriculture contributes to a small fraction of GDP but is central to the livelihood of many households

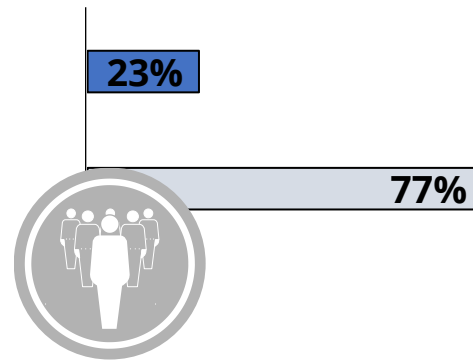
**7.1%**  
of GDP comes  
from  
agriculture



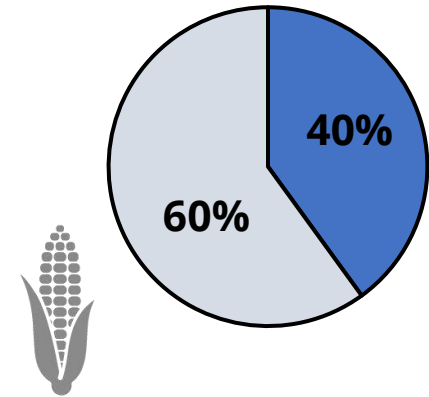
**47%**  
of land area  
is agricultural



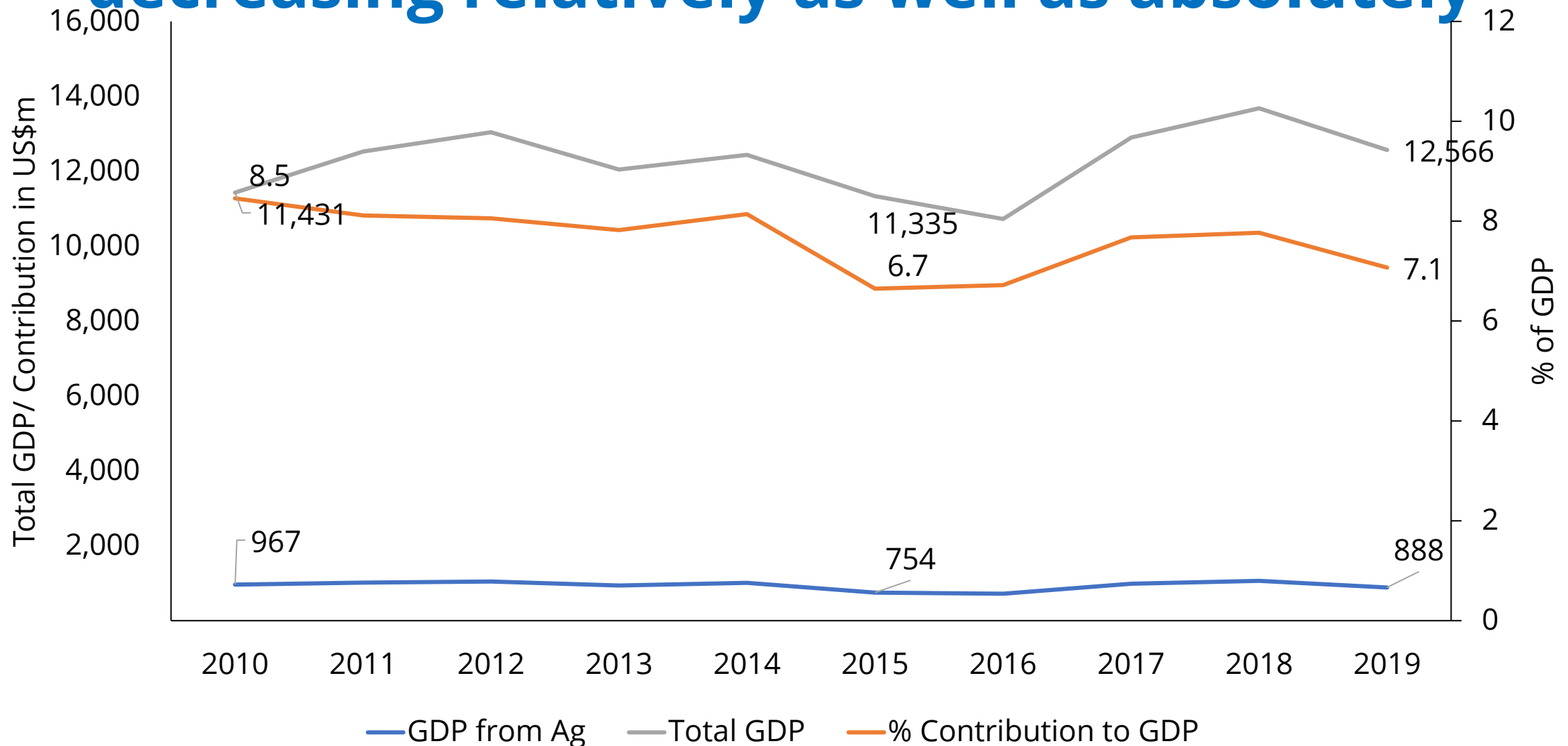
**23%**  
of economically  
active  
population in  
agriculture



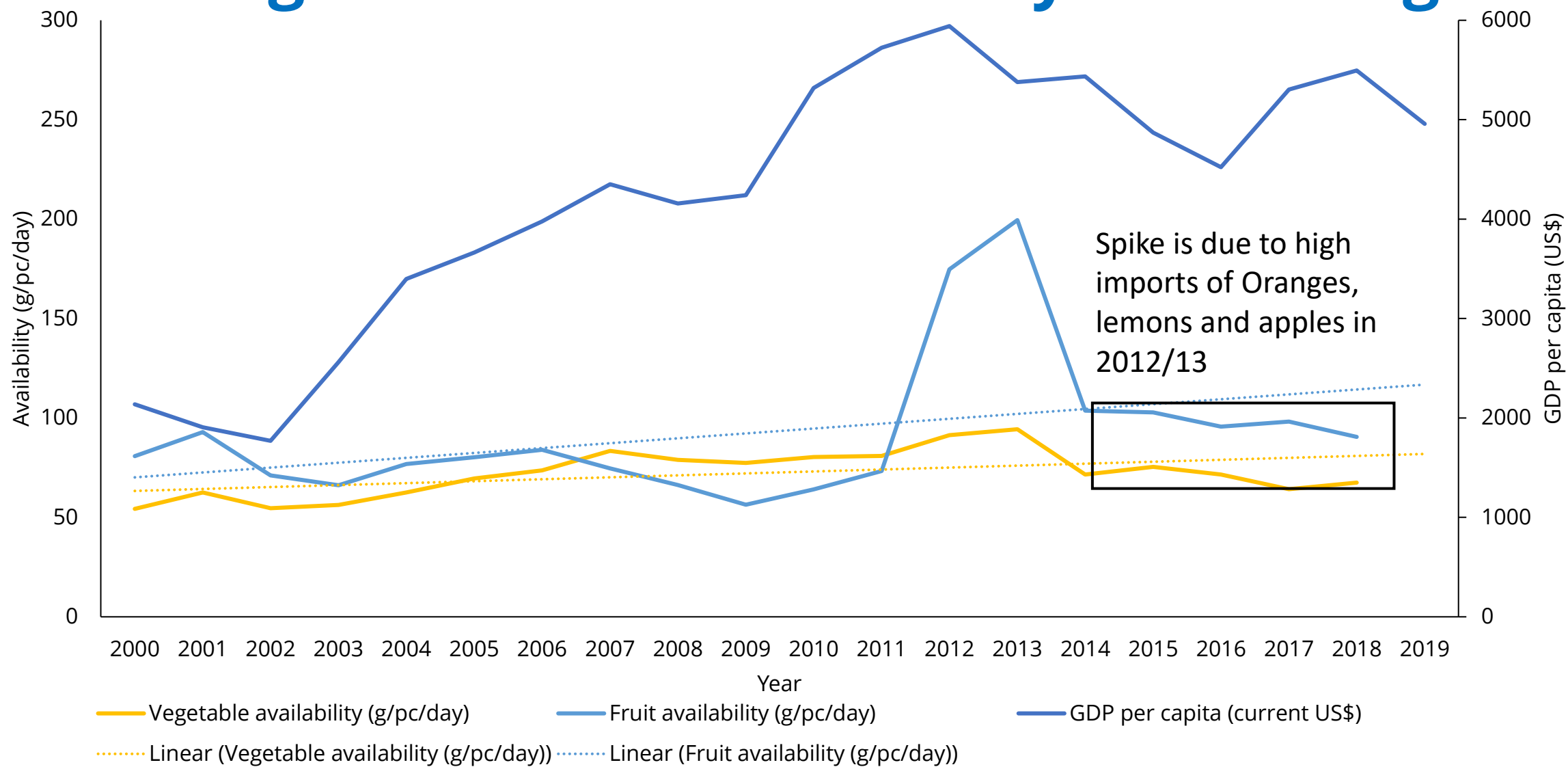
**Only 40%**  
of foods  
consumed  
are produced  
in country



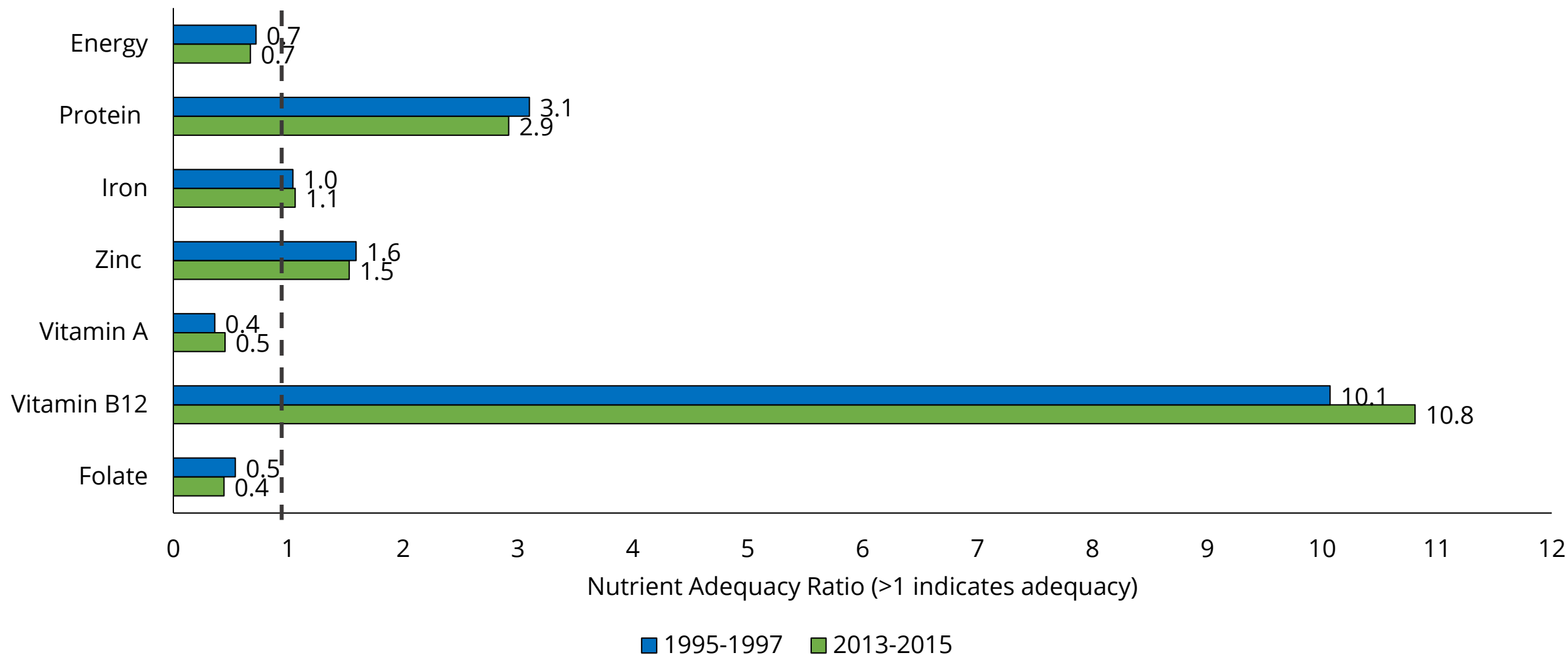
# Agriculture's contribution to GDP has been decreasing relatively as well as absolutely



# Availability of vegetables and fruits has been stagnant and most recently decreasing



# For some micronutrients, national production is below adequate levels to meet domestic needs



# Exports are dominated by high-value products, imported basic foods may be unattainable for poorer people

Table 4: Net Exports 2017/18

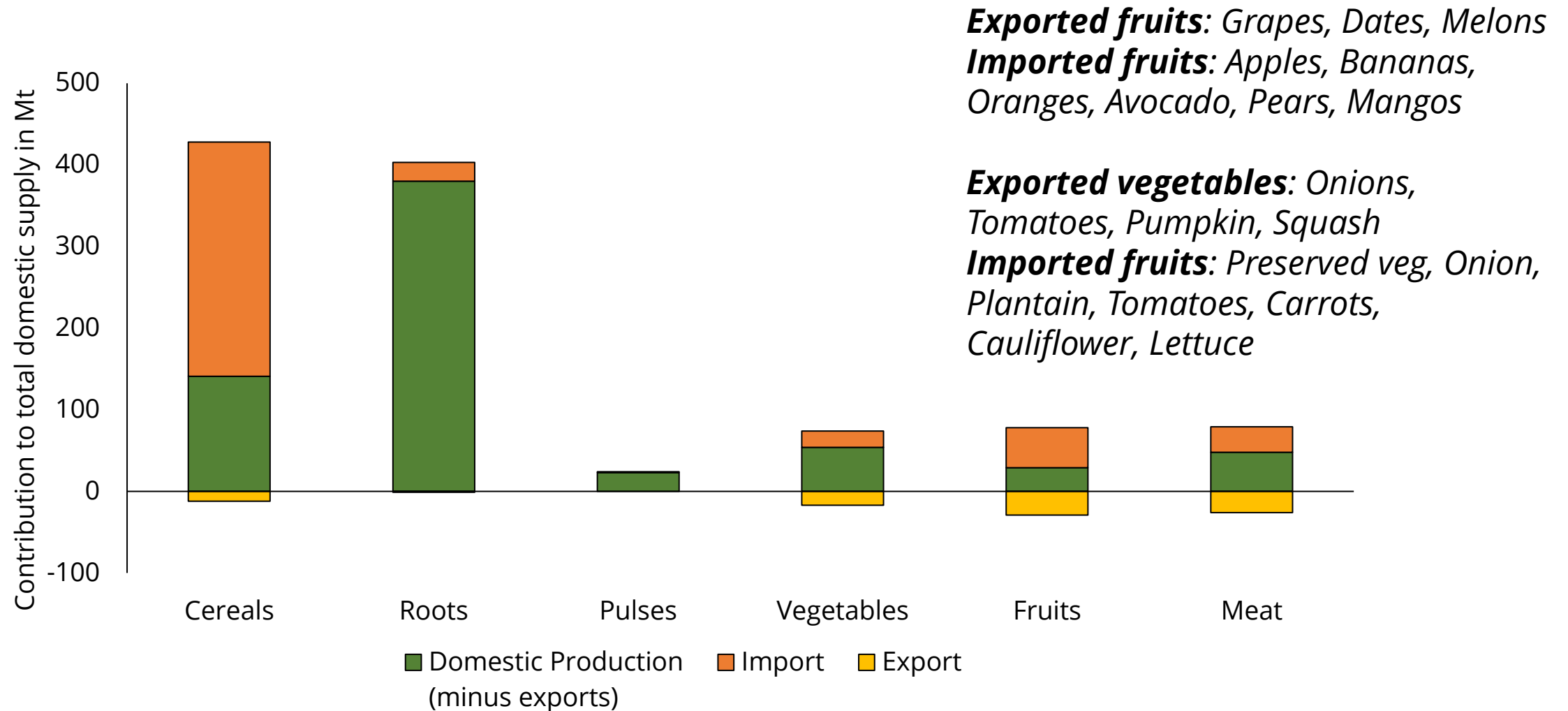
Net Exports (2017/18)	N\$
Cattle	3.4 billion
Sheep and goat	830 million
Grapes	818 million
Trophy hunting	540 million
Charcoal	185 million
<b>Total</b>	<b>5.77 billion</b>

Table 5: Net Imports 2017/18

Net Imports (2017/18)	N\$
Poultry	850 million
Grains	408 million
Vegetables	211 million
Dairy	141 million
Pork	124 million
<b>Total</b>	<b>1.73 billion</b>



# Up to 1/3 of total availability for vegetables, fruits and meats is exported



# Initiatives as Green Schemes and large-scale fortification can increase availability of nutritious food

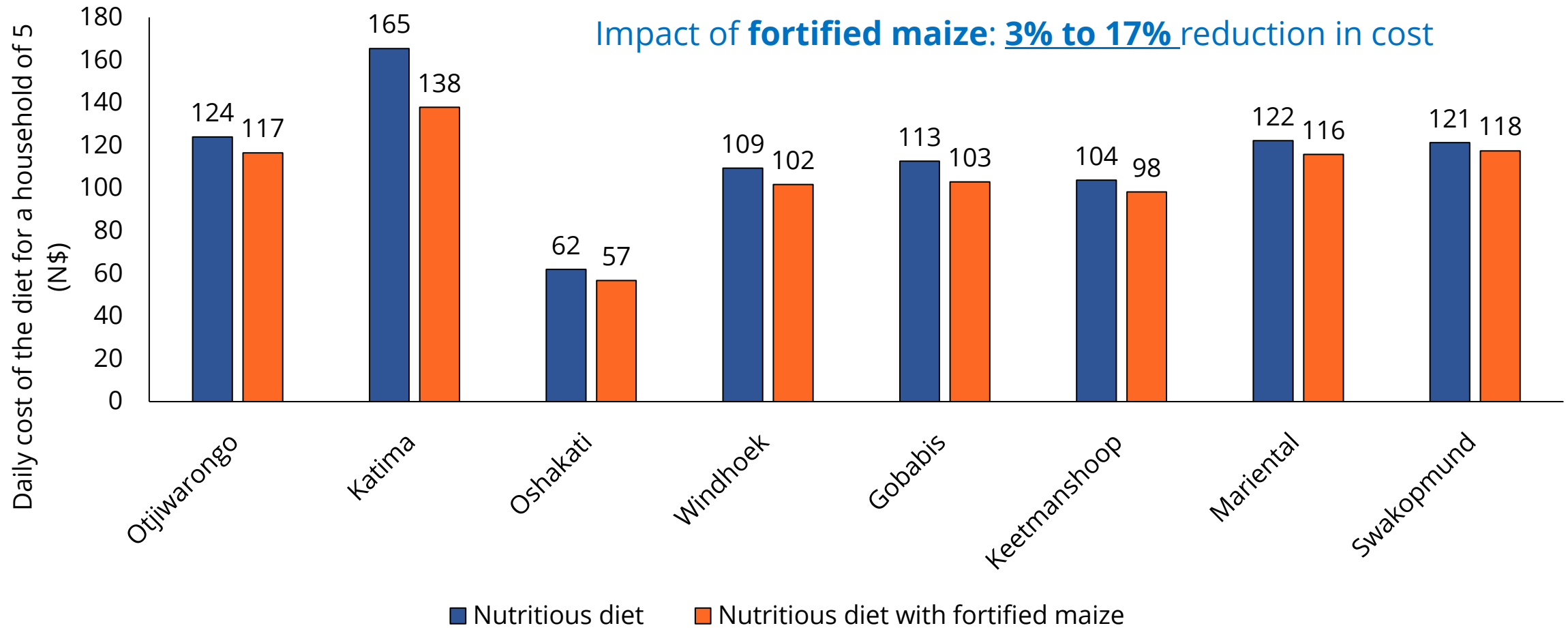
## Green Scheme projects

- Program of investment and promotion of increased food productivity through irrigation
- Increase agriculture production and its contribution to GDP
- Diversify agricultural production
- Promote food security of households

## Large-scale fortification (post-harvest)

- Regional Food and Nutrition Security Strategy (2015-2025)
- To receive milling license, NAB (National Agronomic Board) requires mills to be able to fortify
- SADC Minimum Standards for Food Fortification

# Fortification of staples can increase access to nutrients and lower the cost of a diet



# Green Schemes contribute significantly to production of fruits and vegetables

## Total land under production

**896** hectares in  
1990



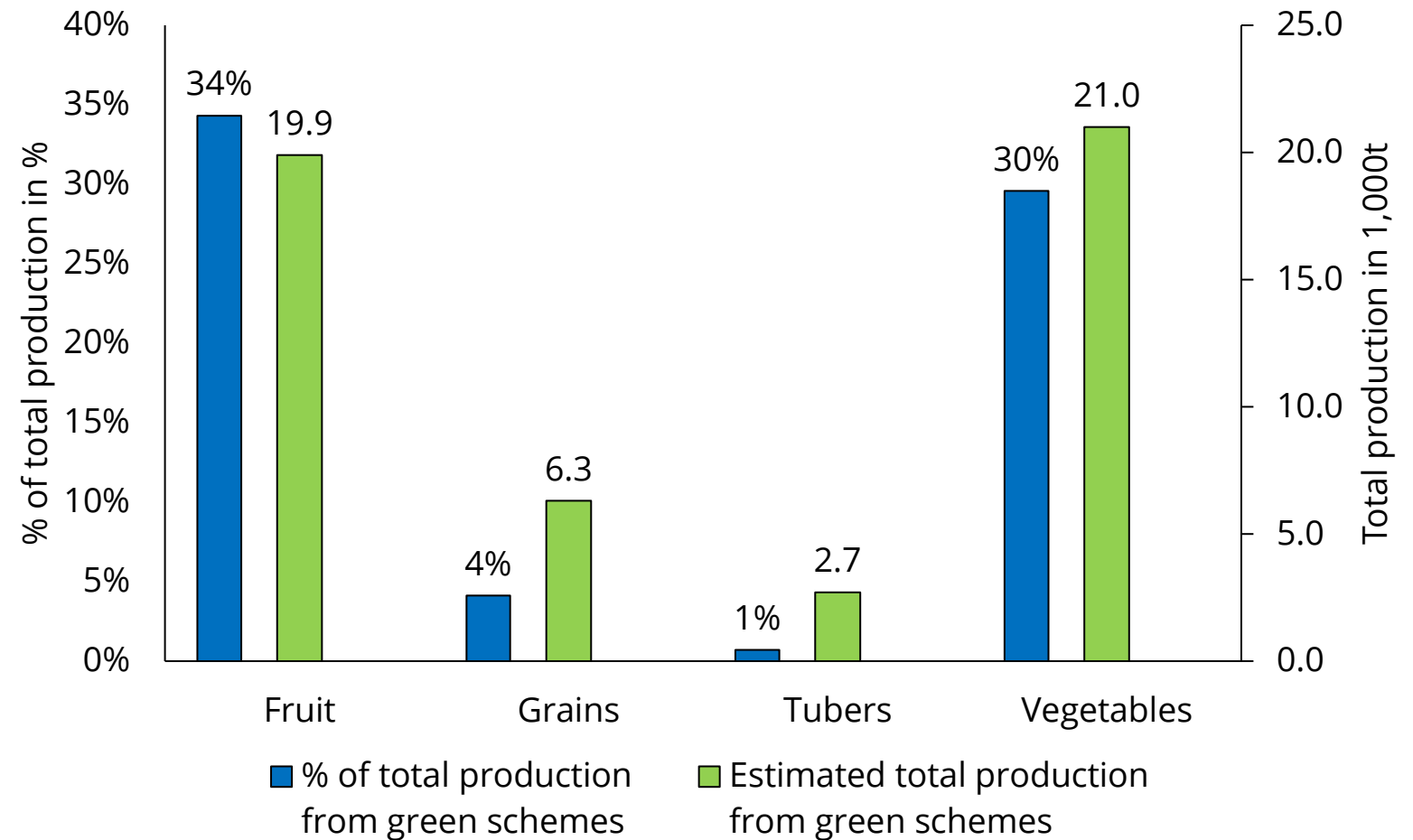
**6,271** hectares in  
2019

## Yearly production

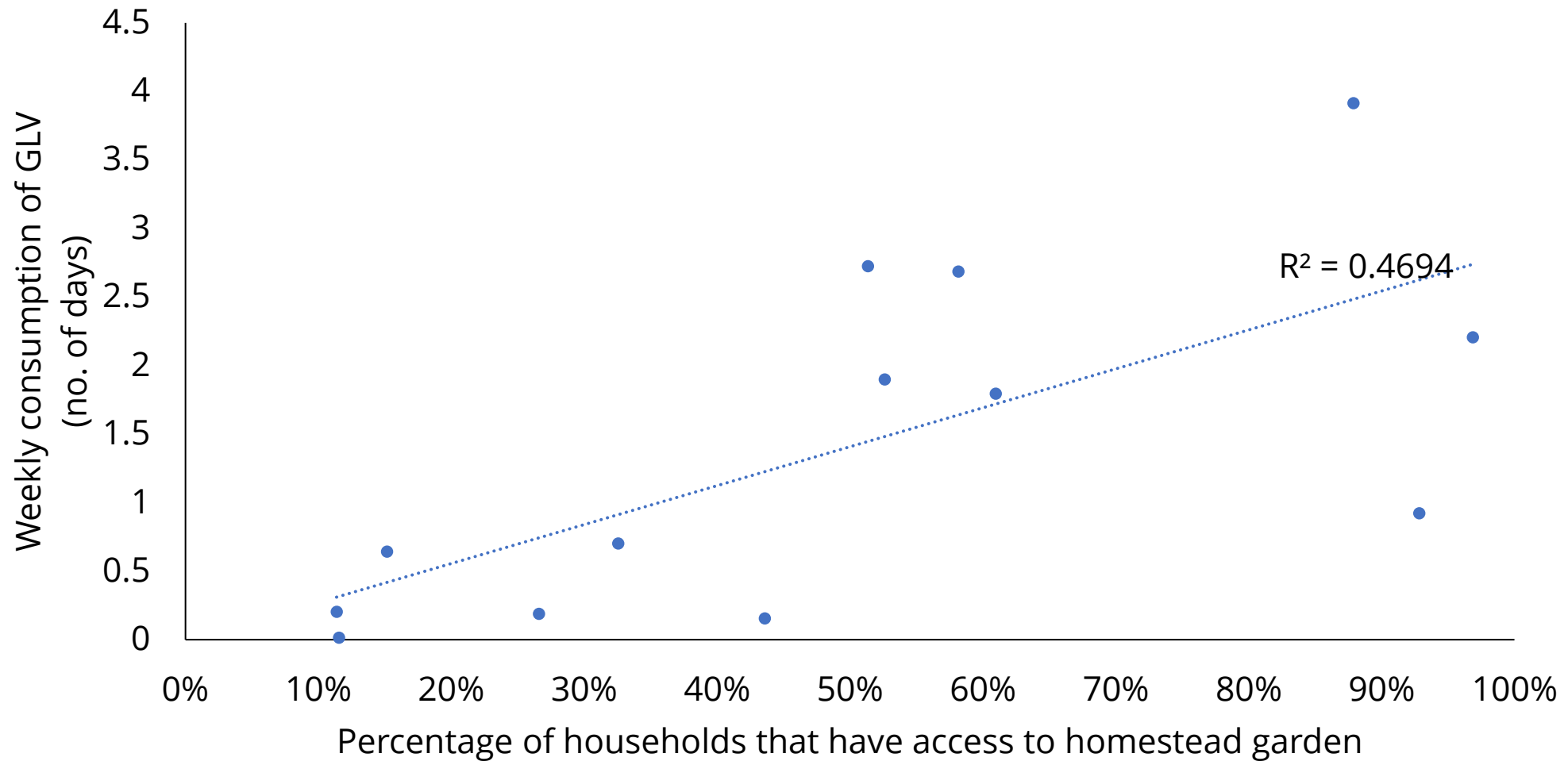
**7,168 t** in 1990



**50,168 t** in 2019



# Access to homestead gardens is associated with higher frequency of consumption of GLV

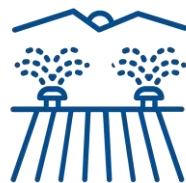




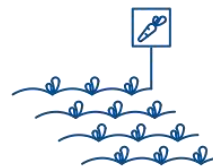
# Installing a greywater filter and irrigation system for improved production of horticulture products



Loan to purchase  
and install system



Sufficient water to  
irrigate 1 hectare\*



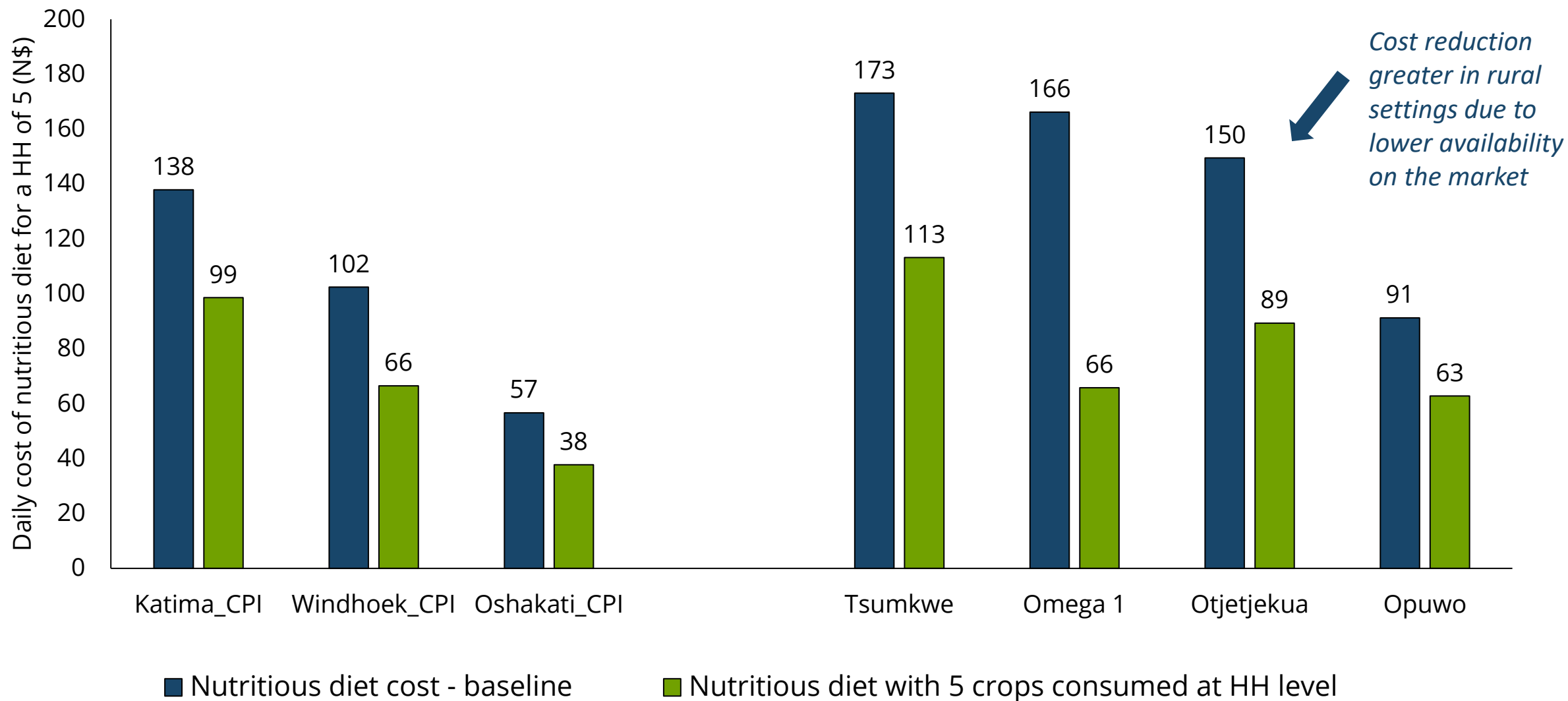
Farmers with 1  
hectare of land\*



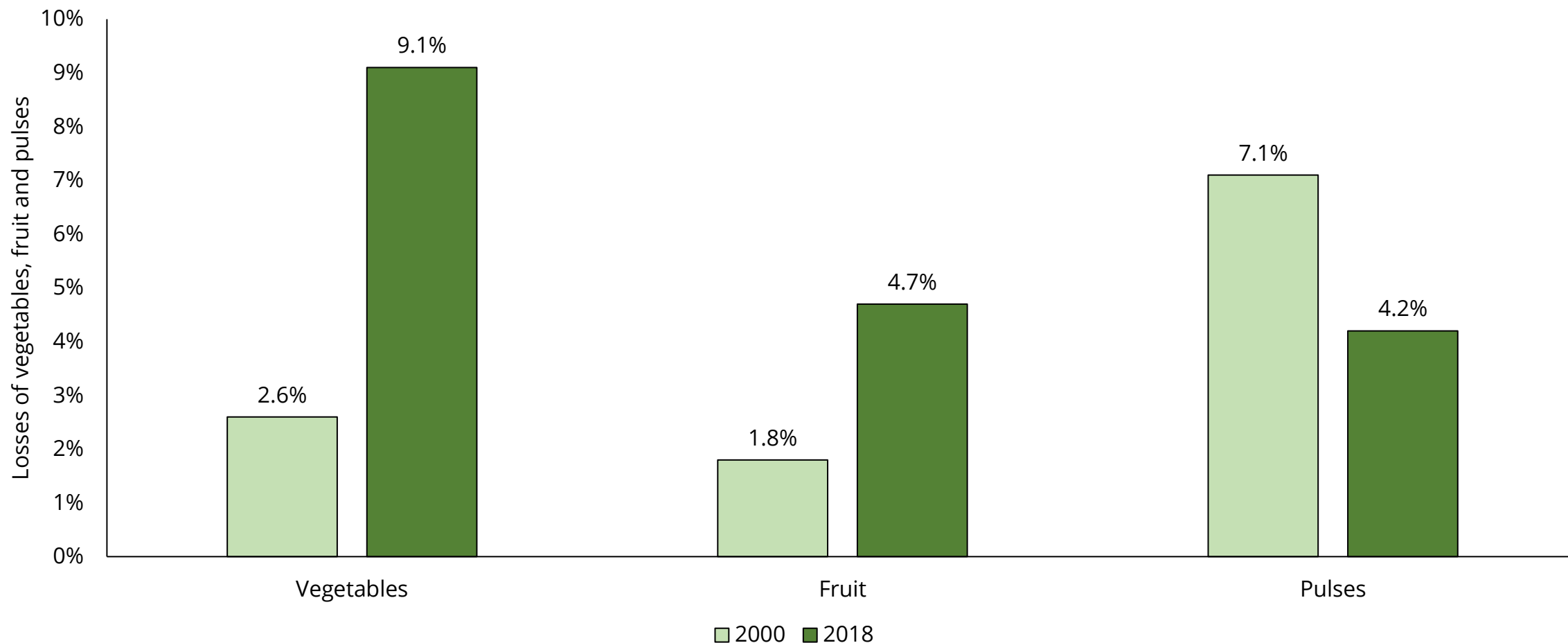
10% of production  
consumed by HH\*

Products	Potential yield/land portion (kg)	Family Consumption (kg)	Ave Farmgate Revenue (N\$)
Tomato	15000	1500	94,500
Onions	4700	470	26,226
Cabbage	13200	1320	143,880
Butternut	5800	580	34,974
Carrots	4000	400	28,080
			<b>327,660</b>

# Consumption of own grown crops could reduce the cost of nutritious diets between 28 and 60 percent



# However, post-harvest losses should be reduced, especially for fresh produce

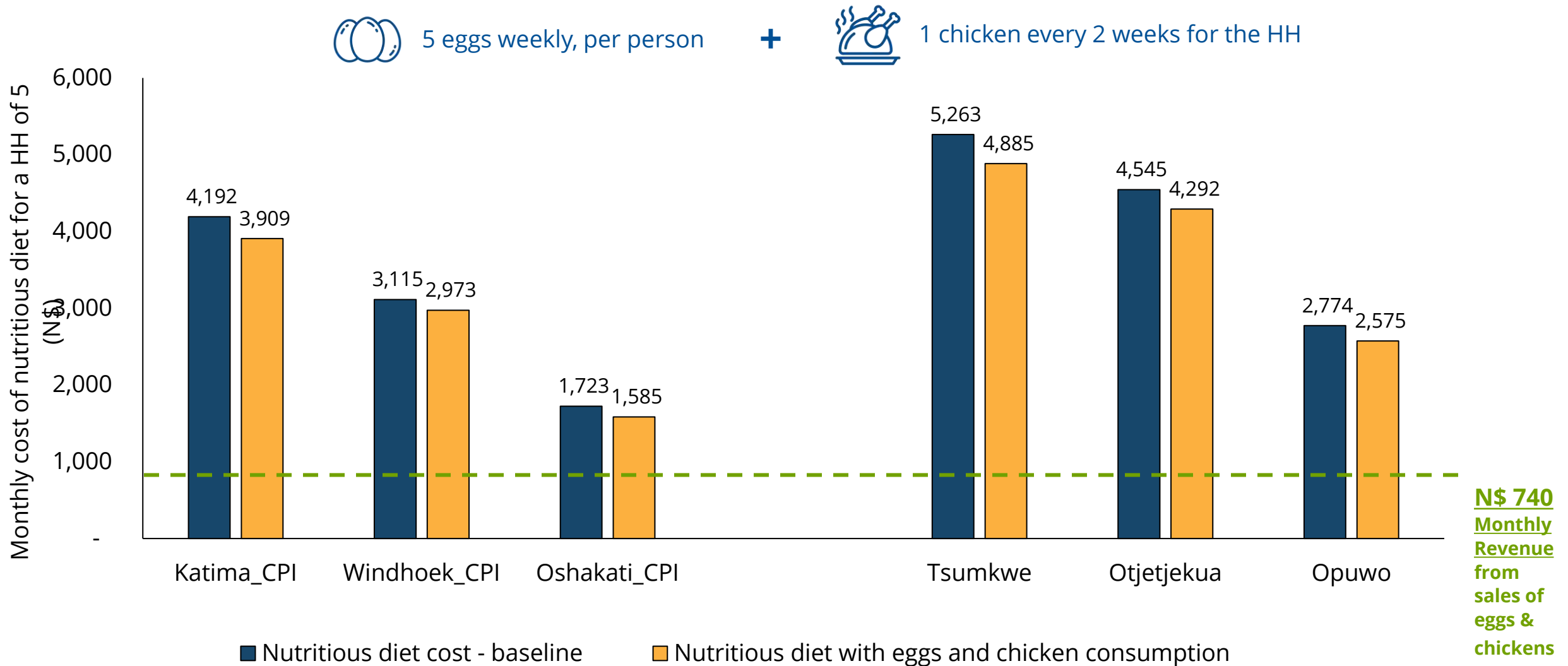


# Indigenous chicken project: dual purpose intervention to increase egg and chicken meat supply



1. Housing and nesting facilities
2. Working capital for purchase of chicks with better genetics, medicines, locally produced feed
3. Support cultivation of feed supplements mainly maize and sunflowers
4. Establishing own breeding flocks- over time
5. Local chickens: *Venda, Koekoek and Ovambo*

# Consumption of eggs and chicken meat could reduce the cost of the diet between 6 and 14 percent



# Foraging and hunting are not well documented, but could reflect food access not captured by markets

**A variety of indigenous foods** are consumed

- In the **north-central regions** this includes in order of increasing importance
  - jackal berries
  - palm/makalani fruits
  - mopane worms
  - birdplum
  - dried and fresh spinach

With the exception of fresh spinach, **these foods are collected in the veld and are seasonally dependent**

- In **Kavango East and West** wild fruits such as musivi, namgondo, maguni, ngongo, makwewo are collected, either to be consumed or used for brewing traditional alcohol for consumption or mostly in exchange for other foodstuffs
- The **dynamic of livelihoods and coping strategies are not well researched**

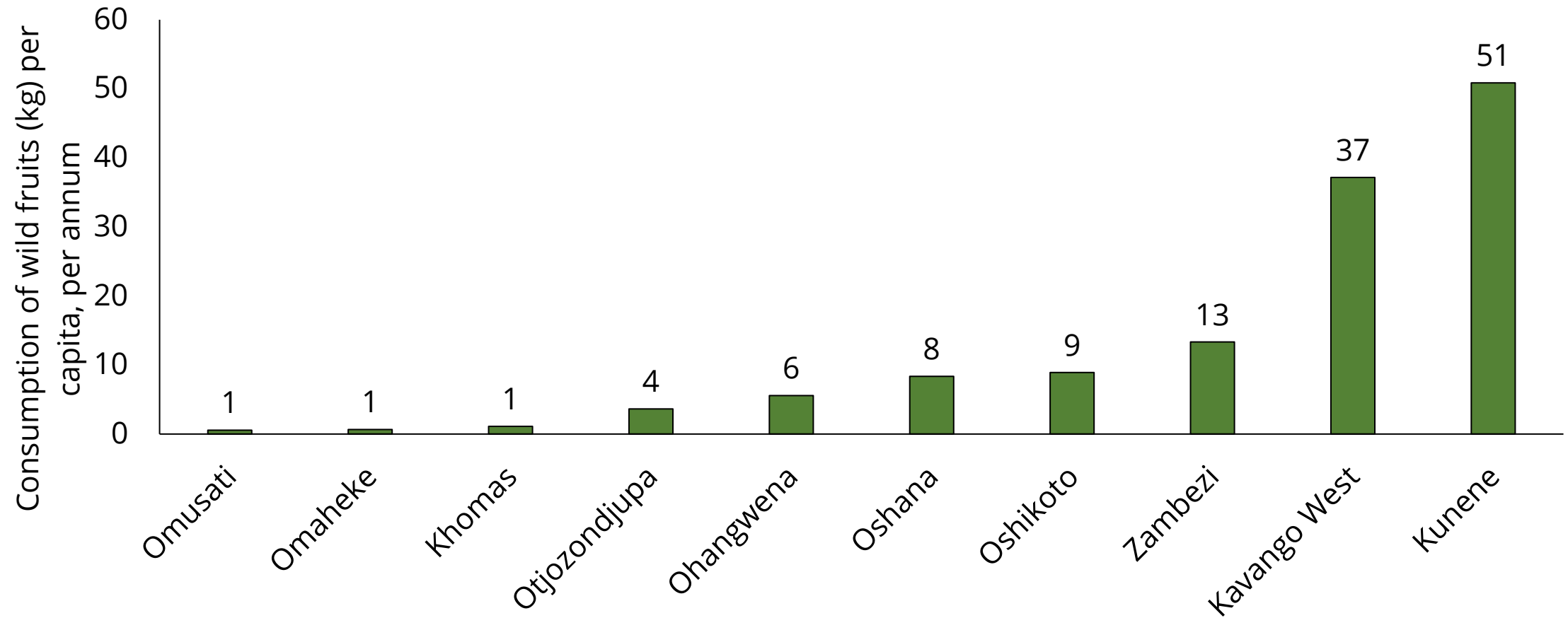
- The **semi-nomadic Himba farmers** in northern Kunene Region similarly **collect a variety of wild or veld foods, in particular during periods of stress**. These include
  - mopani worms
  - wild spinach
  - various nuts and berries (Bollig, 1999, pp. 283–284)
- **Many communities classified as ‘marginalised’** such as the San **depend on gathering veld food and food aid** for their nutrition and food security
- For the majority of Khwe households in the Babwata National Park bush food or foraging was the most important source of food
- **Government is the main source of grains** but supplies are irregular and access to veld foods remains an important coping strategy
- **Since 2017 dependency on government food aid increased** as ‘the strict regulation on the residents’ movements reduced the plant food harvest from the bush’ (Heim 2019, p. 9)



**Small quantities of foraged or home grown green leafy vegetables can make nutritious diets more accessible**

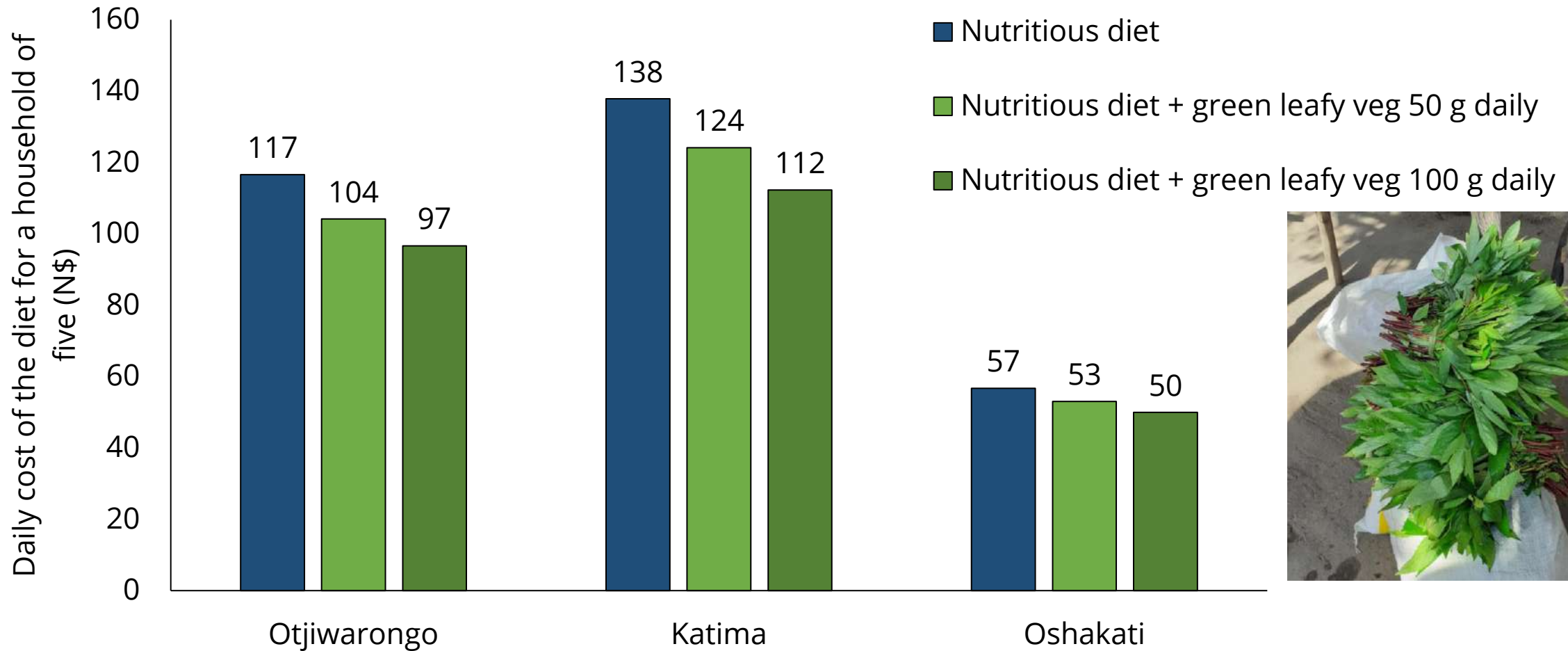


# Foraging of fruit is more prominent in northern Namibia

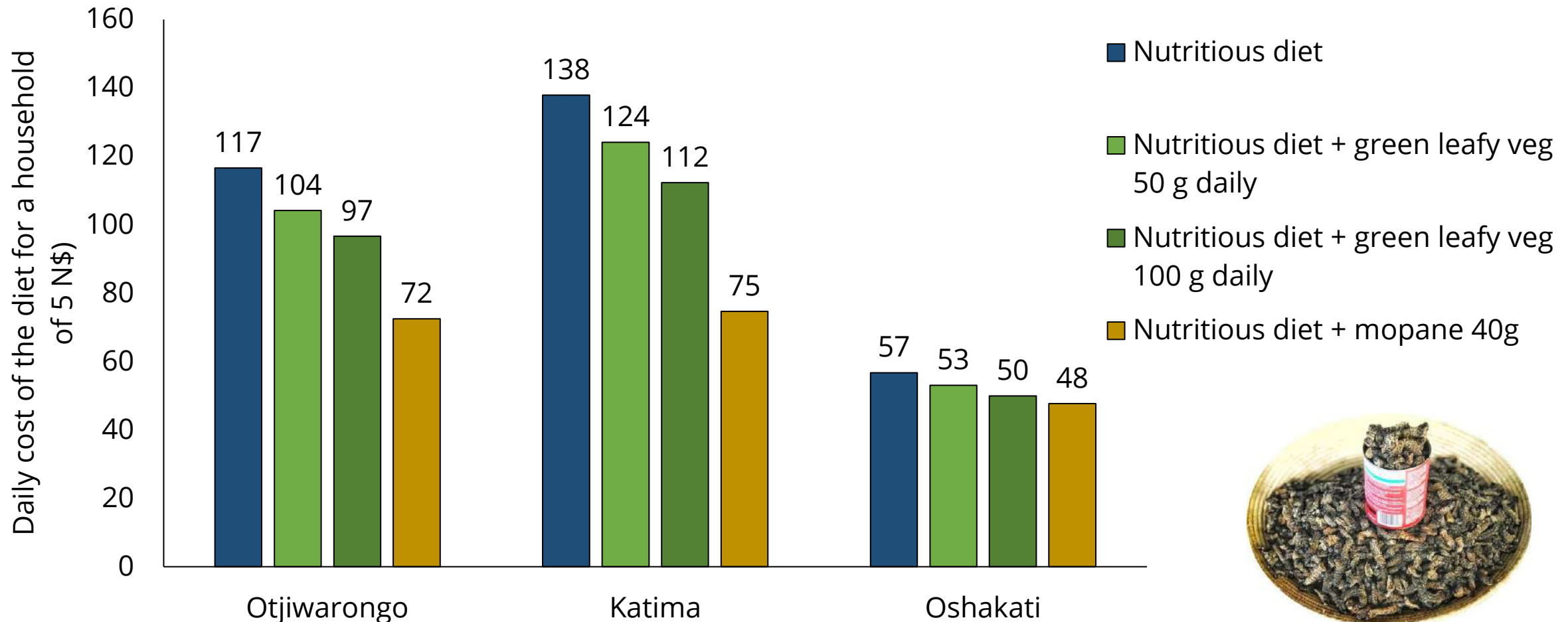




# Small quantities of foraged or home grown green leafy vegetables can make nutritious diets more accessible



# Consumption of mopane worms can decrease the cost of the diet by up to 32 percent





FNG

Key Message 10

## **Multi-sectoral action is needed to move the needle on malnutrition.**

Combining interventions from multiple sectors could have significant effect in reducing the cost of the nutritious diet for households.

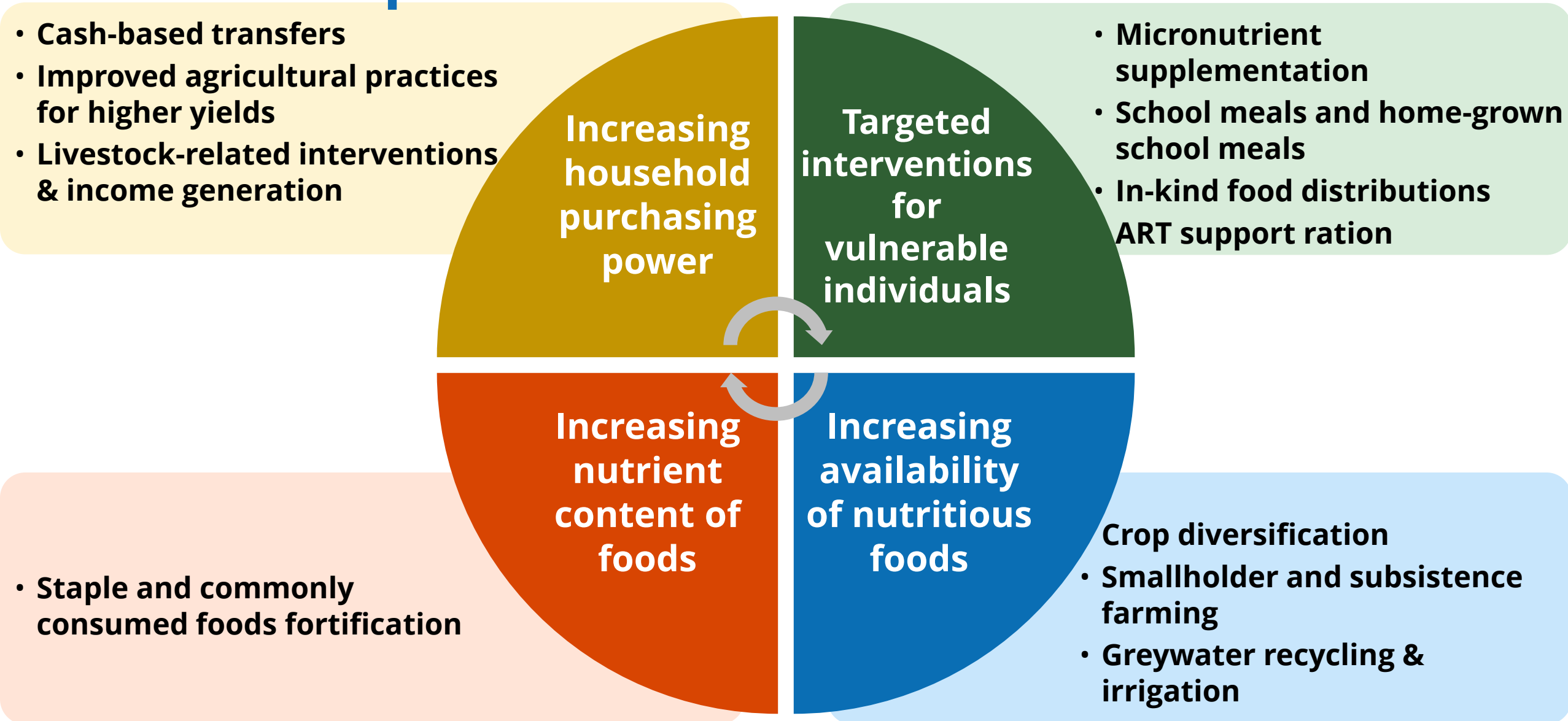
Improved targeting of interventions and greater employment opportunities so to increase purchasing power could make nutritious diets more accessible.

# Harambe Action Plan II

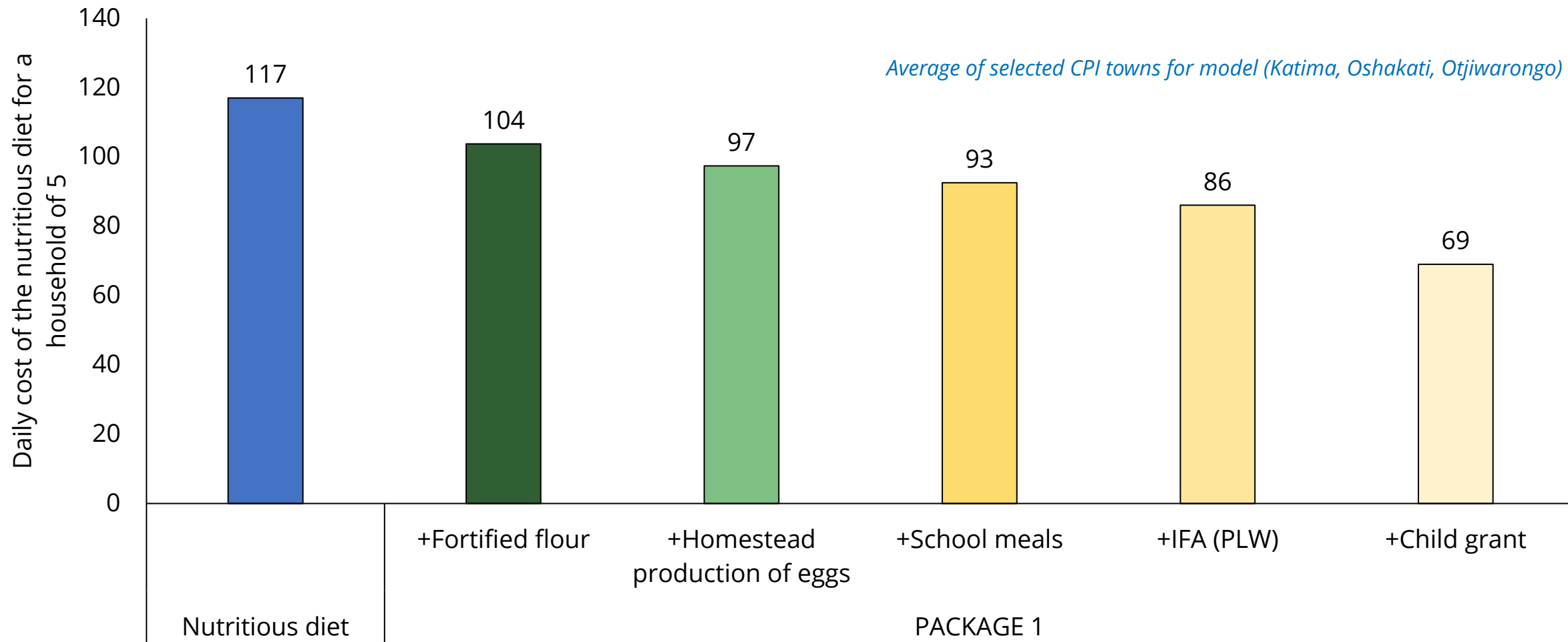
- Goal for Zero Deaths:
  - Activity 1 Securing Household Food Security
    - a) increase agricultural yields
    - c) maintain school feeding programme, improve nutritional value of meals
    - D) determine basic wage floor
  - Activity 2: Consolidation of Social Grants and Food Bank
    - Convert Food Bank, Special Feeding, etc into a monthly cash transfer to phase in a Basic Income Grant
- Goal for Improved Access to social healthcare
  - Activity 4 Improved nutrition
    - Intensify CHW targeted outreach in: Omaheke, Ohangwena, Kunene, Kavango West and Omusati
      - Children, PLW, adults
    - (reduce malnutrition case fatality to less than 10%)
    - Regulations for Micronutrient Fortification of wheat, maize and mahangu
    - Regulations to control marketing of breastmilk substitutes



# Interventions from different sectors could improve access to nutritious diets

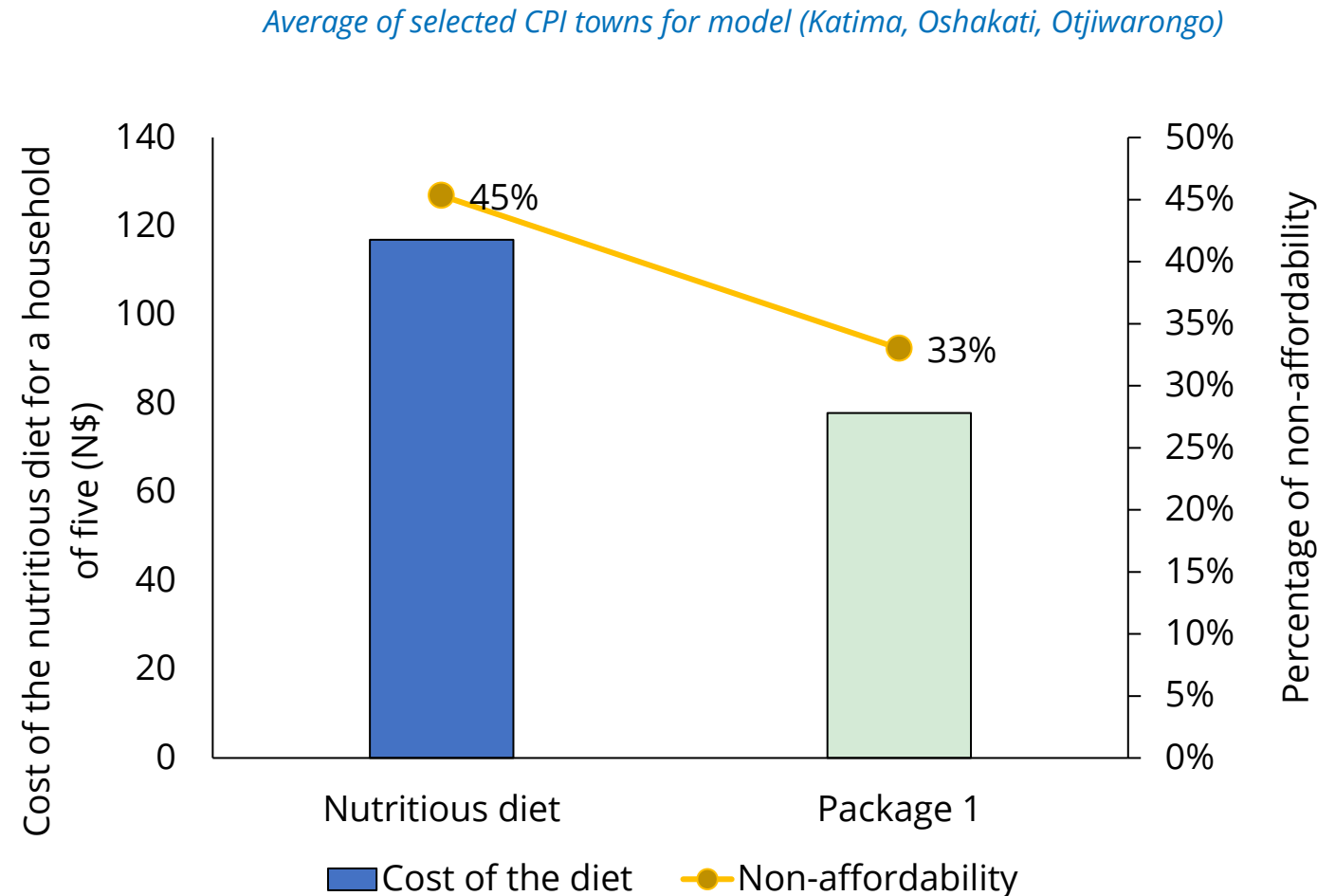


# Combining multi-sectoral interventions into household packages to reduce the cost of the diet



# Combining interventions from different sectors could substantially reduce non-affordability of the nutritious diet

Target group	Household Package 1
Child under 2 years	Optimal breastfeeding
School-aged children	School meal
Children (1-17 years)	Child grant
PLW	IFA
	Fortification
	Homestead production of eggs
Household intervention	



An aerial photograph showing a vast expanse of golden sand dunes on the left, sloping down towards a bright blue ocean on the right. The dunes are characterized by their smooth, undulating curves and the long, dark shadows cast by the low sun. The ocean's surface is textured with white foam from breaking waves. The overall scene is one of natural beauty and tranquility.

**Thank you**