## Women, food and climate change

in Central Asia







Women, food and climate change in Central Asia.

© 2020, Regional Environmental Centre for Central Asia

This publication may be reproduced in whole or in part in any form for educational or non-profit purposes without special permission from the copyright holders, provided acknowledgement of the source is made.

#### Acknowledgement:

Climate Adaptation and Mitigation Program for Aral Sea Basin (CAMP4ASB) sponsored by the International Development Association (IDA) of the World Bank has provided support for the process of developing methods, approaches, and tools for decision-making support and knowledge products on climate change in Central Asia.

#### **Disclaimers:**

The views expressed in this document are those of the authors and do not necessarily reflect views of the partner organizations and governments.

The designations employed and the presentation of the material in this publication do not imply the expression of any opinion whatsoever concerning the legal status of any country, territory, city or area or of its authorities, or concerning delimitation of its frontiers or boundaries. We regret any errors or omissions that may unwittingly have been made.

Management of the CAMP4ASB project in the Regional Environmental Centre for Central Asia: Zafar Makhmudov (Executive Director), Irina Bekmirzaeva (Program Manager)

Artwork and layout: Maria Libert and Alexandra Povarich

Contributors: Irina Bubenko, Saltanat Zhakenova, Aigerim Abdyzhaparova, Firuza Illarionova, Nailya Mustaeva, Viktor Novikov



Edited and produced by Zoï Environment Network, Geneva

## **Table of Contents**

Introduction	4
Women, food and climate change	5
The women of Central Asia	6
Food culture in Central Asia	8
The effects of agriculture on climate change	10
Agricultural emissions as a part of total emissions	11
The effects of climate change on agriculture	12
Emissions in agricultural production	13
Emissions related to consumption	14
Population and households of Central Asia	16
Energy sources used for cooking	17
Food waste	18
Opportunities for mitigation and adaptation in the food system	20
Contribution of CAMP4ASB project	24
Insurance, loans and advice	25
Climate change information	26
Traditional recipes from the region	27
Climate friendly approaches to cooking	28
Beshbarmak	30
Plov/pilaf	31
Shakarap, acchik-chuchuk	32
Manti	33
Lagman	34
Damlama	35
Shurpa	36
Shashlik	37
Samsa	38
Flatbread	39
Boorsok	40
Raw sea buckthorn jam	41
Sea buckthorn jam	42
Pickled assortment	42
Sauerkraut	42
In conclusion	44
Useful links	45

## Introduction

Hospitality is a hallmark of Central Asian culture, and food plays a starring role. Some traditional dishes date back centuries, and some contemporary dishes reflect the influences of distant places. With increasing globalization and trade, the region is becoming less isolated, and faces new opportunities and challenges. One major challenge already influencing the region is climate change, and one of the most vulnerable sectors is agriculture. Farmers, gardeners, pastoralists and consumers all have a stake in this challenge, and how they respond will determine how secure their food supply – and their cherished food traditions – will be in the coming years.

Rising temperatures and changing precipitation patterns are affecting cropland and pastures directly, and are causing equally serious water cycle disruptions that are also affecting growing conditions. The climateagriculture relationship flows in both directions, and agricultural practices are contributing to the greenhouse gas emissions that cause global warming. In fact, all along the path that food follows – from the fields and pastures to the markets to our tables and on to our waste bins – we generate emissions that we can reduce through the choices we make.

At the household level in Central Asia, women make most of the food-related decisions, and their choices about what to eat and how to prepare it can make a difference in their households' and communities' responses to the challenges posed by climate change. *Women, Food and Climate Change in Central Asia* celebrates the women of Central Asia, targets the range of choices they can make to contribute to a reduction of their personal, household, community and national climate change emissions, shows how their food choices can affect the environment and offers alternatives for their consideration.

# Women, food and climate change

As climate change tightens its grip on Central Asia, people from the mountains to the lowlands are finding that some old truths about the weather are no longer reliable. Growing seasons may start earlier and end later, but extreme weather and disrupted precipitation patterns threaten production.

## The women of Central Asia

Women in Central Asia successfully juggle a range of responsibilities – planning the meals, shopping, cooking, taking care of the children, and tending the gardens and the animals – and play a key role in many community decisions and activities. The choices they make influence every aspect of daily life for themselves, their families and their communities. The ease with which the women in the region move between tending to their household responsibilities and their children and shopping for the items they need for the coming meals can disguise the effort that goes into planning the menus and organizing the work of preparing the meals, not to mention actually doing the work.





## Food culture in Central Asia

Food traditions and cuisines vary across Central Asia, and are influenced by geography, climate, lifestyle, culture and the availability of ingredients, but the countries in the region have many foods in common, and all place a high value on hospitality. Special occasions bring family and friends together for wonderful meals, and wonderful meals become their own special occasions. Visitors to the region find the Central Asian food very tasty, mainly of local origin and seasonal, but at the same time predominantly energy-intensive and with greater than average portions, especially for guests.



Contemporary Kazakh cuisine - based primarily on meat and milk products - owes a debt to the country's nomadic traditions. Fermented milk drinks, ayran, kumis and shubat, are common as are the famous Kazakh apples, beshbarmak, plov and horse meat sausages, which are enjoyed across the region. Many fruits, vegetables, herbs and spices introduced from other cultures now mix with the traditional foods, and the local availability of newer ingredients makes for a more diverse cuisine. Kazakhstan's climate is continental, with hot summers and cold winters. Fruits and vegetables dominate Kazakh tables in summer; meat dominates in winter. Kazakhstan is a major producer and exporter of wheat and oils, and is a proud host to globally significant wild apple forests - a genetic treasure and ancestor of all modern apple varieties.

Influenced over many years by people passing through or settling in the country, Kyrgyz cuisine is rooting in the mountain climate and nomadic traditions and



places a high value on the visual appeal of dishes, which are flavoured and coloured by a variety of spices. Kyrgyzstan's national dish – beshbarmak – is made with mutton and noodles boiled in the broth. Kumis – fermented mare's milk – is popular as are other traditional cold drinks (maksum and shoro), highly prized during hot summer months. In addition to meat and milk products, "dewzira" or Uzgen rice is the most valued type of locally grown rice. Women entrepreneurs in Kyrgyzstan have successfully used their culinary skills and local food to develop a range of products – honey, original jams made of walnuts, dried fruits – for domestic sales and export.

The national dishes of Tajikistan – mastoba (mutton soup), moshkichiri (lentil porridge with meat sauce), kurutob (flat bread mixed with butter and dried sour milk) – are usually less meat intensive. Traditional companions to the main meals are sweet confections like halwa, green tea and seasonal fruits. Soup is a must as is meat, often followed by plov. Bread is sacred and must be broken carefully, never cut with a knife. A sense of ceremony permeates every meal. Local varieties of lemons and pomegranates are known and famous well outside of Tajikistan, and the country is famous for high diversity of wild and domesticated varieties of apples, grapes, apricots, onions, pistachios and wheat.

The harsh dry and hot climate, desert landscape and nomadic lifestyle in Turkmenistan have influenced its cuisine, which is as varied as in other countries in the region, but simpler in terms of ingredients and preparation methods. Plov, soups and mutton are popular, and Turkmen melons are world famous. Camel milk – chal – is a popular national drink and is also used in traditional medicine. Seafood is common on the coast of the Caspian Sea, and a variety of dishes use unusual combinations of ingredients – fish with apricots, pomegranate juice or sesame seeds, for example.

Uzbekistan's reputation for hospitality dates to the days of the ancient Silk Road, as do some recipes. The tradition of welcoming guests continues to the present, and today every Uzbek feast includes an elaborate plov with mutton and vegetables. In 2017, a team of 50 Uzbek chefs prepared a plov so big – more than 7,000 kg – that it entered the Guinness Book of World Records. Other dishes include traditional breads baked in tandoor ovens, soups seasoned with herbs and spices, stuffed pastries, and a wide array of fresh fruits and vegetables.

## The effects of agriculture on climate change

Cropland accounts for about 11 per cent of the land on Earth, and overall agricultural land comes to 37 per cent of our planet's land resources. About 20–25 per cent of the global greenhouse gas emissions originate in the

Other emissions

## Almost **20%** of global emissions come from food

food production system and come from the combination of agriculture, forestry and other land uses, as well as storage, transport, packaging, processing, retail, and consumption. Enteric fermentation in livestock and other agricultural animals, chemical processes in soil from application of mineral fertilizers and manure, and loss of soil carbon due to soil mismanagement or deforestation all contribute to emissions. Emissions vary by global region and the means of production higher uses of chemical fertilizers and energy-intensive equipment create higher emissions. In addition, different foods make different contributions to carbon emissions. Scientists divide food system emissions into emissions from production - e.g. from fertilizer applications, grazing and cropland management - and emissions related to consumption - e.g. diets and food choices that influence production.



## Agricultural emissions as a part of total emissions



Globally, energy-related greenhouse gas emissions from the production and burning of fossil fuels make up the largest contribution to the total. All countries are required to make calculations of the national emissions and regularly report to the UN Framework Convention on Climate Change. Based on this reporting, Kazakhstan with agricultural emissions of 10 per cent, Turkmenistan with 12 per cent and Uzbekistan with 11 per cent generally follow the global pattern of agriculture emissions. The smaller mountain countries diverge from this pattern, however, with Kyrgyzstan having 34 per cent of its total emissions come from agriculture. Tajikistan, in contrast, has a whopping 70 per cent of its emissions from agriculture. The country's reliance on hydropower means that it emits dramatically fewer energy-related greenhouse gases, while the majority of the population lives in the countryside and is engaged in agriculture activities. Tajikistan's total emissions are about half of Kyrgyzstan's, just a fraction of the regional total and are the lowest per person in Central Asia. Meat production is the most emission-intensive agricultural activity, and meat consumption in Tajikistan is the lowest among Central Asia countries – 30–40 kg of meat per person per year compared to 60–80 kg per person per year in Kazakhstan. Both food production practices and traditions and food choices, diets and consumption have significant influence on climate.

## The effects of climate change on agriculture



One of the more dramatic outcomes of a warming world is the increase in frequency and intensity of extreme weather. Heavy storms can wipe out crops, ruin pastures, endanger livestock, and lay waste to gardens, as can heatwaves and droughts. In the mountains of Central Asia, warming temperatures are upsetting the timing of the annual melting of snowpack and glaciers, and thus changing the timing of river flows. As warming continues, the mountains lose their ability to act as water towers, and based on the changes that have already occurred, more disruptions in the water cycle are inevitable. Changing precipitation patterns only worsen the problem, and the agriculture sector will have to adjust to the changing conditions. As average temperatures continue to rise, the growing seasons will start and end later than in the past, and plant species will migrate to higher elevations or more northerly latitudes. Potential declines in crop pollinators and increased pressures from pests and diseases may affect crop cultivation, pastoralism, and eventually profitability and quality of food. All of these changes have implications for what farmers can grow, and for what steps they may need to take to protect their livelihoods.

## **Emissions in agricultural production**

The choices growers make about what to produce and what practices to employ affect the level of their farms' emissions. Globally, most farm emissions come from livestock belching methane into the air. The addition of fertilizers to soils results in releases of nitrous oxide. The burning of crop waste releases carbon dioxide, and plowing and tilling the land releases gases trapped in the soil. The use of fuel in tractors and other farm equipment results in carbon emissions, and rice cultivation emits methane. These are "invisible" impacts of agricultural production on the environment. Much more familiar to the residents of Central Asia are the impacts of agriculture on depleting water resources, eroding soils and trampling forests. Growers have opportunities to reduce the emissions from their farms and to adapt their farms to the effects of climate change. The composting of manure, for example, results in an amendment that improves the soil and reduces emissions compared to simply spreading the manure or using chemical fertilizers. Likewise, the use of biological rather than chemical pest controls lowers emissions. And rice growers can apply proven techniques that reduce emissions and require less water while boosting yields. More efficient irrigation helps to save energy for pumping and reduce water losses. Improved land use management reduces soil and forest decline and increases their carbon sequestration capacity.



## **Emissions related to consumption**



#### Annual GHG emissions related to food consumption

\* The calculation of emissions is based on a diet that includes the food item 3-5 times per week.

In general, the environmental impacts of meat-based diets are greater than the impacts associated with vegan or vegetarian diets. The production of meat depends on more energy, land and water resources, and creates more greenhouse gas emissions. Worldwide growth in emissions related to food is driven by increases in population and income and by growing demand for animal-based food products.

Because transport is a significant source of food-related emissions, the concept of food miles – a rough measure of the transport emissions related to getting food from there to here – has helped nurture the idea that we should all eat locally grown food to the extent possible, and has given rise to the term "locavore" to describe a person who strives to eat only local food. All else being equal, eating local food would reduce the emissions related to a person's diet, but all else is rarely equal.

The means of transportation is a factor, but the most important difference may lie in the means of production. Highly mechanized practices in combination with intensive use of chemical fertilizers may result in more emissions than those generated by transportation. And if the food being transported is grown by hand using organic fertilizer from livestock on the farm, the food could travel great distances and still have fewer emissions than the local food at its destination. In this scenario, the imported food would have a lower carbon footprint, would be better for the land and by employing local workers would have important socioeconomic benefits. In terms of personal choice, switching from a meatbased to a plant-based diet is likely to result in a much greater reduction in emissions than eating only locally grown food. A diet that includes beef 3-5 times per week produces more than 1 000 kg of greenhouse gas emissions per year. Substituting beans - vegetable protein - for beef (20 kg in emissions per year) results in a 98 per cent reduction in emissions. These figures are illustrative only, and the relationship between food consumption and emissions varies from place to place depending on local conditions and production practices. The beef from cows raised on deforested land, for example, has nearly 10 times the level of emissions compared to beef from cows raised on natural pastures. The recipes that appear in the next chapter help consumers understand the food-related emissions in popular Central Asian food, energy requirements for cooking and hints how to make traditional meals even more climate- and health-friendly.

Gardeners and farmers alike can adapt to the changing climate conditions wherever they live through careful selection of plant varieties for resistance to drought, frost or disease as their circumstances indicate. Where precipitation patterns are being disrupted, rainwater collection can provide a reservoir for use in dry periods. Some areas may be vulnerable to extremes of heat or cold or both, and providing shelters for livestock will offer the animals protection from the worst weather. Commercial growers can use large greenhouses to protect their crops from storms and weather extremes, and kitchen gardeners can achieve the same goal with modest greenhouses either freestanding or attached to existing buildings.

#### Food composition (diet)

kg per year per person, latest available data for 2017-2019





## Population and households of Central Asia

## Energy sources used for cooking



## Food waste



The emissions associated with food waste are staggering: according to the Food and Agriculture Organization of the United Nations, if food waste were a country it would be the third largest global emitter following the United States and China. Most food waste occurs at the production and retail levels, but consumer food waste is also significant. As food waste rots in waste dumps, it emits methane. In Uzbekistan, the most populous country of Central Asia, where half of the total population is urban, emissions from food waste alone come to 7–8 million tonnes of  $CO_2$  equivalent per year, an amount comparable to the total greenhouse emissions of Tajikistan.

In Europe and North America consumer food waste averages about 95–115 kg per person per year compared to about 30 kg per person per year in Central Asia. This difference suggests that the women of Central Asia already follow the advice given to Western consumers regarding food waste – be sure to use what you already have on hand, plan ahead and buy only what you will use, and make creative use of leftovers. These administrative functions might be called assessment, planning and project implementation in a business or governmental setting, and are quite similar to the functions women carry out in the household day in and day out. Still, not all the food we bring home gets eaten even in the best of circumstances. Melon rinds and other trimmings and skins add up, but these wastes and table scraps need not contribute to emissions. Some of this waste can become feed for animals and some can be composted with other green waste for future use as garden soil amendments. Compost reduces or eliminates the need for chemical fertilizers, promotes higher yields and improves water retention in soils. Many rural households already follow these practices, but urban dwellers may have limited opportunities to put their waste to productive use. Where food wastes end up in landfills, they produce methane as they degrade. Composting eliminates these emissions.

Other strategies for reducing waste emissions include the longstanding practice of canning produce that cannot be eaten before it goes bad. Gardeners across the globe have put part of their harvest on the table and canned the rest for use later in the year. Drying fruit naturally is another way of preserving healthful produce for later consumption.



#### Annual GHG emissions from waste

million tonnes, CO<sub>2</sub> eq

## **Opportunities for mitigation and adaptation** in the food system

#### **M** = Mitigation A = Adaptation

Very high potential Some potential or not applicable

High potential

Α

Α

#### **Basic land-use decisions** Μ

Crop diversification	
Land rehabilitation	
Adjustments in planting dates	
Crop establishment	
Crop-livestock systems	
Silvopastoral systems	

#### **Crop management** Μ Increased soil organic matter Improved water management Precision fertilizer management Change in crop variety Off-season vegetable production **Biochar application**

No-till residue management

Α

#### Livestock management Μ

Feed and fodder banks Drought-resistant livestock Thermal stress control Seasonal feed supplementation Improved animal health Agroforestry



Mitigation refers to the steps we can take to reduce or capture emissions. Adaptation refers to the adjustments we can make to the effects of climate change. At every level – from crop and livestock production to transport, storage and sales to consumption – the food system offers mitigation and adaptation opportunities. Where climate services are available, gardeners and commercial growers have opportunities to refine their adaptation practices even further.

The options to employ no-till residue management and silvopastoral systems, and to reduce waste are the only three options that have very high mitigation and adaptation potential. The no-till approach lets crop residues such as stalks, leaves and seed pods remain in place. The only soil disturbance is narrow strips made to prepare for planting the next crop. In addition to decreasing the release of carbon from the soil, the no-till method increases irrigation efficiency, controls erosion and lowers labour and fuel costs. Such technologies are already used by farmers in Uzbekistan and Kazakhstan. Silvopastoral systems are a particular form of agroforestry, and entail the integration of trees and forage with the managed grazing of domesticated animals. Trampling of forests by herds of sheep and goats is a major environmental issue in many pasturelands of Central Asia, through ecologically balanced solutions exists. Gardeners and growers alike can reduce food waste emissions at both the production and consumption levels.

The Intergovernmental Panel on Climate Change (IPCC) produces periodic reports on climate change by assessing the current literature in an open review by experts and governments around the world. In a 2019 special report on climate change and land, the IPCC updates previous assessments, and includes a chapter on food security. The report finds that climate change is already affecting food security and that the effects are likely to increase with future climate change. The report also finds gender dimensions of food security and climate change, and notes that, "Empowering women and rights-based approaches can create synergies among household food security, adaptation, and mitigation." Farmers, scientists and students may all find interesting information and ideas in this report.

## Adapting to changing conditions







## Contribution of CAMP4ASB project

CAREC – Central Asia Regional Environmental Centre – works with local nongovernmental organizations to present small exhibitions and to conduct workshops to raise awareness of the available climate adaptation and mitigation technologies and how to get financing for improvement projects. Its flagship climate project – CAMP4ASB Climate Adaptation and Mitigation Programme for the Aral Sea Basin works in Tajikistan and Uzbekistan with banks and micro-finance organizations to provide loans for climate-friendly and climate-resilient food production and storage.

In response to limited income generating opportunities in the cold months and weatherrelated losses and damages to agriculture, a CAMP4ASB project supported rural communities and farmers in Uzbekistan's Zeravshan Valley and the lower Amu Darya River basin in establishing sophisticated greenhouses that now employ about 300 women in the production of vegetables for domestic consumption, sales and export. Similar activities across Tajikistan improved the nutritional status of women and children, and families are able to produce surplus vegetables that they can sell. Other Tajik farmers are improving feedstock and water supply conditions for animals, and installing compost generation units that help produce fertilizers and reduce emissions. About 38 000 farmers - half of whom are women - benefited from project activities in Tajikistan.

In the long run for the next 20-30 years, agriculture development plans of the Central Asian countries and projections of the international development agencies (WB, 2019) suggest that food production and exports from Central Asia to Russia and possibly Europe and China will likely grow. In addition to the need to satisfy growing population of the region in food, export prospects promote farmers to expand and diversify food production. Making food production climate-resilient improves profitability and reduces losses. This is especially true to perennial crops, selection of appropriate breeds and varieties and preserving the genetic potential of local crops and native species.

## Insurance, loans and advice



Whether as farm employees or as kitchen gardeners, women in Central Asia may be interested in ways to protect their food security. Insurance against extreme weather is becoming increasingly available, and where crops or livestock are vulnerable to such events, insurance can provide a measure of protection from losses. The availability of agricultural insurance is not yet universal among Central Asia countries, however, and the coverage of risks varies.

Households and commercial growers alike may be eligible for small grants and loans to develop climatefriendly projects such as greenhouses, rainwater collection systems, livestock shelters, natural fruit-drying systems and other initiatives that reduce emissions, and provide more resilience in small agriculture and more food security for households and communities. Each country has its own programmes for housing and energy efficiency improvements, and international donors are supporting a range of climate adaptation and food security actions. Households can check with their local banks, micro-finance organizations, farmer associations or international organizations to find out what is available in their areas. Local non-governmental organizations and extension services may also be of assistance in identifying financing opportunities. The Green Climate Fund is expanding its activities in Central Asia, and Tajikistan and Kyrgyzstan are already receiving support to improve food security in the face of climate change. Adaptation Fund projects in drought-prone areas of Uzbekistan and Turkmenistan are making farming enterprises and communities more resilient to weather extremes and climate change. In addition, the Global Environment Facility funds medium-sized projects and operates a small grant programme that supports farmlevel interventions in most of the countries. In order to apply and use these resources, interested applicants are encouraged to get familiar with climate change information and ask for advice from the specialized services and organizations.

## **Climate change information**



All of the region's national hydrometeorological services produce forecasts for agriculture production ranging from the national and province levels to the farm level. Women in Central Asia may benefit from contacting their hydrometeorological service and learning about the available information products that help them select appropriate crops and varieties, take crop protection measures against weather extremes, such as frosts and hailstorms, and optimize planting and harvesting routines. Official weather reports may be useful in filing insurance claims. Hydromet modernization projects and programmes in each country are aiming to improve climate information services for key users.

Non-governmental organizations with climate change expertise are active throughout Central Asia, and agricultural extension agents provide advice at the local level. Science and research groups, such as WOCAT (World Overview of Conservation Approaches and Technologies) and ICARDA (the International Center for Agriculture Research in the Dryland Areas), are active in Central Asia, and have tested, collected and demonstrated numerous good practices. Interested farmers can consult the information produced by these organizations. The World Food Programme, which is concerned with food security in the face of climate change, is implementing Green Climate Fund projects in Tajikistan and Kyrgyzstan focusing on food production and climate services in the mountains.

Farmers of Central Asia increasingly embrace mobile technology. In response to this trend and the growing demand in climate information, the Central Asia Regional Environmental Centre is partnering with ICARDA under the CAMP4ASB project to design a regional climate change information platform that will become an important open online source for experience exchange and practical information tailored to the needs and aspirations of users in Central Asia. In addition, a growing number of global open sources offer climate change information (see the Useful links section).

# Traditional recipes from the region

Production of food, especially meat, contributes a large proportion of food-related emissions in Central Asia. Energy use for cooking at home contributes to the emissions, too, and the longer food is cooked, the more emissions are generated. Cleaner energy, such as hydro-, solar- or wind-generated electricity, or natural gas generates fewer emissions. Where climate conditions are appropriate and energy is in deficit, nongovernmental organizations and community organizations encourage the use of solar cooking. Households can also reduce their emissions and harmful health effects by cooking on clean, efficient cook stoves.

Selecting a short list of traditional dishes that are representative of Central Asia was a challenge for the authors. The recipes included here run the gamut of high to low climate impacts with energy-intensive meat dishes at one end and low-impact pickled vegetables and jams at the other. Readers in the region will know that precise ingredients vary from place to place, and that cooks in different areas will follow their own particular tastes and experience. That's why a Samarkand plov can be distinguished from a Ferghana plov. These recipes try to take a middle path by using the most common and straightforward approach that is representative of the region if not a particular place.

### Climate-friendly and energy-saving approaches in an urban kitchen



### Climate-friendly and energy-saving approaches in a rural kitchen





#### Instructions:

1. Cover the meat with water and bring it to a boil, periodically removing the foam. Add a pinch of salt for taste and  $\frac{1}{2}$  onion for clear stock. Let it cook for about  $\frac{1}{2}-2$  hours, reducing heat to simmer.

2. To prepare the noodle dough, mix flour (600–700 g) in a bowl; add a pinch of salt and 1 cup of water. Add egg and knead the dough well. Cover the bowl and leave for 30 minutes.

3. Roll the pastry into a thin layer (1-2 mm). Sprinkle with flour and roll up. Slice it into thin strips (2-3 mm). You can also use a pasta machine.

4. Dice an onion into small pieces. Pour ½ litre of broth in a pot and bring to boil. Add the chopped onions, some ground black pepper, and a pinch of salt for taste. Let boil for 5 minutes.

5. When the meat is cooked, cut it into small slices or strips measuring 5-6 mm.

6. Cook the noodles for 3-5 minutes in the boiling broth. Sieve them out onto a large plate using a skimmer. Then, add the chopped meat and pour in some onion sauce (*chyk*). Mix it and serve the *beshbarmak* on a big platter with bowls of broth. (In Kazakh cuisine, *beshbarmak* is not mixed – the noodles and meat are all in the center. From there, you can add the onion).

Mix it and serve beshbarmak on a big platter with bowls of broth. (In Kazakh cuisine beshbarmak is not mixed, just put noodles and meat in the center. Then add the onion).

Since ancient times, beshbarmak has been prepared during big toi (party) and served for honorable and respected guests. Beshbarmak is prepared with the boiled meat of horse, sheep, cattle or yak. In the old times the dish was prepared from the meat of a mountain goat or deer bagged by hunters. Usually, males cook the meat and females make the dough. Initially this traditional dish is accompanied by a piece of meat (ustukan) given to the guests of honour. The most honoured guest is served a sheep's head – "bash" or back – "jambash". The rest of the guests, depending on their age and social status, also get their ustukan.

The owners of the house are responsible for cooking and serving this dish, and the stakes are high because incorrectly served ustukan can offend and even insult the guest of honour and cause irreparable damage to the reputation of the house owners.



#### Instructions:

1. Rinse the rice and cover with cold water; let it soak for 30–40 minutes. Cut the meat into 4–5 cm pieces, carrots into strips, and onions into half-rings.

2. Pour oil into a well-heated Dutch oven, let it heat, and add onions. Fry the onions until golden over high heat (3–5 minutes), stir well to prevent the onion from burning (if you want a dark pilaf, fry onions until brown). Add the meat to the kettle, stir from time to time, and continue frying until golden brown. Add carrots and fry with the meat over high heat for approximately 15–20 minutes until brown. Add salt, cumin, and spices to taste.

3. Pour hot water just to cover all meat and carrots and let it simmer for 30–40 minutes on low heat. Do not cover.

4. Bring the broth and meat to a boil. Add rice to the boiling broth and spread the rice evenly. Broth should cover about 1½-2 cm above the rice surface. Let the pilaf boil for 5-8 minutes over high heat making the rice swell and absorb most of the liquid. Heap the rice together and make a few holes to let the air out. Then place the garlic cloves evenly. Cover tightly with a lid and steam for 20 minutes.

5. Remove the lid and mix the pilaf thoroughly. Serve with Shakarap (Acchik-Chuchuk) salad.

While the ingredients can vary (you can make it using lamb or beef and spices to your taste), one thing that is consistent is it's always served in generous portions!

Plov has always been the favorite dish across Central Asia. Women cook the day-to-day family foods, including plov, man step in during preparation of festive dishes for large number of guests.

Plov is served on big ceramic dishes. Rice is placed in an attractive mound, pieces of meat are placed on top and the dish is sprinkled with finely cut greens.



#### SHAKARAP

Shakarap is a simple salad, consisting of thinly sliced tomatoes and onions. It is especially popular in Uzbekistan and Kyrgyzstan. Usually the salad is served in individual small dishes as a side dish accompanying meat and rice. Most of the salads are made with locally-grown produce.

#### Instructions:

1. Thinly slice the tomatoes.

2. Add onions, chopped into thin rings.

3. Add salt, ground pepper and sprinkle with herbs for taste.

4. Gently mix all the ingredients and serve with *pilaf*.

#### ACCHIK-CHUCHUK

#### Instructions:

- 1. Thinly slice tomatoes and cucumbers.
- 2. Add onions, chopped into thin rings.
- 3. Combine with finely chopped peppers and herbs.
- 4. Add salt and ground pepper for taste.
- 5. Gently mix all ingredients and serve with pilaf.



In Central Asia, *manti* are popular steamed dumplings with a delicate, fine dough and juicy meat filling. *Manti* are served for lunch or dinner. Hot, steaming *manti* are served on a large colourful lagan (platter), and are eaten by hand – both for convenience and to keep the juicy stuffing from falling out.

Stuffing varies depending on the season and taste preferences and can consist of meat, potatoes, pumpkin, turnips, sweet peppers, etc.

#### Instructions:

1. Sift flour together with a pinch of salt (for taste) in a deep bowl. Make an indentation in the flour, add egg into the well, add warm water, and softly knead the dough (as for dumplings). Cover and let the dough rest for 30 minutes.

2. Finely chop onions, meat, and mutton fat, add a pinch of salt and pepper for taste, and add 50 ml water and mix well. Let stand for 30 minutes.

3. Divide dough in half. Thinly roll the dough into 2 large circles, each 2–3 mm thick. Sprinkle with flour and fold into a long, wide strip. Cut it into equal squares, approximately 5–6 cm per side, forming a rectangle.

4. Place 1 tablespoon of filling in the center of each square. Then fasten the ends crosswise (like an envelope). Seal the dough all the way through to secure the inside filling.

5. Coat steamer bowls with butter or vegetable oil, place the *manti* inside.

6. Pour water into the steamer (about half) and steam for 45 minutes with the lid closed.

7. Place the cooked *manti* on a large plate and serve with salad or sauce.



Lagman is a Central-Asian dish with roots connecting Chinese and Korean kitchens. There are multiple variations of this dish that please any tastes.

#### Instructions:

**Gravy (you can start making dough concurrently):** 1. Cut meat and vegetables into 2-3 cm pieces.

2. Pour oil into a well-heated Dutch oven, let it heat. Add meat and fry over high heat for 5-10 minutes.

3. Add onions and fry for 5–10 minutes. Then add radish, sweet peppers, and tomatoes. Add salt, ground pepper and spices for taste. Fry the mixture and stew for 10–15 minutes.

4. Add garlic and Chinese cabbage, stew for 2–3 minutes over high heat. Cover the Dutch oven with water, reduce the heat, and let cook for 30 minutes.

5. Turn off the heat and add finely chopped celery and leave for 5 minutes.

#### Dough:

1. Sift flour into a bowl. Mix salt with water and periodically pour small amounts of water into the flour. Knead the medium soft dough and let it rest for 30–40 minutes.

2. Knead the dough and slice it into strips,  $1\frac{1}{2}$  wide. Coat each strip with vegetable oil, cover with a lid and leave for 30-40 minutes.

3. Then stretch each strip with your hands, coat with oil, and let sit for 10 minutes. The dough becomes elastic.

4. Using your hands, wrap long strips of dough around the spread hands, then wave the dough up and down, spreading hands wider and stretching the dough rolls to the thin noodles (½ cm thick). Smack the noodles against the table. After the noodles are finished, cook them immediately.

5. Boil the resulting noodles in a large amount of salted water. As soon as the water starts boiling, add noodles one by one to keep them from sticking. Cook the noodles for 5 minutes at most. Once the noodles are cooked, remove them with a slotted spoon to a colander, rinse with cold water, put the noodles into a pot, and pour in a small amount of oil and stir.

6. Before serving, put cooked noodles into a sieve and scald with boiling water. Then serve the noodles on deep plates, adding the gravy and sprinkling with finely chopped herbs to taste.



*Damlama* is a tasty and nutritious Central Asian dish which consists of meat and vegetables stewed in their own juices.

#### Instructions:

1. Slice meat, potatoes, carrots, aubergines (optional), cabbage, tomatoes, into 4–5 cm cubes, and cut onions into rings.

2. Pour oil into a well-heated Dutch oven, let it heat. Add meat and fry a little. Add salt and ground pepper for taste.

3. Add the onions and fry with the meat for 10–15 minutes.

4. Layer the ingredients – meat with onion rings, then lay the carrots on top of the meat, tomatoes, aubergines (optional), cabbage, potatoes, garlic, salt and pepper to taste, cover with cabbage leaves. Pour in a cup of boiling water. Close tightly with a lid.

5. Let it boil over a high heat. And then cook over a low heat for 1½-2 hours. Then open the lid and gently stir everything. Serve on a big platter and sprinkle with finely chopped basil or cilantro.



Shorpo, or Shurpa, is a meat broth soup with large chunks of meat, very often fatty mutton. Other ingredients include pieces of carrot and potato and of course a sprinkling of fresh herbs. There are a lot of variations of this soup.

#### Instructions:

1. Cut the brisket into portions and pour in  $2\frac{1}{2}-3$  litres water. Bring to a boil, periodically removing the foam; add salt for taste and 1 onion for clear stock.

2. Let it cook for about  $1\frac{1}{2}-2$  hours over low heat.

3. Dice potatoes, sweet peppers and tomatoes into large chunks.

4. Add potatoes to the stock with meat, and after 5 minutes add sweet peppers, add the tomatoes and garlic. Cook for 15–20 minutes until potatoes are almost done.

5. Sprinkle with the herbs and serve in a bowl (piala).



Shashlik is usually made from mutton or beef; alternating pieces of meat and fat are well seasoned and marinated. It is then served with pickled onions and can be ordered as main dish or separately.

#### Instructions:

1. Cut the meat into medium pieces and put them into a bowl.

2. Make the marinade. Peel and chop onions into pieces, put into the meat. Pour in the oil, add salt and pepper and mix well.

3. Put the meat to marinate in the refrigerator for 2-4 hours (if it is tender meat, if not, then overnight or for a day).

4. Thread the meat and fat onto skewers and chargrill the shashlik for about 15–20 minutes until cooked. Serve with herbs, marinated onions (in vinegar), and flatbread.



#### Ingredients:



Samsa is filled with meat, mutton fat and onions and baked in the oven. It is usually served with a pot of tea or even a meat broth.

#### Instructions:

1. Sift the flour in a bowl and grate with frozen butter.

2. Whip the egg in kefir, add 1 teaspoon salt and mix. Then pour it into the flour. Knead the dough rapidly and place in the refrigerator for 2–3 hours.

3. Prepare the fillings for *samsa*. Finely chop onions, meat, and mutton fat. Add salt, ground pepper, and ground cumin (optional) then mix it together. Cover the minced meat and set to one side.

4. Slice the dough into equal pieces and roll them into a thin, round layer  $\frac{1}{2}$  cm thick, and 8-9 cm in diameter.

5. Put 1 tablespoon of minced meat in the middle of each pat. Form the *samsa* into a triangle, bend and press its corners. Lay the *samsa* on a baking sheet. Coat them with egg yolk and sprinkle with sesame or nigella seeds, if desired. Bake in a preheated oven at 180 degrees Celsius for 35–40 minutes, until golden. *Samsa* is served as a hot snack, with soup or *shurpa*.



In Central Asia, all meal is served with bread. The most common and popular one is a round flat white bread. Typically, it's baked in a fire oven known as a *tandyr* (tandoor). There are many tastes and shapes of flatbread.

#### Instructions:

1. Sift the flour and add yeast, salt, sugar, butter and warm milk. Knead soft dough and leave in a warm place for  $2-2\frac{1}{2}$  hours.

2. Divide the dough into 6-8 exact portions, form into balls. Cover the dough with a tea towel and leave for 30 minutes.

3. Roll the balls out into flatbread by hand, about 2–3 cm thick, and press the center of the flatbread centre with a *chekich* bread stamp or other similar bread stamp.

4. Brush with egg yolk, sprinkle with sesame seeds, and leave for 15 minutes until the oven heats. Then lay flatbreads on a baking sheet and bake at a temperature of 180 degrees Celsius for 20–25 minutes. Serve with any dish.



*Boorsok* is square-shaped fried dough that is a crucial dish at all celebrations, holidays, or funerals. Traditionally cooked outside on a wood-fired stove. It is always eaten with *kaymak*, jam, and hot tea.

#### Instructions:

1. Sift the flour and add yeast, salt, sugar, melted butter and warm milk. Knead the soft dough and leave in a warm place for  $2-2\frac{1}{2}$  hours.

2. Divide the dough into 6 equivalently sized balls. Cover the dough with a tea towel and let sit for 15–20 minutes to make it easier to roll.

3. Then roll the balls out into rather thin flatbread layers, about  $\frac{1}{2}$  cm thick and cut into squares of 4–5 cm.

4. Heat a deep cast iron Dutch oven on a stove and pour in 1 litre of vegetable oil. Bring it to a boil. Then fry the dough pieces by completely submerging them in oil, one slice of flatbread at a time. Stir the pieces of dough with a slotted spoon or spatula for about 2–3 minutes, until they start to turn golden brown, then carefully remove them. Serve *boorsok* with *kaymak*, sour cream or jam and hot tea.



#### **RAW SEA BUCKTHORN JAM**

#### Ingredients:

- 1 kilogram sea buckthorn
- 1¼-1½ kilograms sugar

#### Instructions:

Making this treat will take not take long.

1. Put sea buckthorn in a bowl or pan and add almost all sugar.

2. Grind the berries – this can be done by putting them in a blender, meat grinder, or mashing by hand; the important thing is that the mixture is consistent. Remove the seeds (optional) from the puree by grinding it through a sieve.

3. Pour jam into sterilized jars, sprinkle the remaining sugar on top and cover with lids. A layer of sugar is necessary so that the jam does not spoil.

4. Refrigerate to store.

#### **SEA BUCKTHORN JAM**

#### Ingredients:

- 1 kilogram sea buckthorn
- 1 kilogram sugar

#### Instructions:

Making this treat will take not take long. The berries remain almost entirely intact, but they give the jam an amazing flavour.

1. Lay the sea buckthorn and sugar into a pan in alternating layers. Leave for 5 hours so that the berries release their juice.

2. Put the pan over low heat and cook, stirring, for several minutes until all the sugar has dissolved. It is not necessary to boil the jam.

3. Pour the jam into sterilized jars and refrigerate/store in a cool place.

## Home-made preparations: jams, pickles and dairy products

#### PICKLED ASSORTMENT

#### Ingredients:

- 1½ tomatoes
- 1 kilogram cucumbers
- 2 bitter peppers
- 3-4 cloves garlic
- 1-2 pieces horseradish
- 5 blackcurrant leaves
- 5 dill sprigs
- 5-6 peppercorns
- 3 pieces bay leaf
- 3 tablespoons vinegar
- 3 tablespoons salt
- 3 tablespoons sugar

#### Instructions:

- 1. Wash all vegetables and jars thoroughly.
- 2. Cut the peppers into 4 parts.

3. Lay garlic, horseradish, blackcurrant leaves, dill sprigs, peppercorns and pieces of bay leaf on the bottom of a prepared jar. Add the vegetables.

4. Boil a kettle of water. Pour boiling water over the vegetables, cover with the lid and leave for 20 minutes.

5. Drain the water, boil, pour again and cover with the lid for 20 minutes.

6. Drain the water for the last time and make the marinade with this water: add salt, sugar, and vinegar and let boil. Fill the jars with the marinade. Immediately close tightly, turn upside down and cover with a warm blanket until it cools completely. Turn back upright and store in a pantry.

#### SAUERKRAUT

#### Ingredients:

- 2 kilograms white cabbage
- 1-2 carrots
- 2 heaping tablespoons salt
- 1 litre warm water

#### Instructions:

1. Shred cabbage thinly and grate the carrots. Mix in a large bowl.

2. Lay cabbage with carrots in a sterilized 3-litre jar and tamp well.

3. Add 2 tablespoons of salt to 1 litre of warm water, mix and pour into the cabbage.

4. Cover with a piece of cheesecloth and leave for 2–3 days at room temperature.

5. Check the cabbage 2–3 times a day. Pierce the cabbage with a fork or the handle of a wooden spoon to the bottom, releasing any gases that have built up as it ferments.

6. After fermentation on the third day, cover the jar with a plastic lid and put in the refrigerator. Serve with oil and onions or cranberries to taste.

## DRIED FRUITS



## In conclusion

Farmers and gardeners can decide what to grow in their specific changing climate conditions, and the women of Central Asia can help with those choices by making their own choices about what to grow, buy and prepare, and to some extent about how to prepare it. Some improvements may be beyond the reach of individuals, but in those cases the women of Central Asia in their capacity as community leaders may be influential in advocating for assistance for developing kitchen gardens or clean cookstove initiatives.



## **Useful links**

#### National Meteorological and Hydrological Services

Kazakhstan: kazhydromet.kz

Kyrgyzstan: meteo.kg

Tajikistan: meteo.tj

Turkmenistan: meteo.gov.tm

Uzbekistan: meteo.uz

#### **Online resources**

Central Asia climate change portal: <u>https://centralasia</u> <u>climateportal.org</u>

#### weADAPT: <a href="https://www.weadapt.org/">https://www.weadapt.org/</a>

The weADAPT website provides credible, high quality information on adaptation to climate change, and allows users to share experiences.

#### WOCAT: <a href="https://www.wocat.net/en/">https://www.wocat.net/en/</a>

The World Overview of Conservation Approaches and Technologies (WOCAT) is a global Network that shares information about sustainable land management.

World Bank Climate Change Knowledge Portal: <u>https://</u> <u>climateknowledgeportal.worldbank.org/</u>

This Portal provides for access to climate change and development information at the global, regional, and country levels.

Global Network on Silvopastoral Systems: <u>https://global</u> <u>silvopastoralnetwork.org/</u>

Intergovernmental Panel on Climate Change <a href="https://www.ipcc.ch/">https://www.ipcc.ch/</a>

Hospitality is a hallmark of Central Asian culture, and food plays a starring role. Some traditional dishes date back centuries, and some contemporary dishes reflect the influences of distant places. With increasing globalization and trade, the region is becoming less isolated, and faces new opportunities and challenges. One major challenge already influencing the region is climate change, and one of the most vulnerable sectors is agriculture. Farmers, gardeners, pastoralists and consumers all have a stake in this challenge, and how they respond will determine how secure their food supply – and their cherished food traditions – will be in the coming years.

At the household level in Central Asia, women make most of the food-related decisions, and their choices about what to eat and how to prepare it can make a difference in their households' and communities' responses to the challenges posed by climate change. Women, Food and Climate Change in Central Asia celebrates the place of food in the region's culture and the leadership role of women in household and community affairs. It explains the relationships between climate change and food, and shows how individual decisions can make a difference.

#### Contacts

The Regional Coordination Unit for CAMP4ASB, Regional Environmental Centre for Central Asia (CAREC) 40 Orbita-1, Republic of Kazakhstan, A15D5B3 camp4asb@carececo.org +7 727 265 43 34

carececo.org ca-climate.org

#### TAJIKISTAN

The National Coordination Unit for CAMP4ASB under the Committee for Environment Protection, Government of the Republic of Tajikistan 5/1 Shamsi, Dushanbe, Republic of Tajikistan, 7340346 camp4asb@gmail.ru +992 44 640 15 16 tajnature.tj The National Coordination Unit for CAMP4ASB under the Ministry of Finance, Republic of Tajikistan

under the Ministry of Finance, Republic of Tajikistan 3 Ak. Radzhabovykh St., Dushanbe, Republic of Tajikistan camp4asb@greenfi nance.tj +992 221-02-34, +992 221-67-43 www.camp4asb.tj

#### UZBEKISTAN

The National Coordination Unit for CAMP4ASB under the Agro Industry and Food Security Agency of the Republic of Uzbekistan Labzak 1A St., Tashkent, Republic of Uzbekistan, 100000 info@rra.uz + 998 71 241 45 30 www.uzaifsa.uz

Center of Hydrometeorological Service (Uzgidromet) 72 1st Proyezd Bodomzor Yuli, Tashkent, Republic of Uzbekistan, 100052 uzhymet@meteo.uz +998 71 237 35 11, +998 71 235 73 93 www.meteo.uz