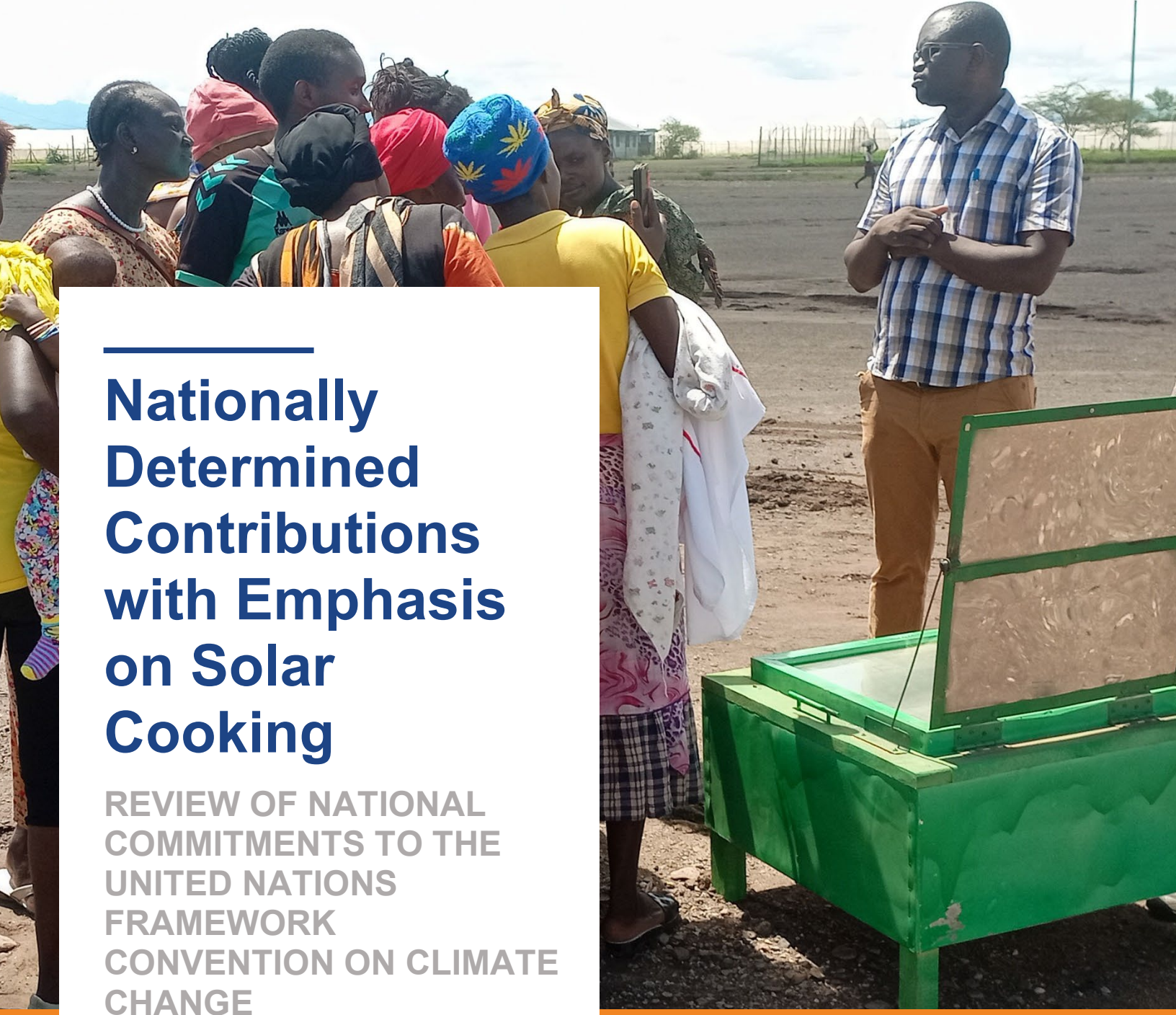

Nationally Determined Contributions with Emphasis on Solar Cooking

REVIEW OF NATIONAL COMMITMENTS TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

2023

Solar Cookers International

SCI
SOLAR COOKERS INTERNATIONAL

This report was prepared by Solar Cookers International, a 501(c)3 organization based in Sacramento, CA, U.S.A.

Data listed in this document was sourced from the UNFCCC NDC Database (http://www4.unfccc.int/ndcregistry/Pages/All.aspx) and was prepared by Solar Cookers International (SCI) Staff. Thanks to SCI Board Member, Michael Paparian for conceptualizing the report.

Front Cover: Kakuma Refugee Camp residents attend a solar cooking training facilitated by Eco-Impact Hub, a Community Based Organization (CBO) registered in Kenya. Programming is made possible through collaboration with Solar Cookers International.
Photo credit – Eco-Impact Hub, CBO

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Clean, Sustainable Cooking

Examining how Nationally Determined Contributions (NDCs) support the transition to clean, sustainable energy for cooking.

Countries develop plans on how they will reduce emissions and deal with climate change. These plans are called Nationally Determined Contributions (NDCs). All Parties to the Paris Agreement have submitted at least a first NDC to the United Nations Framework Convention on Climate Change (UNFCC) secretariat, with the majority of Parties also communicating new or updated NDCs.

Nationally Determined Contributions (NDCs) can create transformational change in a nation's household energy plan by including clean, sustainable cooking targets.

According to the World Health Organization (WHO), around ~2.3 billion people cook using polluting open fires or simple stoves fueled by kerosene, biomass (wood, animal dung, and crop waste), and coal. The WHO names cooking with polluting fuels as one of the largest environmental contributors to ill health, especially for women and children. Apart from the devastating health implications, cooking with polluting fuels also accelerates deforestation and contributes to global greenhouse emissions.

> **"Burning solid fuels for cooking emits some of the most significant contributors to global climate change, and unsustainable wood harvesting contributes to deforestation, reducing carbon uptake by forests."**
> ***(https://tinyurl.com/4sx2z9t2)***

Recognizing the impact cooking has on health and the environment in national policy documents like NDCs is the first step towards progress. However, some proposed measures would achieve only incremental change. For example, many NDCs include LPG in fuel goals; though, LPG continues the dependence on fossil fuels that contribute to climate change.

Solar thermal cooking is an appropriate, accessible, no-emission technology that addresses key drivers of climate change by reducing carbon pollution and minimizing the need to source wood and other polluting fuels. Solar cooking technologies help break the cycle of energy poverty and are both adaptive and mitigating solutions that support a transition to clean, sustainable cooking.

A solar cooker absorbs and transforms sunlight into thermal energy to generate the temperatures necessary to cook meals, pasteurize water, and dehydrate food.

Solar Cookers International (SCI) is internationally recognized for its expertise in scientific research and developing safe and sustainable solar thermal-powered cooking solutions. SCI collaborates with world leaders and global communities disproportionately affected by economic inequity and climate change. Founded in 1987, SCI now has collaborators in over 135 countries, making nearly 8 billion solar-cooked meals possible. SCI has special consultative status with the United Nations Economic and Social Council and regularly provides expertise in support of the United Nations Sustainable Development Goals.

For more information about SCI please visit solarcookers.org or email info@solarcookers.org.

The following pages highlight language from NDC reports and show potential opportunities to include clean, sustainable cooking in NDCs, by country.

Methodology

For purposes of this report, NDCs officially submitted by each party to the Paris Climate Change Agreement are examined. In most cases, Parties also submitted an "INDC" -- an Intended Nationally Determined Contribution. This report only reviews the final NDCs. The United Nations posts the NDCs online here: https://unfccc.int/NDCREG.

Each submitted NDC was examined for any references to cooking, the cooking sector, and cooking technologies. Reports were also examined for mention of mitigation and adaptation goals, measures, and initiatives in the clean cooking sector that signaled potential space for solar cooking adoption.

Generally, if NDC language was singularly focused on one, national blanket approach, like LPG fuel substitution, the party was not recognized as being receptive to solar thermal cooking initiatives. If the NDC mentioned solar cooking directly or renewable energy in relation to cooking, they were recognized as being receptive to solar thermal cooking initiatives. Additionally, and more subtly, if the NDC did not specifically mention renewables but highlighted several initiatives, discussed multipronged approaches, only mentioned targets but without corresponding measures, or mentioned the need for improved technology (i.e., cookstoves) without specifying the type, the party was recognized as being potentially receptive to solar thermal cooking initiatives.

Findings

NDCs mention the cooking sector generally and/or contain language which may be supportive of solar thermal cooking

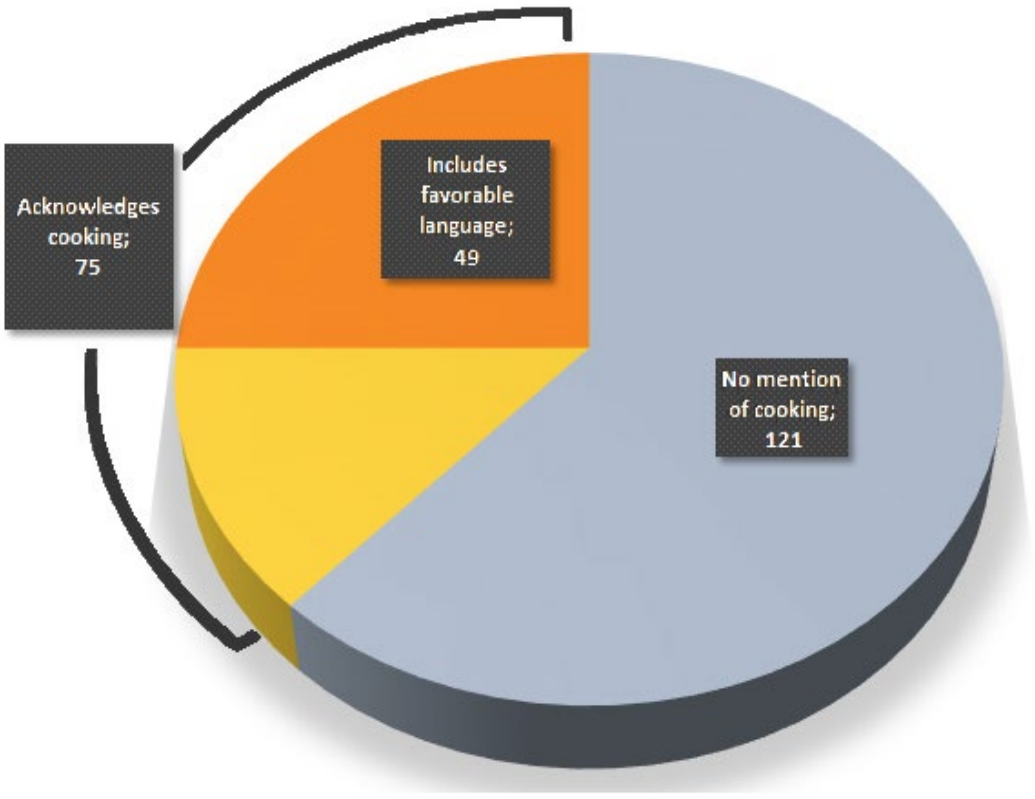
Of 196 Nationally Determined Contributions (NCDs) submitted to UNFCCC, **75** specifically mention cooking or cookstoves, and of those, **49** include language that may support solar cooking solutions.

Three NDCs of the 46 currently specifically reference solar cooking as a sustainable approach.

The Central African Republic is particularly noteworthy for its inclusion of specific targets for solar cooker adoption.

***Penetration of 5% of household equipped with solar cookers in 2025 and 10% equipped in 2030 (targets: 50% female heads of household)*- (Central African Republic NDC, PG 14, 2021)**

COUNTRIES THAT INCLUDE LANGUAGE THAT COULD SUPPORT SOLAR COOKING
Afghanistan, Angola, Bangladesh, Belize, Benin Burkina Faso, Cambodia, Central African Republic, Chad, Colombia, Comoros, Côte d'Ivoire, Democratic Republic of the Congo, Eritrea, Eswatini, Ethiopia, Gambia, Ghana, Guinea, Guinea Bissau, Haiti, Honduras, Kyrgyzstan, Lao PDR, Lesotho, Liberia, Madagascar, Malawi, Marshall Islands, Mauritania, Mongolia, Morocco, Myanmar, Nepal, Niger, Nigeria, Niue, Pakistan, Paraguay, Rwanda, Senegal, Sierra Leone, Somalia Sudan, Timor-Leste, Togo, Uganda, Vanuatu, Viet Nam

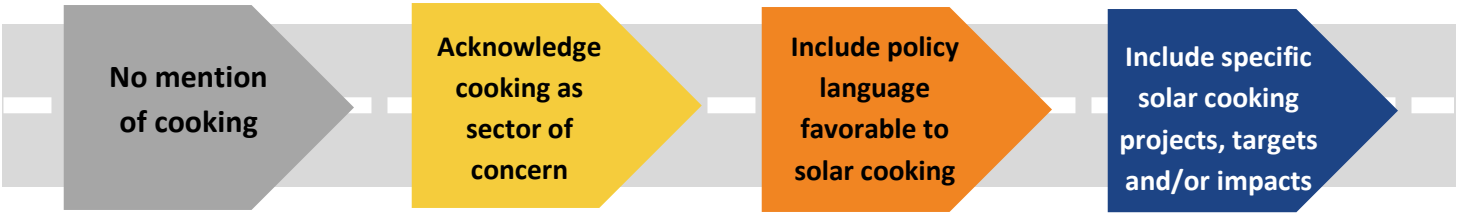


196 NDCs Analyzed as of 18-October-2023


NDC Map
2023 | Analysis of Cooking Sector Policy Language
No NDC submitted
No mention of cooking
Acknowledges cooking as a sector of concern or potential development
Includes policy language that may be favorable to solar cooking

Next Steps

Including supportive language in policy documents can soften the ground for collaboration, funding, and project opportunities. Ideally, NDCs would include specific mention of solar cooking projects, goals, and/or impacts. However, more modest, broad language can also be a beneficial early step in advancing a party along the path towards achieving no-emission cooking solutions.



Decision makers, civil society, and individuals can use their positions to advance parties along the path towards effective solar cooking solutions by taking the recommended actions below.

	DECISION MAKERS	CIVIL SOCIETY & INDIVIDUALS
If your NDC does not mention cooking:	Consider including language that recognizes the impact cooking and cooking-related activities, such as harvesting firewood, has on climate change.	Encourage decision makers to include language that recognizes the impact cooking and cooking-related activities, such as harvesting firewood, has on climate change.
If your NDC mentions cooking but does not contain language that is favorable to solar cooking:	Strengthen existing NDC language to highlight clean cooking solutions that utilize renewable energy sources	Encourage decision makers to strengthen existing NDC language to highlight clean cooking solutions that utilize renewable energy sources
If your NDC includes language that is favorable to or specifically mentions solar cooking:	**Talk to Solar Cookers International to learn more about opportunities for collaboration and unlocking support for solar cooking initiatives**	**Encourage decision makers to commit resources to solar cooking initiatives. Include solar cooking in your organization's mission and action plan.**

Resources that support efforts to inform and appeal to stakeholders:

Learn about solar cooking basics and see a summary of the economic impact solar cooking can have on your country by visiting solarcookers.org/resources/download. Learn about solar cooking around the world by visiting the SCI wiki at solarcooking.fandom.com and discover organizations, manufacturers, projects, and events in your own region by exploring your country page. Visit the World Health Organization (WHO) at who.int/news-room/fact-shets/details/household-air-pollution-and-health to learn more about the impact of household air pollution on health.

Proposed NDC Language

If the party aims to reduce CO_2 emissions by reducing dependence on fossil fuels (including LPG) and biomass (wood, charcoal, animal and crop waste) for cooking, SCI encourages the party to consider including language in their policy documents, such as:

Transition from biomass and fossil fuels for cooking to renewable energy sources which include solar thermal cooking solutions

Additionally, including language that focuses on deforestation, smoke-related health concerns, women's empowerment, and renewable energy targets can be used to unlock support for clean cooking initiatives. Because solar-cooking is a cross-cutting solution at the intersection of the energy transition, sustainable development, and climate justice, there is a broad spectrum of policy that can pave the way for solar cooking opportunities.

SCI Global Advisor, Janak Palta McGilligan hands out solar cooked bread.

Country	Acknowledges cooking as a sector of concern or potential development	Includes language that may be favorable to Solar Cooking	Specific discussions
Afghanistan	X	X	Clean cooking is a sector gap. There is a need to reduce rural peoples' dependence on fuel for cooking and heating by building capacity and improving technology. (Pg 8, 2016)
Albania	X		In rural areas firewood is used for cooking and water heating (Pg 32, 2021).
Algeria			
Andorra (in French and Spanish)			
Angola	X	X	Combustible firewood continues to be one of the most used forms of energy in rural Angola for heating and cooking. The uncontrolled use of this resource has created some problems of deforestation, although limited to the peripheries of small towns and villages in rural areas. (Pg 26, 2021) [National Electricity Fund (FUNEL)] Support[s] the distribution of improved solar lanterns and ovens, manufactured in Angola (Pg 70, 2021)
Antigua and Barbuda	X		Relies on liquid petroleum gas for cooking (pg31. 2021) A key priority is removing barriers that inhibit female-headed households and micro, small and medium enterprises (MSMEs) from accessing back-up renewable energy generation (pg9, 2021)
Argentina			
Armenia			
Australia			
Austria (part of EU submission)			
Azerbaijan			
Bahamas	X		Waste can be a useful resource to produce energy (e.g., organic waste can produce cooking gas in household digesters, methane gas can be collected from landfills) (Pg 60, 2022)

Bahrain			
Bangladesh	X	X	Ashyrayan: A shelter project for homeless people and climate refugees includes "Solar Home System based alternate power sources, improved cook stoves etc." (Pg15, 2021) Bangladesh's Country Action Plan for Clean Cook Stoves 2013 (CAP 2013) focused predominantly on the removal of existing financing barriers by enabling access to capital by SMEs (small and midsize enterprises), promoting access to climate funds, leveraging government funds to finance women-led businesses in the sector and lobbying for additional financing options from international donors at low rates. About 4.5 million improved cook stoves have been distributed already. A new National Action Plan for Clean Cooking in Bangladesh (2020-2030) is being formulated following its success. (Pg 16, 2021)
Barbados			
Belarus			
Belgium (part of EU submission)			
Belize	X	X	Aim is to achieve a reduction of fuel wood consumption by 27%-66%, depending on the technology, the duration of cooking and the replacement technology. (Pg 4, 2016)
Benin	X	X	Promotion of access for 275,000 new households to cooking equipment using domestic gas (Pg 21, 2021) Support for the organization and development of internal markets for the manufacturing and marketing of high-performance cooking equipment cooking (improved stoves using wood energy; butane gas cooking equipment). (Pg 31, 2021) Projects to promote climate change mitigation measures at household level and the promotion of renewable energies and efficient economic stoves and pressure cookers in the commune of Dassa-Zoumé (Pg 31, 2021)
Bhutan			
Bolivia			
Bosnia and Herzegovina			
Botswana			
Brazil			

Brunei Darusssalam			
Bulgaria (part of EU submission)			
Burkina Faso	X	X	[Adaption projects include] 540,000 improved cook stoves are produced and distributed, at least 50% in urban and semi-urban areas. [and] 80% of dolo beer brewers use an improved cook stove...This contributes to a reduction of YY% in the demand for firewood. (Pg 16, 2016) The "improved cookstove project" is considered to have enormous socioeconomic impact but is challenging because it is not profitable and requires external investment... Use of the improved cook stove makes it possible to save 15% to 45% of the energy used in cooking; The cooking speed resulting from the use of an improved cook stove allows the user of the stove to save 50% to 75% of the original time devoted to cooking; improved cook stoves permits households and other users to reduce their exposure to respiratory diseases caused by smoke or the inhalation of carbon dioxide or carbon monoxide cooking, (Pg24, 2016)
Burundi	X		Burundi has committed to ...replacing 100%, by 2030, all carbonization ovens and all traditional domestic cookers. (Pg 3, 2020) In the residential sub-sector, the fuels used are wood energy, bagasse made up of plant or agricultural waste for cooking, heating and lighting and oil for lighting by rural households. As for urban households, the fuels used are charcoal for cooking and kerosene for partial lighting. (Pg 21, 2020) [National priorities include] biogas digesters in schools to boarding school to compensate for usage wood for cooking. (Pg 43, 2020) [Energy Sector Priority Projects include] Strengthening the capacities of improved cookstove manufacturing technicians and organize exhibition fairs for improved cookstoves to develop new markets and establish contact with potential customers (Pg 52, 2020)

Cabo Verde	X		[Firewood is the second most consumed fuel] ...About 20% of households use wood as the main energy source for cooking. The vast majority (85%) of the wood used is collected mainly by women and only 13% is purchased. (pg 14, 2021) [Mitigation Contribution:] Promote farm biogas units as a means to recover nutrients and improve soils, facilitate farm hygiene and health, substitute wood or fossil gas for cooking or electricity for lighting (Pg 23, 2021) The most frequently used indicators when assessing the effects of climate change on the disease profile in Cabo Verde are those related to... respiratory diseases caused by cooking stoves (pg 44, 2021)
Cambodia	X	X	Women will play a crucial role in composting activities at household scale as traditionally women are more involved in cooking activities. (Pg 90, 2020) [MITIGATION ACTION:] Replacing inefficient boilers in the Food & Beverage industry [which potentially has] Roughly estimated GHG emission reductions: 0.02 MtCO2e (metric tons of carbon dioxide equivalent)/year for 17 highly efficient boiler replacing same amount of low efficient units. (Pg 96, 2021) [MITIGATION ACTION:] Diversification of household and community energy generation sources to reduce reliance on biomass as an energy source. (Pg 93, 2021)
Cameroon (in French)	X		[Energy Sector Measures Include] Production and popularization of improved stoves and natural gas (methane): Distribution of 500,000 improved stoves in the Soudano-Sahelian zone (Pg51, 2021)
Canada			
Central African Republic	X	X	[Energy sector objectives include] Penetration of improved stoves in households, 5% in 2025 and 10% in 2030; 5% of household equipped with solar cookers in 2025 and 10% equipped in 2030 (targets: 50% female heads of household) (Pg 14, 15, 2021)
Chad	X	X	National energy consumption is dominated at 96.5% by the consumption of wood fuels...This overexploitation of wood resources for household uses combined with climate change has led to deforestation of more than 90%...As the main source energy for cooking is wood or charcoal, the vulnerability of wood energy can have a considerable impact on households that are dependent on it, especially the poorest population. (Pg30, 2021)

			The actions in the following areas present an urgent need for capacity building and technology transfer...Promotion of Improved Stoves and clean cooking (Pg 40, 2021)
Chile	X		The main sources of black carbon in Chile are the use of diesel for transportation, firewood for heating and residential cooking, and biomass used as an energy source in the industrial sector. (Pg34, 2020)
China			
Columbia	X	X	[Mitigation measures include] Replacing traditional wood stoves with efficient stoves: reducing the use of firewood in rural homes through the implementation of efficient stoves that use a minor amount of this fuel for the same energy demand, to prevent forest degradation: 1,000,000 efficient firewood cooking stoves (2021-2030) (Pg43, 2020) [Territorial measures include] implementation of eco-efficient stoves and/or solar energy systems for cores towns [in Putumayo] (Pg 52, 2020) and Implementation of alternative energies (solar, wind, biomass) eco-efficient stoves, promotion and technology transfer actions for the reduction of deforestation. [in the Valley of the Cauca] (Pg 54, 2020)
Comoros (in French)	X	X	Better access to renewable energies with adapted technologies would allow access to energy services for lighting, cooking and productive activities which would reduce their workload and free up time which they could devote to other tasks, including income-generating ones. (Pg 11, 2021)
Congo (In French)	X		
Cook Islands			
Costa Rica			
Côte d'Ivoire (in French)	X	X	
Croatia (part of EU submission)			
Cuba	X		Contribution to reduce consumption of fossil fuels: The replacement of 2 million resistances driven electric cookers with induction cookers (Pg 26, 2020)

Cyprus (part of EU submission)			
Czech Republic (Part of EU submission)			
Democratic People's Republic of Korea (North)	X		[Mitigation measures] To use biogas from livestock manure and domestic sewage instead of coal or firewood for cooking; To replace conventional wood stoves for cooking with efficient wood stoves at rural households; To replace conventional coal stoves for cooking with efficient electric cookers at the households; (Pg 9,10, 2016)
Democratic Republic of the Congo (in French)	X	X	Since 2009, the electricity policy has been technically validated by all stakeholders. Current efforts are focused on developing clean cooking strategies. (Pg 25, 2023) Also, the DRC intends to implement a national energy framework policy specifically targeting clean cooking strategies (LPG, electric stove, etc.), while associating concerns about the increase in the share of energy renewables in its energy mix, the promotion of energy efficiency, the improvement of public transport, and the energy recovery from waste. (Pg 46, 2021) [Action] Transition to energy-efficient cooking [Indicator] Number of households using biogas and LPG technologies; and briquettes made from agricultural residues or biodegradable household waste. (Pg 54, 2021)
Denmark (part of EU submission)			
Djibouti	X		[Priority mitigation measures under study or pending funding include] Reduction of fuel wood consumption for cooking: Decrease in the consumption of wood for cooking, estimated at 56,100 tonnes each year, through the replacement of 1,000 units by systems that use LPG.
Dominica			
Dominican Republic			
Ecuador (in Spanish)	X		[Initiatives include] Program of Efficient Cooking- Replacing Liquefied Petroleum Gas (LPG) stoves with induction cookers (Pg 18, 2019)
Egypt			the sector aims to improve the standard of living of citizens through access to clean fuel in households. The natural gas pipelines were already connected to 86 villages. (Pg 14)
El Salvador (in Spanish)			

Equatorial Guinea (in Spanish)			
Eritrea	X	X	As adaptation strategy, the government of Eritrea has already taken concrete measures to introduce energy saving cooking stoves for rural households. These stoves have efficiency of about 26% compared to the traditional ones with 10%. This calls for further research and development to improve its efficiency. Besides reducing the pressure on the forest resources, the advantages of these stoves lie in the use of waste biomass as well as in securing the health and wellbeing of women and children. (Pg 29. 2018) CO2 reduction options include introducing efficient wood stoves and replacing wood stoves with LPG stoves. (Pg 16, 2019)
Estonia (part of EU submission)			
Eswatini	X	X	[mitigation contributions include] Achieving 100% access to clean modern energy for cooking at household-level by 2030; Improving by 50%, uptake of energy efficient biomass stoves used for cooking by 2030...In 2010, access to clean fuels and technologies for cooking (% of population) was 33.0%. (Pg 7, 2021)
Ethiopia	X	X	The other most important driver of LUCF (Land Use Change and Forestry) emissions is biomass energy used for cooking and baking...Thus, replacing or improving household energy use for cooking and baking leads to substantively reduced pressure on forestry resources. (Pg 12, 13, 2021) [Policy interventions include] Reducing residential biomass use 1.) Fuel Switch: shift from unsustainable biomass energy demand to electric stoves, renewable biofuels (e.g., residues) 2.) Biomass efficiency: improved cookstoves. (Pg 12, 2021)
European Union			
Fiji	X		
Finland (part of EU submission)			
France (part of EU submission)			
Gabon (in French)			

Gambia	X	X	when biogas and improved cookstoves further reduce firewood demand, the wood from agroforestry operations can be used for timber and as a substitute for carbon-intensive construction materials (Pg 14, 2021) National Energy Efficiency Action Plan (NEEAP) of The Gambia (2015-2020/2030) provides scenarios for the contribution of energy efficiency in the electricity and cooking sectors...Thus, measures and activities are proposed in... (e) cooking initiatives (Pg 32, 2021) [Mitigation measures include] Upscaling deployment of fuel-efficient biomass combustion stoves in residential applications and commercial/industrial applications. (Pg 14,2021)
Georgia			
Germany (part of EU submission)			
Ghana	X	X	Some of the measures, including improved cookstoves... are expected to reduce black carbon emissions for better public health outcomes (Pg 14, 2021) [Policy actions include] expanding the adoption of market-based cleaner cooking solutions [which supports the following socio-economic outcomes] social inclusion, sustainable energy transition, and smart communities. [This action is also highly gender responsive and is associated with 4,214.2 kt emission reduction]. (Pg26, 2021)
Greece (part of EU submission)			
Grenada			
Guatemala (In Spanish)			

Guinea	X	X	The National Climate Change Strategy provides for the introduction of at least 1 million improved stoves by 2030 and the deployment of butane gas, and "assumes that this action will halve the quantity of firewood extracted from the forest" (Pg 21, 2021) In particular, Guinea wishes to engage in these cooperative approaches to develop the production of electricity from renewable energy sources, notably small hydroelectricity, photovoltaic solar and wind power, as well as the deployment of improved cookstoves among of 50% (conditional objective) of Guinean households to significantly reduce the pressure on forest resources and the resulting losses of remarkable biodiversity. (Pg 37, 2021) The government of Guinea has also undertaken the substitution of a part of the biofuels by butane gas through a promotion fund, a gas bottling plant and subsidies. Combined with biogas, the diffusion of this modern cooking method aims national capacities of 40 kTep in 2030. (Pg 29, 2021)
Guinea Bissau	X	X	[Expected measures include] The large-scale dissemination of improved stoves for cooking to reduce fuelwood consumption. (Pg 17, 2021) projects dealing with rural development in GB include gender focused adaptation components such as RE facilities for irrigation and diversification of agricultural production by women small-scale farmers (NGO ADPP, www.adpp-gb.org), and activities for cleaner cooking or against deforestation (Pg 30, 2021)
Guyana	X		The Government of Guyana will continue to work closely with farmers in agricultural areas across Guyana to encourage the use of bio-digesters to reduce waste, produce biogas and provide affordable, healthy and efficient cooking means at the household level. (Pg 10, 2022)
Haiti (French)	X	X	[Emissions] could be mitigated by focusing on different alternatives such as:...using energy-efficient stoves to replace traditional fireplaces... (Pg 13, 2022) Mitigation measure: Efficient wood stoves, Efficient charcoal stoves, LPG stoves replacing wood stoves. 1000 each. (Pg 27, 2023)
Holy See (Vatican)			

Honduras (Spanish)	X	X	The measurement for the sectoral objective, "reducing firewood consumption in families," considers ... average per capita consumption, per capita consumption and number of inhabitants, both according to household size, fraction of urban households that use firewood, fraction of rural households that use firewood, fraction of urban households that use improved stoves for cooking, fraction of urban households that use traditional stoves for cooking, fraction of rural households that use traditional stoves for cooking and fraction of firewood savings with improved stoves. (Pg36, 2021) Among the measures that are planned to be carried out for the implementation of the inclusion component social and gender equality, the following stand out: Involvement of women, PIAH (indigenous peoples indigenous and Afro-Honduran people) and youth in the design and implementation of improved stove projects, promoting their training in construction. (Pg 15, 2021) The purpose of ENAEM (Estufas Mejoradas y la Estrategia Nacional para la Adopción) is to identify the lines that lead to the transition and sustained use of clean cooking technologies by the Honduran population. The direct benefits of the adoption of improved stoves can be quantified in terms of: i) the reduction in firewood consumption in homes, associated in turn with less pressure on the forest resource, ii) the improvement in indoor air quality , reducing the risk of respiratory diseases, iii) the optimization of resources at home, allowing time and money, which were previously used for access to energy, to be invested in activities that generate value and contribute to the reduction of poverty. (Pg 36, 2021)
Hungary (part of EU submission)			
Iceland			
India	X		[India accounts for] about 30% of the global population relying on solid biomass for cooking and 92 million without access to safe drinking water. (Pg 5, 2015) India has launched 'Direct Benefit Transfer Scheme' for cooking gas, where subsidy will be transferred directly into the bank accounts of the targeted beneficiaries. In fact, over the past one year India has almost cut its petroleum subsidy by about 26%. (Pg 27, 2015) 'Give It Up' Campaign launched to encourage citizens to give

			up subsidy on cooking gas to meet the needs of the truly needy citizens, thereby promote shift away from inefficient use of biomass in rural areas. (Pg 36, 2015)
Indonesia	X		Construction of additional natural gas pipeline is intended to substitute the use of kerosene for cooking in residential and commercial sectors. (Pg 25, 2021) [Mitigation Measures include] - Induction Electric Stove (Pg 24, 2021)
Iraq****			
Ireland (part of EU submission)			
Israel			
Italy (part of EU submission)			
Jamaica			
Japan			
Jordan			
Kazakhstan			
Kenya	X		
Kiribati	X		
Kuwait			
Kyrgyzstan	X	X	the main burden in the field of the availability and delivery of water for domestic needs and the provision of fuel for heating and cooking falls primarily on women (Pg 17, 2021) [Energy efficiency measures] include scaling up the installation of energy efficient stoves in households (Pg 21, 2021)
Lao PDR	X	X	Mitigation targets include Introduction of 50,000 energy efficient cook stoves which will reduce the use of non-renewable biomass for combustion (Pg 5, 2020) Implementation across three provinces: Vientiane Capital, Savannakhet, and Champasack. (Pg 18)

Latvia (part of EU Submission)			
Lebanon			
Lesotho	X	X	Mitigation pillar: Energy efficiency measures, deployment of renewable energy sources in power generation (hydro, solar and wind), promotion and dissemination of clean energy technologies (efficient cook-stoves and LPGs) to reduce overreliance on fuel wood. Global Alliance for Clean Cookstove [project description] a.) Create a market for clean and efficient household cooking solutions in order to save lives, improve livelihoods, empower women, and protect the environment b.)Have households to adopt clean and efficient cook stoves and fuels by 2020. (Pg 18, 2020) Scaling Up Renewable Energy Program (SREP) [project description] Potential areas of SREP intervention include on-grid renewable energy technologies (hydro, wind and solar), off-grid renewable energy technology (small hydro, solar photovoltaic and hybrid generation systems), capacity building in both the public and private sector and a funding facility for private sector initiatives such as energy efficient cook stoves and solar home systems. the most promising and realistic mitigation options include, but are not limited to: To disseminate efficient cook-stoves to reach a penetration rate of 30% in 2030; (Pg 19, 2020) [In the building sector activities include] Gradual shift towards the use of cleaner energy technologies, such as LPG, efficient cook-stoves, among others to reduce the amount of fuel-wood used for cooking (Pg 22, 2020)

Liberia	X	X	[Energy sector mitigation targets] Produce and distribute energy saving cook stoves to reduce the use of fuel wood and charcoal (Link to Forest sector): Reduce emissions by 588 Gg CO2e per year by making sure 60% of households using fuel wood or charcoal are supplied with energy efficient cook stoves by 2030 …To support the distribution of energy saving cookstoves, implement a campaign to increase awareness to promote the use of energy efficient cook stoves and regulate its use.(Pg 14, 2021) [Adaption actions include] Promote household and community-level adoption of practices that improve air quality, improve water safety and reduce the risk of disease transmission, while also reducing fuelwood use, such as water filters and improved cookstoves [Fishery sector actions include] Develop a program to provide trainings about and incentives for fisher-folk to adopt eco-stove fish dryers to reduce GHG emissions and discourage mangrove deforestation from usual methods by 2025. (Pg 11, 2021) .
Liechtenstein			
Lithuania (part of EU Submission)			
Luxembourg (part of EU submission)			
Madagascar	X	X	[Mitigation Action] Disseminate improved stoves (by 2030: 50% of households adopting improved stoves). (Pg 3, 2016) Electrification level is extremely low, with about 20% of households benefiting from electric lightning. This explains its dependence on fuelwood, which will persist in the medium term. (Pg 1, 2016)
Malawi	X	X	[NDC Measures] 1.) Improved charcoal cookstoves - rural households (a) Deployment of efficient charcoal cookstoves to urban households; increasing from 20% to 30% efficiency thereby reducing demand for charcoal and CH4 and N2O emissions. 2.) Improved firewood cookstoves - rural households (b) Introduction of 2 million improved high efficiency stoves, resulting in carbon sink preservation through reduction in use of unsustainable biomass fuel. (Pg 36. 2022) In relation to adaptation, specific capacity and national

			needs include: Up-scaled adoption of alternative energy to biomass for cooking and heating;
Malaysia			
Maldives			
Mali (in French)			
Malta (part of EU submission)			
Marshall Islands	X	X	[Cooking/Lighting Recommendation] Continue efforts to phase out the use of kerosene for lighting and cooking; Engage women stakeholders as key players in this sector and empower women as entrepreneurs with capacity building and technology transfer; and Establish whether the Energy Planning Division (EPD) needs a more robust Government mandate in order to fully decarbonize these activities (Pg 40, 2018) Kerosene and liquefied petroleum gas (LPG) used for cooking and lighting are significant contributors towards the 'other' sector [which] accounted for nearly the same level of emissions as the transportation sector (Pg 41, 2018) For cooking, due to public health concerns, particularly for women and children, RMI has already embarked on an aggressive low-carbon strategy encouraging the replacement of kerosene with LPG and efficient biomass cook-stoves (e.g. the 'One Smokeless Stove Per Home' project) However, the decarbonization pathway is less clear since electric/solar-powered stoves are not seen as viable at the moment.(Pg 41,2021) [Potential Next Steps] Explore the potential for cheaper solar power and time of use rates to incentivize users to switch loads to electric, particularly during the hours that solar generation is highest. (Pg 41, 2018)

Mauritania (in French)	X	X	[Measures] 9.) Efficient charcoal stoves (improved stoves): Distribution of 150,000 improved stoves by 2030 10.) LPG replacing wood: Distribution of 170,000 LPG stoves by 2030 11.) Efficient electric stoves: Distribution of 10,000 efficient electric stoves by 2030 (Pg 50, 2021) Bio digester technology is already present in the sub-region. A diet of organic 2 m3 digester composed mainly of cattle dung and other organic waste will produce biogas usable for cooking and of heating of hot water. (Pg 51, 2021)
Mauritius			
Mexico			In the same way, rural communities are supported to reduce the use of firewood and to have more efficient combustion processes, and thereby protect the health of the population, mainly women and children in rural homes that currently have exposure. high to this pollutant. This measure is very relevant to achieving the black carbon goal. (Pg 15, 2022)
Micronesia			
Monaco			
Mongolia	X	X	[Mitigation Action] Reduce fuel use in individual households through improving stove efficiency (with co-benefit of air pollution reduction), (Pg 3, 2016)
Montenegro			
Morocco (French)	X	X	
Mozambique	X		Promotion of low carbon urbanization [measure] Massification of LPG - Increasing the number of people with access to cooking gas to around 309.02% compared to today

Myanmar	X	X	Through the distribution of 5.1 million fuel-efficient cookstoves Myanmar will achieve a cumulative emissions reduction of approximately 12.99 million tCO2e during 2021-2030 ... t. Traditional cookstoves are also replaced by LPG based technology substitutions to further reduce the emissions from the use of fuelwood and charcoal. The government has set an unconditional target to support the distribution of one million LPG stoves by the private sector resulting in an emission reduction of 14.94 million tCO2e by 2030(Pg 2, 2021) Data Collection for improved cookstove initiative includes: number of stoves distributed, percentage of continued use, lifetime of stoves, modifications, performance (Pg24,25, 2021) Cooking with LPG saves time needed for fuelwood collection and cooking, and reduces health impacts (respiratory disease, eye disease) (Pg25, 2021) According to the national census data, upwards of 80% of the national population uses fuelwood and charcoal as a primary means of cooking food. Myanmar has promoted the use of improved fuelwood cook-stoves to reduce forest degradation and GHG emissions from unsustainable fuelwood use. (Pg 24, 2021) [mitigation project] electrical cooking (pg 49, 2021) Key mitigation technologies will be required in... clean cooking (Pg 57, 2021) [Residential Sector Potential Measure] Implementation of prepaid energy meter for gas based cookstoves
Namibia			
Nauru			
Nepal	X	X	[Targets] By 2030, ensure 25% of households use electric stoves as their primary mode of cooking; By 2025, install 500,000 improved cookstoves, specifically in rural areas...combined targets can reduce emissions from approximately 1,999 Gg CO2 eq. in BAU (Business as Usual) in 2025 to approximately 1,774 Gg CO2 eq. This is around an 11% reduction in emissions from the cooking sector. (Pg 3, 2020) Currently, around 5% of households use electric induction

			stoves, either as their primary or secondary mode of cooking. (Pg 4, 2020)
Netherlands (part of EU submission)			
New Zealand			
Nicaragua (in Spanish)			
Niger	X	X	The mitigation options concern the management of sub-'Residential' sector (households), by rural electrification, the wood energy economy and its replacement by other more modern fuels (butane gas, biofuels, solar); (Pg 17, 2021) Cooking energy: reduction in the demand for wood energy per inhabitant by the mass spread of improved cook stoves, with a rate of penetration of 100% in urban areas and 30% in rural areas; promotion as domestic gas of biogas and biofuels at both the industrial and family level. (Pg 2, 2016)
Nigeria	X	X	
Niue	X	X	Implement energy efficiency through... fuel substitution for transport and cooking. (Pg 10, 2016)
Norway			
Oman			
Pakistan	X	X	Sustainable Energy For All (SEforAll) National Action Plan 2019:...Policy also targets cooking fuel practices in Pakistan with a plan to introduce alternate sources for cooking to a total of 14.03 million households by 2025 (Pg 29, 2021) [Proposed Action] Pilot energy efficient low-cost cooking technology projects [indicator] number of women adopting energy-efficient technologies (Pg 56, 2021)
Palau			
Panama (in Spanish)			
Papua New Guinea			

Paraguay (in Spanish)	X	X	Efficient or Improved Cookstoves Program, through the Poverty, Reforestation, Energy and Climate Change Project (PROEZA) (Pg 98, 2022) [Actions to 2023] 1. Promote the use of efficient stoves for vulnerable families in rural areas, especially those most dependent on the use of biomass in cooking. 2. Promote initiatives for distributed generation through solar and wind systems in areas with low or limited access to energy sources. 3. Promote the use of solar thermal energy through the use of solar water heaters
Peru			
Philippines			
Poland (part of EU submission)			
Portugal (part of EU submission)			
Qatar			
Republic of Korea (south)			
Republic of Moldova	X		Measures were taken to create forest plantations for industrial and energy needs, as well as planting energy crops to meet population needs for heating and food preparation. (Pg 65, 2020)
Republic of North Macedonia			
Romania (part of EU submission)			
Russian Federation			
Rwanda	X	X	Rwanda energy primary use is dominated by biomass, which accounts for around 86% of the total. Over 80% of Rwandan households use wood for their cooking fuel, followed by charcoal, crop waste, gas or biogas...The average household uses around 1.8 tons of firewood each year to meet its cooking needs with a traditional stove (Pg 15, 2020) [Mitigation] Dissemination of modern efficient cook stoves to 80% of the rural population and 50% of the urban population by 2030, achieving a more sustainable balance between supply and demand of biomass, and reducing

			firewood and fossil energy consumption for cooking. (Pg 37, 2020)
Saint Kitts and Nevis			
Saint Lucia			
Samoa			
San Marino			
Sao Tome and Principe			
Saudi Arabia			
Senegal	X	X	Domestic fuels (mainly charcoal and firewood) represent nearly 35% of final household energy consumption in 2016. Firewood and charcoal constitute more than 75% of energy sources household cooking...Measures for domestic fuels contribute to the preservation of forest resources, with the substitution of firewood and charcoal with sustainable sources and efficient cooking equipment. (Pg 25, 26, 2020)
Serbia			
Seychelles			
Sierra Leone	X	X	Major water uses include domestic (drinking, cooking, hygiene) (Pg 7, 2021) Sierra Leone proposes to implement the revised National Energy Policy and Strategic Plan (2020), the Integrated Resource Plan (2019), and National Electrification Roadmap (2020), focusing on the role off grid energy sources could play in achieving universal access and energy efficiency. Focused plans such as policies for clean cooking and the off grid solar energy strategy (2020) will be useful in improving quality control measures, creating opportunities for private investment, addressing ambiguities around ownership of environmental attributes for solar investments, and fostering citizen buy-in. [Proposed Action] Developing technical capacity to manufacture energy-efficient cook stoves (Pg 46, 2023)
Singapore			

Slovakia (part of EU submission			
Slovenia (part of EU submission)			
Solomon Islands			
Somalia	X	X	[Priority] Interventions include promotion of alternative energy sources through accelerated diffusion of energy efficient cook-stoves for reduction in charcoal consumption. (Pg 6, 2021) Solar resources have been utilized for off-grid generation in the country, as well as for water heating for municipal buildings. Solar cooking has also seen some uptake in the country, and solar power is seen as the energy source of choice for the rehabilitation of many municipal buildings (Pg 9, 2016)
South Africa			
South Sudan			
Spain (part of EU submission)			
Sri Lanka			
St. Vincent and the Grenadines			
State of Palestine			
Sudan	X	X	[Energy Sector Measure] Biomass savings through improved cookstoves for over 300,000 rural households; Improved cookstoves as replacement for traditional inefficient wood stoves for 20% of rural population (Pg 6, 2021) [Results have been achieved across states in which there was a] Reduction in unsustainable biomass harvesting through shifting from a total dependence on firewood to butane gas units for cooking. (Pg 22, 2021)
Suriname			
Sweden (part of EU submission)			
Switzerland			
Syrian Arabic Republic			

Tajikistan (in Russian)			
Thailand			
The Former Yugoslav Republic of Macedonia			
The United Republic of Tanzania	X		[Mitigation] Expanding the use of natural gas for power production, cooking, transportation, and thermal services through improvement of natural gas supply systems throughout the country. (Pg 17, 2021)
Timor-Leste	X	X	Solar energy, biogas, hydropower, and efficient cook stoves have been increasingly piloted and utilized as an alternative to fossil fuels. However, further progress is conditional on access to increased resources, finance, and technology transfer. (pg14, 2022)
Togo	X	X	[Action] increase the number of households cooking using improved efficiency biomass stoves and cleaner fuels such as LPG or electricity (Pg 17, 2021) [Activity] Increase the share of the population using biogas for cooking has 4% in 2025 And has 12% in 2030 (Pg 26, 2021) In the field of energy, all populations in rural areas resort to the use of cakes, sawdust, palm nut shells and corn straw, sorghum to cook food. (Pg 54, 2021)
Tonga			
Trinidad and Tobago			
Tunisia	X		[Priority]: Consolidate the capacity of youth and women's associations to create territorial synergies for an alternative tourism offer (rural tourism, agri-tourism, valorisation of local know-how such as cooking and local products. (Pg 68, 2021)
Turkey			
Turkmenistan			
Tuvalu	X		Tuvalu has early experience in biogas projects which not only produces energy for cooking but also reduces methane emissions from livestock. (Pg. 10, 2022)

Uganda	X	X	[Action] Increase access to clean energy cooking technologies [Indicators] Increased share of clean energy for cooking; Share of biomass energy used for cooking; proportion of households and institutions using efficient cooking technologies The [Energy Efficient Stove] measure aims to promote clean cooking solutions and biomass energy use efficiency technologies for fuel wood and charcoal stoves among households and institutions (education, hospitals, prisons, and industries, among others). The measure will reduce emissions by approximately 6.89 MtCO2e by 2030. [Pg 32, 2022] [Cooking mitigation measures, incl. energy efficiency and fuel switch] measure aims to improve energy efficiency during cooking by adoption of efficient charcoal and fuelwood stoves and to change from using biomass as main source energy for cooking to the use of cleaner energy resources. This can lead to emission reductions of approximately 1.09 MtCO2e by 2030. (Pg 35, 2022) [Mitigation Measure] Electricity to reach 50% of cooking fuel share by 2025 (Pg 36, 2022)
Ukraine			
United Arab Emirates			
United Kingdom			
United States	X		Building sector emissions come from electricity use, as well as fossil fuels burned on site for heating air and water and for cooking... The emissions reduction pathways for buildings consider ongoing government support for energy efficiency and efficient electric heating and cooking in buildings via funding for retrofit programs, wider use of heat pumps and induction stoves, and adoption of modern energy codes for new buildings (Pg 4, 2021)
Uruguay			
Uzbekistan			
Vanuatu	X	X	[Commitment] By 2030, (d) 14% improve biomass end use (improved cook stoves and drying) efficiency (Pg 2, 2022) The majority of households in Vanuatu are located in remote locations with no on-grid electricity access, in fact, most households already rely on renewable energy to meet their basic lighting and cooking needs. (Pg 52, 2022)

Venezuela (in Spanish)			
Viet Nam	X	X	[Criteria] (i) cost/benefit efficiency; (ii) feasibility in implementation; (iii) harmonization and co-benefits with climate change adaptation, socio-economic development; and (iv) consistency with national and sectoral development plans [Measure] use of biogas and cleaner fuel instead of coal for household cooking in rural areas (Pg 6,7, 2022)
Zambia	X		
Zimbabwe	X		Several mitigation projects have been excluded from this analysis for ... lack of a clear local implementing agency to advance that particular project (efficient cook-stoves). (Pg24, 2021)