



FACT SHEET

RADIO PRODUCTION GUIDE

OUTREACH GUIDE

CHARCOAL AND WOOD COOKING

SOUTH AFRICA

INTRODUCTION

When it comes to the energy source frequently used throughout the continent of Africa for cooking, charcoal is one of the most popular. Globally, it's been reported that 2.8 billion people use biomass fuels for cooking, and these fuels include firewood, charcoal, dung, and agricultural residues. Every year, 51.2 Million tons of wood charcoal is produced and 57% of that is produced on the continent of Africa. Over the past twenty years, there has been a significant increase in the production of coal in many African nations, including South Africa, Madagascar, Tanzania, Zimbabwe, Ivory Coast, and the Democratic Republic of the Congo. Charcoal production on the continent of Africa has increased massively for a handful of reasons. Firstly, charcoal is easy to produce and this allows individuals as well as companies to make a product themselves and directly sell it to distributors or buyers. Secondly, it is a fuel source for cooking that is longer lasting than just wood; charcoal can be stored for much longer without damage or losing its power and it can burn for much longer compared to wood. While charcoal production has created job opportunities and markets within many countries, it is also a major threat to the environment. Because charcoal is made through burning of wood into "chars" with low oxygen (hence char-coals), many trees and forests have been cut down at rapid rates. In addition to contributing to deforestation, charcoal production and the use of it in cooking also pollutes the air. When things like dung, wood, and charcoal are burned, the smoke can impact people's ability to breathe well and expose them to toxins on a regular basis. This threatens the health and lives of many people, including women and children who are often in roles of routine cooking. The reliance on lucrative and quick products like charcoal in many African nations is connected to the legacy of colonialism (racist extraction) and the lack of structured markets and sustainability due to generations of extraction and domination. Because there aren't major companies or organizations registered within many countries' governments when it comes to charcoal, this means that much of the production is unregulated and carried out by individuals or groups of individuals, contributing to deforestation. The solution to the mass production of charcoal and the negative impacts on the environment isn't an entire halt to charcoal. Because many people are reliant on charcoal on a daily basis for both income and cooking and heating, moving towards sustainability is a step in the right direction to producing charcoal in a better way while pushing governments to introduce better fuels and energy infrastructure. Moving forward, a hybrid strategy of regulating charcoal production while introducing cleaner and safer energy sources for cooking can continue to provide livelihoods for many communities on the continent and help the environment.

IMPACT OF UNSUITABLE CHARCOAL PRODUCTION

Deforestation, floods, and global warming

Charcoal is made from burning wood into concentrated “chars” of carbon. This is done by burning wood in a low oxygen environment, often covering the burning wood with sand. This process removes water, methane, hydrogen, and tar from the wood, becoming charcoal. The major impact of unregulated charcoal production is increased deforestation to have supply of wood to make charcoal. Deforestation leads to an excess of carbon dioxide in the atmosphere, which leads ultimately to climate change and flooding. Because trees take in carbon dioxide (CO₂) for photosynthesis, which is their energy creation process, they reduce the amount of CO₂ in the atmosphere. Excess CO₂ in the atmosphere contributes to the greenhouse effect and the warming of the earth. The warming of earth jeopardizes many of the earth’s functioning including biodiversity and survivable climates for humans. Deforestation also can lead to more flooding because with less tree coverage, soil can become oversaturated and unable to hold all rainfall, leading to a greater likelihood of flooding. Lastly, A handful of gases are emitted from charcoal when it is burned, and the most harmful emission for the environment is carbon dioxide, in addition to the other carcinogens that threaten human health.

Air pollution and Human Health(in cities and in homes)

The World Health Organization estimates that charcoal cooking leads to 10,000 premature deaths on a daily basis, or 4 million premature deaths a year. When charcoal is burned, chemicals and toxins are released into the air. Breathing in air polluted with smoke raises the risk of breathing in particles of smoke that can puncture the lungs and bloodstream, leading to pneumonia, stroke, heart disease, and lung cancer. The World Health Organization refers to this in home breathing of toxins, household air pollution, and it can be deadly. This kind of health risk highly affects women and children who are often cooking in many households and are therefore routinely exposed to smoke and fumes. For example, the exposure to household air pollution nearly doubles the risk for childhood pneumonia, and it’s reported that this is responsible for 45% of all pneumonia deaths in children less than 5 years old. Additionally, about 17% of lung cancer deaths in adults are caused by the carcinogens (toxic fumes) that come from the burning of solid fuel like charcoal. Lastly, household air pollution can cause respiratory issues or worsen existing conditions like asthma and bronchitis as well. Overall air pollution negatively impacts communities and the world by compromising clean air.

SUSTAINABLE CHARCOAL PRODUCTION AND ALTERNATIVES

Is there a sustainable way to make charcoal?

The answer is yes. The biggest issues with charcoal production are the negative impacts on human health and the environment. The health risks affect both those who use charcoal regularly use charcoal for fuel, as well as for those who produce it. Because charcoal is made through a process of burning wood, there is exposure of emissions to those who set the wood on fire and then cover it (usually with sand). However, charcoal is an affordable fuel for 3 million people on the continent who are reliant on charcoal for cooking. Also, thousands are reliant on charcoal production for an income. With all this in mind, there are ways of moving forward that prioritize more sustainable ways of making and using charcoal as well as implementing policies that can regulate production and introduce cleaner sources of energy at more affordable rates.

Better Charcoal stoves:

- Energy Uganda Foundation and the Climate Neutral Group have partnered together to make charcoal efficient stoves that trap more heat and market them at an affordable price in various regions in Uganda. Over 90% of rural households use open flame stoves while urban households use less energy efficient charcoal ones. Energy efficient charcoal stoves trap more heat, which requires less charcoal and produces less smoke. This saves many households money and also allows the government and other initiatives to move towards other fuel production to maintain the employment energy production provides.

Read more: <https://climateneutralgroup.co.za/efficient-charcoal-stoves-in-uganda/>

Sustainable production of charcoal- kiln and chimney production:

- In Zambia, local producers and environmental consultants have created a more sustainable charcoal production by producing it in a kiln that reduces carbon emissions. By burning the wood in a kiln made of metal barrels, the carbon remains in the barrels and can be put back into the soil. This method of charcoal making is a lot more safe to those making it as well as those around it who would be subject to the fumes and emissions of the burning.

Read more: <https://www.unep.org/news-and-stories/story/charcoal-burning-issue>

- Similarly in Senegal, the use of a kiln, called a Casamance kiln, can greatly contribute to sustainability in both the production (less emissions) as well as a producing a product that burns for longer. This kiln is equipped with a chimney that can be made of oil drums, which allows for better control of airflow. Also, rather than all the emissions and harmful gases escaping into the air during production, some of them stay within the kiln, reducing air pollution. Lastly, this kind of production can

produce more efficient charcoal because the carbon that stays within the kiln can go back into the charcoal, allowing it to burn longer and have a 30% greater efficiency rate.

Read more: https://english.rvo.nl/sites/default/files/2013/12/Report%20Charcoal%20-%20BTG%20-%20NPSB_0.pdf

Policy that regulates the market:

- In Tanzania, the government has tried to ban charcoal production, with little success as people continued to make and sell charcoal. In recent years, the government, specifically the Tanzania Forest Conservation Department in collaboration with Mjumita, a nonprofit group, have shifted to allocating certain parts of the country and villages for charcoal production so as to not deplete multiple forests all at the same time. For example the government has dedicated village land for forest reserves, of which 10% of the area is designated for charcoal production, beekeeping, and timber harvesting. Additionally, there are plans to introduce cleaner energy source alternatives.

Read more: <https://www.aa.com.tr/en/africa/tanzania-testing-novel-model-to-produce-green-charcoal/1899312>

DEFINITIONS

- **Biomass** is material that comes from living organisms, such as animals and plants. Biomass can be used for energy and cooking, with the most common biomass materials being plants and waste.

- **Colonialism** is a system of white supremacy that sought to dominate and extract from countries in Africa. Colonialism is deeply violent as it attempts to make Black and Brown people inferior. Due to years of exploitation for Europe's benefit, this left countries on the continent with little structure leading to "quick money" economies like charcoal production and lack of basic infrastructure.

- **Exploitation** refers to the use of products or labour in an unfair way.

- **Infrastructure** refers to the basic organisational structures of a system, project, or society such as buildings, roads, and energy sources.

- **Sustainable charcoal production** refers to holistic processes that both create

safer and cleaner ways to produce charcoal as well as the implementation of other kinds of policy and strategy that conserve forests and make other fuels available.

- **Urbanization** is the process of an area becoming more densely populated (less rural) and industrialized. This can change the environment significantly as sometimes trees and other kinds of nature are cleared to expand cities.

- **Solar** cooking is the process of converting sunlight into usable heat for cooking. Solar cooking devices include a solar oven or a solar stove.

-**Biogas digester** is a system or machine that processes waste into gas, or what is called biogas. The biogas produced from the waste is then held by the digester so the energy can be productly used rather than be let out as emissions.

COOKING FUELS: BENEFITS AND DISADVANTAGES		
	ADVANTAGES	DISADVANTAGES
Biomass	<ul style="list-style-type: none"> - It can be a renewable resource if produced sustainably. - It is easily accessible: biomass generally doesn't need any processing to be used, and is often an affordable option. 	<ul style="list-style-type: none"> - The burning of any kind of biomass produces emissions that damage the environment and human health. - While biomass doesn't need to be processed, instances of things like wet wood can lead people to waiting to cook and heat for much longer than anticipated.
Paraffin	<ul style="list-style-type: none"> - Paraffin, or sometimes known as kerosene, is a hydrocarbon liquid that comes from petroleum and it is efficient and can burn for a long time, often used for cooking and heating. - It is a 'cleaner' fossil fuel, giving off less emissions than wood or charcoal. 	<ul style="list-style-type: none"> - Like any fossil fuel, paraffin does produce greenhouse gas emissions. - Paraffin is hard to recycle and reuse, damaging the environment. Paraffin is also highly flammable and can cause house fires easily.
Charcoal	<ul style="list-style-type: none"> - Charcoal (a biomass) is an affordable fuel to most who rely on it for cooking. - Charcoal burns for longer than wood, providing people with more efficiency for their money. 	<ul style="list-style-type: none"> - Charcoal contributes to household air pollution as it is used within home spaces, compromising the health of people like women and children who are often cooking. - Charcoal accelerates deforestation.

<p>Solar</p>	<ul style="list-style-type: none"> - Solar energy creates no emissions, which aids the environment and reduces risk for people and communities. - Solar cookers and solar ovens tend to last for a long time and have no ongoing cost as the sun is free. - There is no air pollution health risk related to solar cooking. 	<ul style="list-style-type: none"> - When there is no sun, the stove cannot operate. So in climates where there are heavy rain seasons, snow, or consistent cloud coverage, it becomes difficult to rely on a solar cooking only. - Solar ovens usually only heat up to 160c so it takes longer to cook in it (but the food does not burn and can be left unattended). - Solar cooking stoves and ovens are not always easy to find.
<p>Biogas digester</p>	<ul style="list-style-type: none"> - Biogas is a kind of gas fuel that is produced after organic materials (plant and animal products) are broken down by bacteria in an oxygen-free environment. One of the major advantages is that it is a renewable energy and doesn't release greenhouse gases, which is beneficial for human health and the environment. A biogas digester can be created at a large-scale level - for example a waste treatment plant which collects food waste and turns it into gas. It can also be created at a household level, usually turning sewage (human poo) into gas for cooking in the household. - Biomass digesters can turn something unwanted (waste, sewage) into a cooking fuel for free for a household, or in terms of a business waste that is often costly to dispose into something profitable. 	<ul style="list-style-type: none"> - Biogas digesters are not easy to build, some level of skill and expertise (usually an engineer) is needed to ensure that it is built safely - as it stores gas it can be dangerous - explode. - At a household level there needs to be enough people (usually at least 6 people) in the household to generate enough waste for it to be a sustainable source of energy for cooking.

MYTH BUSTER**MYTH**

There is no way to make charcoal sustainably

FACT

Although charcoal production has accelerated deforestation in Africa, there are ways to produce charcoal that can be more environmentally friendly than in the past. There are also policies and regulations that can manage the rate of production as well as which forests are designated for charcoal production.

Charcoal is an inefficient fuel for cooking

While charcoal does produce pollution in the form of black soot, it is a more controlled and longer lasting fuel than cooking with wood.

Charcoal production should be banned or outlawed due the damage it causes on the environment

While charcoal production and the burning of it poses health risks to communities and environments, it is also the source of many peoples livelihoods. Moving forward, implementing policies that manage the production as well as try to introduce cleaner energy sources at affordable rates can help create a more sustainable future.

Charcoal production has always been a popular industry on the continent

In some African nations, charcoal production has doubled over the past twenty years. The increasing demand for employment and changing landscape or urbanisation has driven up the market for this kind of fuel. This is underpinned by the legacy of colonialism and the lack of infrastructure of fully sustainable and formal economies due to centuries of exploitation. Colonialism was a system of white supremacy that sought to dominate and extract from countries in Africa. Because many resources were taken from African countries, this has led to “quick money” economies in the present because there is a lack of infrastructure of energy sources like electricity or formal economies.

CASE STUDY

Solar Cooking in Tanzania

In the Arusha region of Tanzania, two international organizations focusing on community and sustainability worked to provide 100 solar and 100 fireless cookers to 100 families. This initiative is very significant for a number of reasons. Firstly, it was measured that health complications with the eyes or respiratory system decreased by 40% due to the lack of emissions from daily cooking. Secondly, The cutting of local wood decreased, helping to decrease deforestation. Lastly and importantly, since these stoves didn't require families to buy fuel, this resulted in more children attending school as families has more disposable income.

Both organizations led workshops on how to use the devices and families were able to cook most of their everyday staples.

More here: <https://solarcooking.fandom.com/wiki/Tanzania>

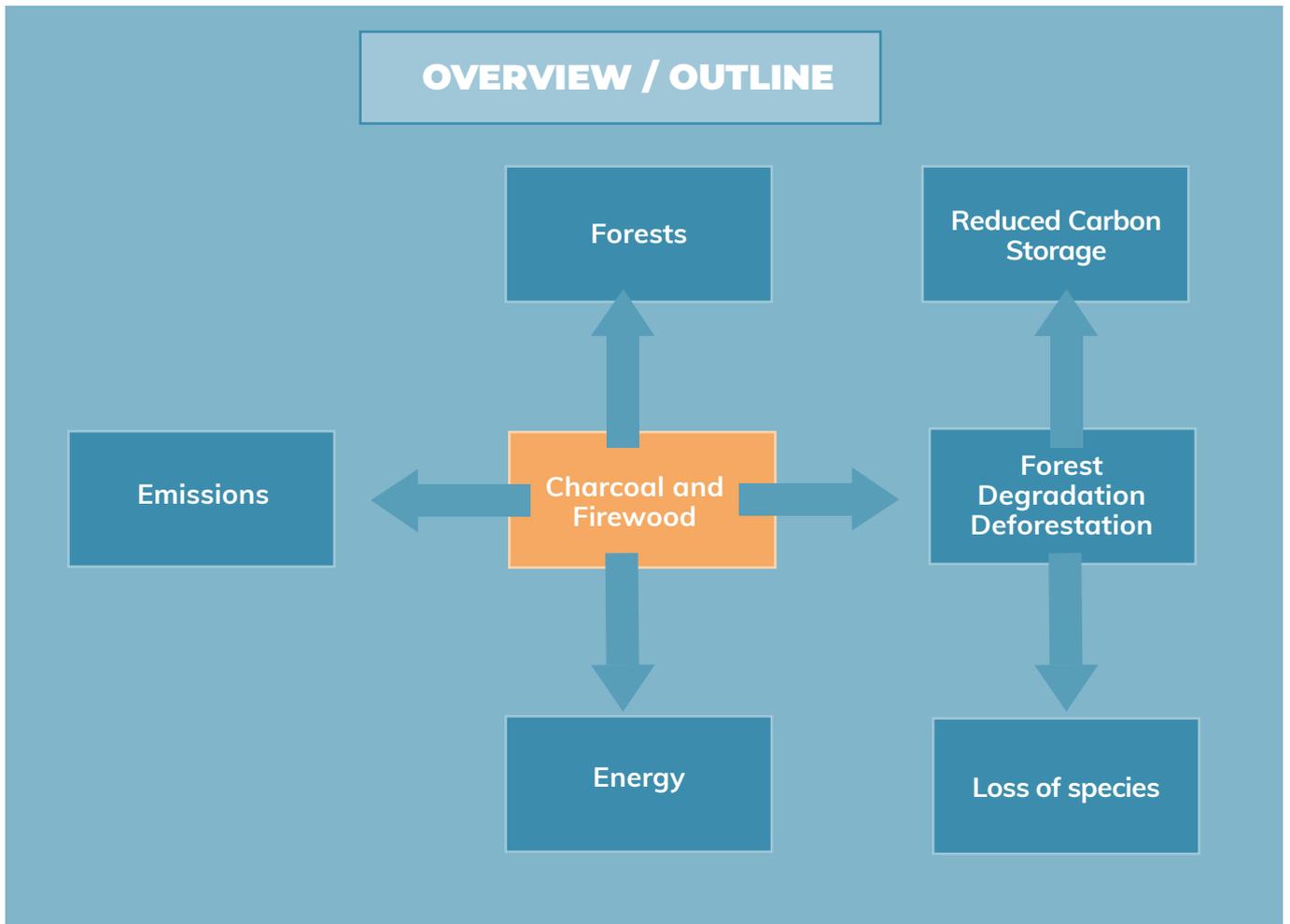
Biogas digester in Kenya

In a farming area just outside of Nairobi, farmers have begun using biomass digesters to make fertilizer and nourish the soil in a natural way. What makes a biomass digester for these farmers is a brick tank, and one farmer, Josphat Muchiri Njonge, uses the dung from his 10 dairy cows to create a rich organic fertilizer. This greatly aids the soil by keeping it nutrient rich and able to retain water (repents flooding) and produce efficient harvests that support farmers and consumers. The digester itself allows natural microorganisms to break down manure in the absence of oxygen to create compost and biogas, a clean, renewable energy source. This energy source could be a useful energy source when it comes to the development of economies as well as cities, not not to mention reducing deforestation.

More here: <https://www.africanews.com/2019/08/06/kenyan-farmers-make-use-of-biogas/>

RESOURCES

- Map of Wood Charcoal production in Africa - <https://www.grida.no/resources/7497>
- Energy Education : Charcoal - <https://energyeducation.ca/encyclopedia/Charcoal>
- Beyond Charcoal: How One Company Helps Rwandan Families Save their Health and the Environment, One Cookstove at a Time - <https://www.worldbank.org/en/news/feature/2018/12/19/beyond-charcoal-how-one-company-helps-rwandan-families-save-their-health-and-the-environment-one-cookstove-at-a-time>
- Improved cookstoves in Maputo city, Mozambique - <https://www.goldstandard.org/projects/improved-cookstoves-maputo-city-mozambique>
- Greening Zambia's charcoal business for improved livelihoods and forest management through strong producer groups - <http://www.fao.org/3/i7238e/i7238e.pdf>
- 10,000 biogas plants to be installed in Tanzania - <https://snv.org/update/10000-biogas-plants-be-installed-tanzania-support-government-norwegian-embassy>
- Charcoal, carbon emissions, and international conventions/ protocols - https://energypedia.info/images/4/4a/EN-Charcoal%2C_carbon_emissions_and_international_onventions%3Bprotocols-Almeida_A._Site.pdf



Resource: https://energypedia.info/images/4/4a/EN-Charcoal%2C_carbon_emissions_and_international_onventions%3Bprotocols-Almeida_A._Sitee.pdf



DID YOU KNOW?

In recent years, South Africa has moved towards using invasive plants and trees as the source of making charcoal and other biomass fuels. This strategy helps both the problem of reducing the space and water invasive plants take up and reducing deforestation of trees that are needed in the country



South Africa imports charcoal from neighboring countries like Namibia to meet the domestic demand of charcoal. This domestic need is often used for coal stoves in rural areas, as well as for outdoor cooking, or braaing as its called. In Namibia, about 30% of the 150 000 tons of charcoal produced in Namibia is imported to South Africa.

Source: CapeTalk

Much of the local charcoal production in South Africa is exported, oftentimes to countries in Europe. This is due to differences in infrastructure and industrialisation in the country. In comparison to other countries on the continent like Tanzania or DRC, there is less reliance on charcoal for everyday cooking as electricity and gas are some of the main and most common fuels for cooking. Historically, paraffin and charcoal were used by many people during apartheid. Currently, SA sells charcoal to Europe as is it a semi profitable export product

Source: Biofund

Out of all the wood **consumed and produced** in South Africa, about 49% is used for woodfuel and charcoal. This differs from regions like West Africa where 94% of wood consumed accounts for charcoal production.



RELATED CASE STUDY

Upcycling invasive plants and wood

In South Africa, the government in 2020 has partnered with local manufacturing plants to “upcycle” invasive vegetation to make charcoal. Because invasive species take up about 6% of annual freshwater South and there are already expensive efforts spent annually removing this vegetation, the removal and use of them to make charcoal is a more positive alternative when it comes to making charcoal without accelerating deforestation. This project aims to make 10,000 tons of charcoal suitable for export and will create about 170 jobs in the Western Cape of South Africa.

More here: <https://www.cbn.co.za/featured/eco-friendly-charcoal-production-to-boost-sas-water-security/>

<https://www.esi-africa.com/industry-sectors/renewable-energy/upcycling-invasive-wood-to-address-climate-change/>



CHARCOAL AND WOOD COOKING

RADIO PRODUCTION GUIDE



ANGLES

DIFFERENT WAYS TO TALK ABOUT “CHARCOAL AND WOOD COOKING”

- Charcoal use in Africa the facts
- What are the pros and cons of charcoal in your community?
- What does charcoal have to do with deforestation?
- What alternatives to charcoal exist for cooking
- How can charcoal production be managed in more sustainable ways?

CHOOSE AN ANGLE

“Charcoal use in Africa”

DIFFERENT WAYS TO TALK ABOUT “ CHARCOAL USE IN AFRICA”

- What are the pros of charcoal in my community (employment? livelihood?)
- What are the cons of charcoal in my community (deforestation, health issues)

FORMATS



VOX POPS (30 SECONDS)



Vox pop aim

To get many opinions on one topic.



Who do you talk to?

Anybody in the community, for example someone who uses charcoal on a regular basis, or someone that makes it



Question

Do you like using charcoal for cooking? Explain why you think that cooking with charcoal is a benefit or a burden in your community?



AUDIO COMMENTARY (2 MINUTES)



Audio commentary aim

To get people's opinion about a topic that they care deeply about.



Who do you talk to?

- An NGO representative whose work involves sustainable charcoal production or environmental justice
- A young community activist in your community who talks about charcoal or better fuel production; and
- A government representative who has advocated for better energy policies

Talking points:

- What role does charcoal play on the continent of Africa?
- What are the negative impacts of charcoal production and charcoal use on the environment and human health?
- How does charcoal production contribute to deforestation and CO2 emissions?
- Why is charcoal so popular amongst many countries on the continent?
- How does the legacy of colonialism affect why charcoal is so widely produced and used?
- What are some of the solutions to charcoal production? Are there alternative ways to make it?
- What are alternative fuels or ways of using charcoal ?



PUBLIC SERVICE ANNOUNCEMENT (PSA) 30 SECONDS



The aim of a PSA

To create a public awareness message. Create a PSA that encourages people to save water



Create a PSA (Public Service Announcement) that raises awareness about the importance of talking to young people about how to understand the issue of charcoal, what sustainable options there are, and how to push for cleaner fuels.

Voice 1: Nozuko, is charcoal both a part of your everyday life but also something that can cause harm over time?

Voice 2: Yes, I think so, but what can young people do about it?

Voice 1: I think we can lobby for cleaner fuels and more efficient appliances that use charcoal

Voice 2: That makes sense, we can make change for sustainability and health of ourselves and the planet!

Slogan: Sustainable charcoal is the way forward!



AUDIO PROFILE AIM (3 MINUTES)



Audio profile aim:

To get a first person account of someone's experience, passion or journey. Audio profiles often aim to inspire.



Who do you talk to?

- A person who works in charcoal production;
- A leader of a company or NGO whose work addresses sustainable charcoal production
- A government representative who has advocated for better energy policies



Questions

- How do you make sure you have enough water?
- What water saving ideas can you share with us?
- How do you think the water situation in our area is impacting on food production?
- How do you think the water situation in our area is impacting on people's health?

Please see interview questions in "How to present your show"



HOW TO PRESENT YOUR SHOW

Use your produced radio features, your research and the suggested script and questions to write your own script.

[INTRO:]

Host 1: It's just gone [TIME] and you're just in time for the [NAME OF SHOW] on [RADIO STATION]. My name is [NAME].

Host 2: And my name is [NAME]. On today's show, we will be talking about charcoal and wood cooking

Host 1: Oh, wow! That's a complex topic! Where will we begin?

Host 2: How about we begin with defining what charcoal is and what it means for lots of African countries?

Host 1: Shap, go for it!

Host 2: Charcoal is a wood fuel that 3 billion people rely on for everyday use like cooking. It's a very efficient fuel compared to wood and its readily accessible and very affordable. Charcoal comes from burning wood in a low oxygen environment, like putting sand on top of burning wood, and after the fire, what remains is chars of the wood, becoming charcoal. You get it?

Host 1: Oh that makes sense! And what role does it play for Africa?

Host 2: Well, since so many people rely on charcoal, it's a big industry, but it comes at a cost. Charcoal production has accelerated deforestation in

many countries which really hurts the environment in a lot of ways, from lack of CO2 regulation to flash flooding due to soil erosion.

Host 1: Does burning coal also cause emissions?

Host 2: It does. And this has very negative impacts on the health of people who are regularly exposed to charcoal smoke. The World Health Organization estimates that 10,000 lose their lives prematurely everyday due to the negative impacts of air pollution like pneumonia, stroke, heart disease, and lung cancer

Host 1: In other words, charcoal production is both central to many people's lives, but also has a lot of negative impacts? What solutions are there?

Host 2: Exactly. There are solutions that we can work towards that still keep people employed; use sustainably made charcoal cooking appliances and lobby for policy that regulates the market and offers new jobs in more sustainable fuel production.

Host 1: I see! So it's about trying to reduce harm while building up other parts of the economy

Host 2: That's right. Prioritizing people's lives, namely women who are often doing the cooking over charcoal stoves, while



HOW TO PRESENT YOUR SHOW

Use your produced radio features, your research and the suggested script and questions to write your own script.

creating more sustainable options can get us to a brighter future.

Host 1: That makes sense, and it's inspiring to see the ways we can positively impact our communities.

Host 1: I think this is the perfect time to hear from our listeners. We would love to hear from you. What role does charcoal play in your community? Have there been innovations that you know of for more sustainable and safer ways to use charcoal?

[PRESENT WHO IS BEING INTERVIEWED]

[PLAY THE INTERVIEW]

[ENGAGE AUDIENCE BY ASKING QUESTIONS AND GIVING THEM A CHANCE TO SHARE THEIR THOUGHTS ABOUT WHAT THEY'VE HEARD]

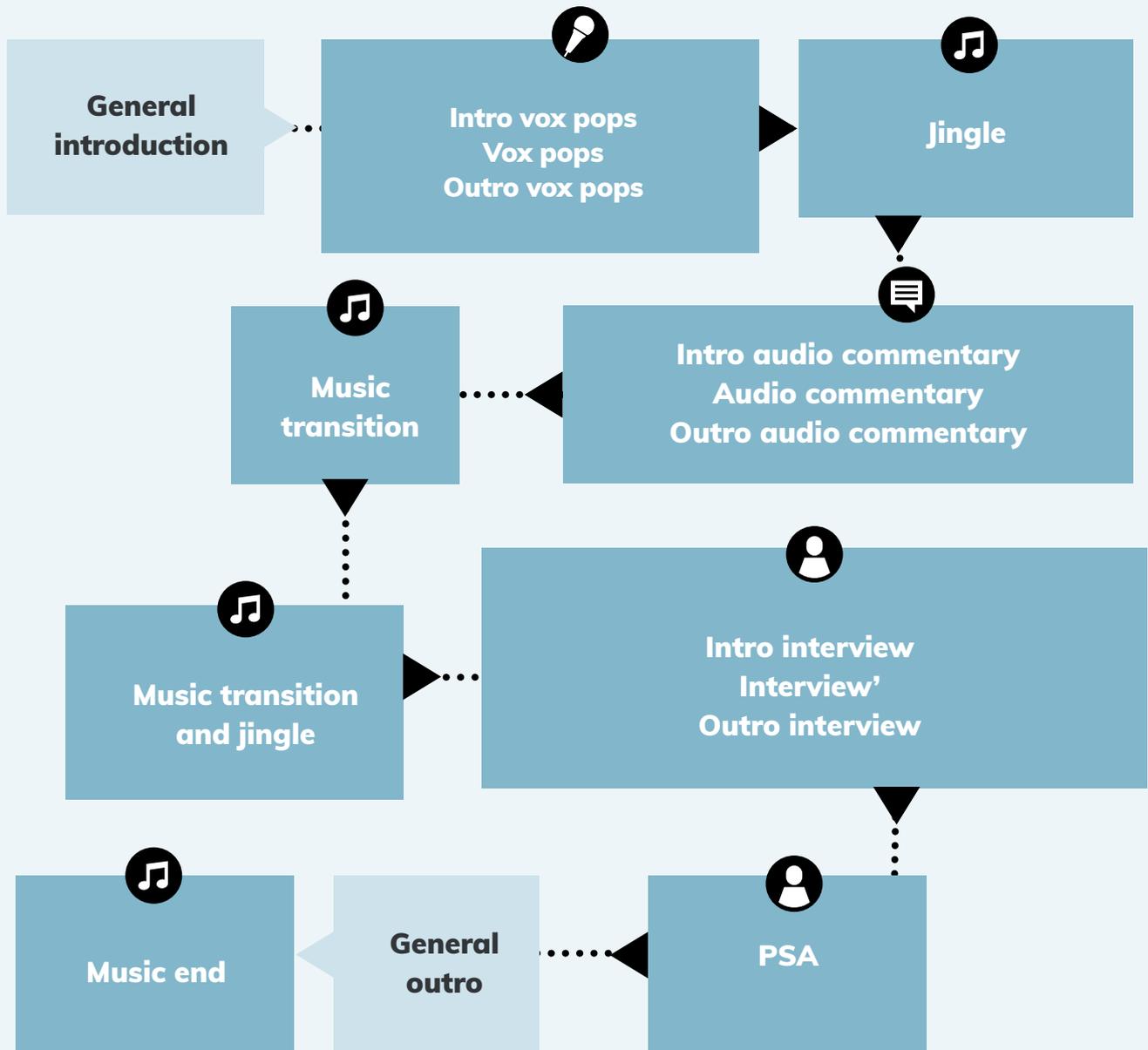
Host 1: It was good to hear from our listeners. I really like hearing about how

some of our listeners use charcoal and try to find alternative and safe ways to use it.

Host 2: Me too, it really does show that we can start today to make changes in our communities and protect the health of our environments.

Host 1: Today's conversation has been really informative and energizing! Join us next week on [DAY] at [TIME]. We'll be talking all about [NEXT WEEK'S SHOW TOPIC]. Until then, it's bye from us!

SHOW OUTLINE



ETHICS AND CONSENT

This may be a sensitive topic for some, so make sure you inform your audience to respect those who share personal stories in the space.