

ACU-British Council Commonwealth Futures Climate Research Cohort:

# Technology and Policy Mapping for Sustainable Energy Access in the Global South

**A Case for Rural Communities (TechMap4RC)**





# CONTEXT

There is abundant evidence that there exists a gap in the socio-economic development in the world's richest and poorest countries ("Global North/South Divide"). Regrettably, faster economic growth in the Global North meant that it became responsible for 90%+ of excess global carbon emissions leading to the climate breakdown the world is experiencing today. However, it is the Global South that is most vulnerable to the repercussions of our changing environment (e.g. desertification, flooding, rise in temperatures, intensive tropical cyclones). It is now common ground that we need to change our patterns of living to protect vulnerable communities and preserve the planet for future generations. This includes a targeted approach to changing the way we generate and use energy to meet the varying needs of different communities while contributing to the achievement of the Sustainable Development Goals (SDGs).

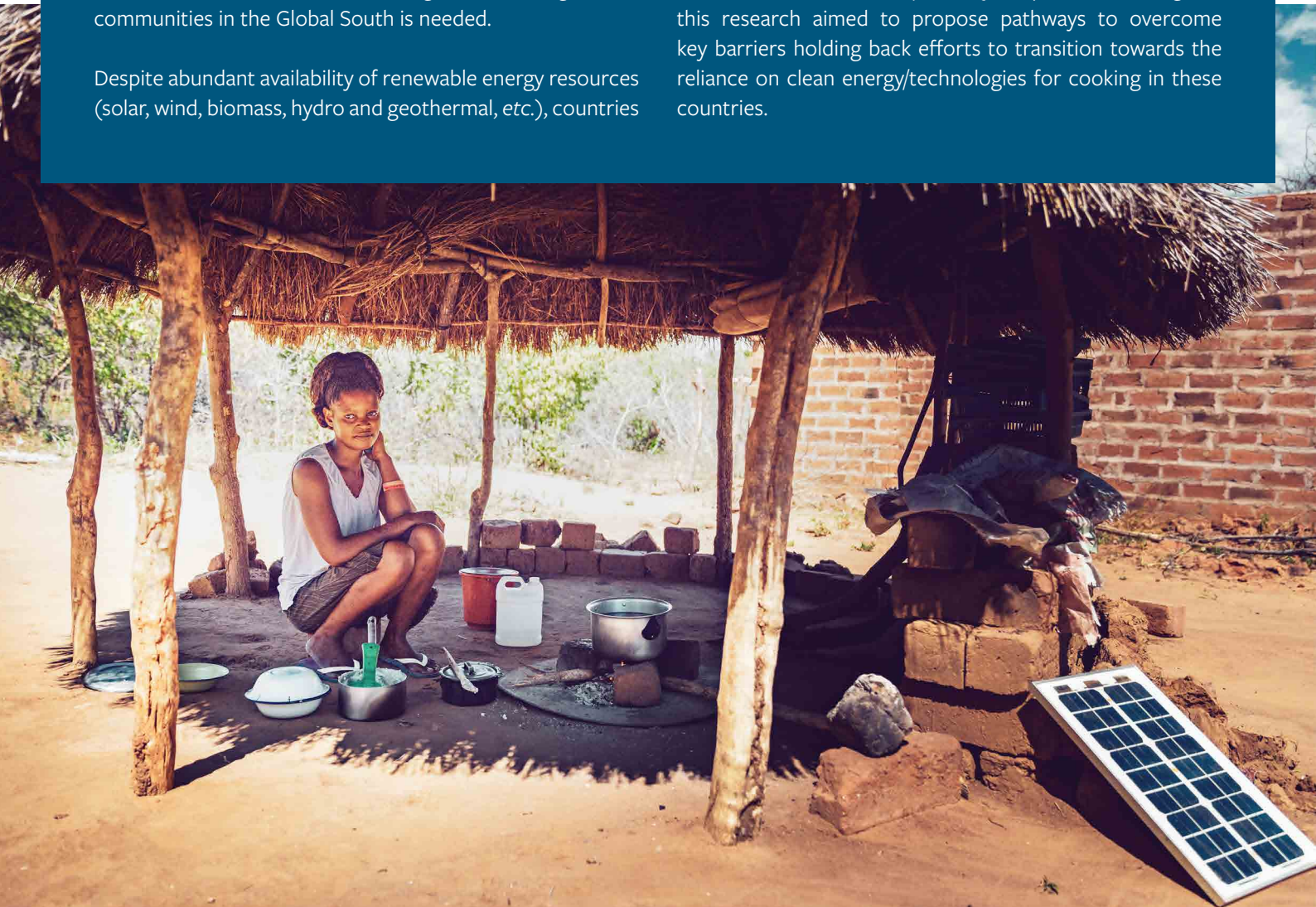
Cooking is one of the principal energy demands for rural communities in the Global South. However, scientific research on the subject quasi-unanimously agrees on the detrimental consequences of current practices employed. More broadly, rural communities are also less resilient to the detrimental consequences of climate change. Thus, targeted policy action to drive a transition towards the reliance on clean fuels and technologies for cooking in rural communities in the Global South is needed.

Despite abundant availability of renewable energy resources (solar, wind, biomass, hydro and geothermal, etc.), countries

in the Global South have insufficient research & development, financial and technical capabilities to produce and utilise green energy in key sectors. This could be reflected in a flurry of incoherent policy documents and strategies in countries in the Global South that aim to outline sustainable plans to move away from the reliance on environmentally harmful fuels through acknowledging and attempting to address identified technical, financial, economic, and socio-cultural barriers.

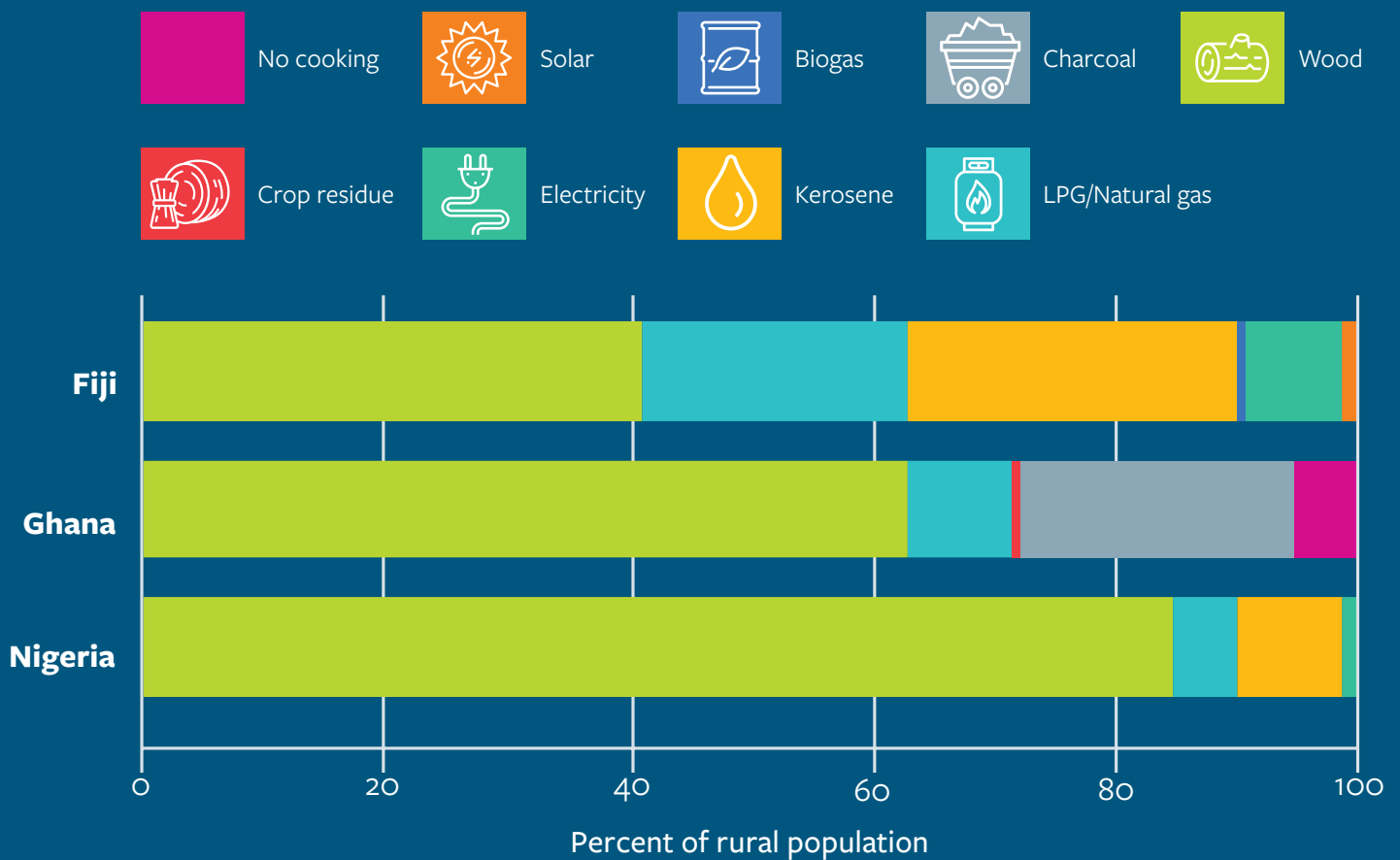
This not only drags the global effort to fight climate change, it also exposes these communities to health hazards (contravenes SDG.3 "Good health and wellbeing"), pollutes their environments (contravenes SDGs 6 "Clean water and sanitation" & SDG.11 "Sustainable cities and communities") and imposes heavy financial burdens on Governments to recover from the repercussions of climate change which would lead to further poverty (contravenes SDG.1 "No poverty"). Therefore, there is an urgent need to develop adequate policy pathways that aim to present Governments in the Global South with options to be holistically weighed in order to effectively drive the clean energy cooking space in their respective countries (SDG.7).

Considering that three of the project team members are citizens of and located respectively in Fiji, Ghana and Nigeria, this research aimed to propose pathways to overcome key barriers holding back efforts to transition towards the reliance on clean energy/technologies for cooking in these countries.



# KEY FINDINGS

- Clean cooking fuels and technologies use in rural areas is still at infancy stage in the three countries studied; Fiji – 68% of rural households use wood and kerosene fuels, Ghana – 85% of rural households use wood and charcoal fuels, and Nigeria – 80% of rural households use wood for open fire stoves and kerosene while 14 % use self-built or manufactured biomass stoves. (Figure 1.)
- Clean energy technologies that are currently being promoted in the selected countries are: (i) Fiji – improved biomass cookstoves and home biogas digesters with stoves, (ii) Ghana – improved wood-burning stoves and LPG, (iii) Nigeria – LPG and improved biomass cook stoves.
- There are opportunities for the promotion of a number of other clean fuels and technologies in rural communities such as solar electric stoves, ethanol, box solar cooker or concentrating solar cooker, and solar panel cookers. However, awareness around the harmful effects of current practices and the benefits of cleaner fuels and technologies needs to be raised, coupled with building local capacities to operate new fuels/technologies, the setting of adequate public and private financing mechanisms for their initial uptake and the implementation of a business model which ensures the longevity of the projects.
- The biggest hindrance to clean energy uptake is financing. However, developing appropriate business model can be a solution to clean energy financing and create a ‘win-win’ situation for rural communities and energy entrepreneurs. The study proposes the “mobile phones for clean cooking energy concept”. This concept follows the regular “buy now pay later” concept but introduces mobile phone payment system which serves as a guarantee to the investors and also enables flexible and convenient instalment payment.



**Figure 1** Cooking fuels used in 2017 and 2018 by rural population. (FBoS, 2018;<sup>1</sup> GSS, 2019;<sup>2</sup> NBS, 2020)<sup>3</sup>

<sup>1</sup> FBoS, 2018. Household survey data from 2017 census. Fiji Bureau of Statistics, Personal Communication in June 2018 via email

<sup>2</sup> GSS, 2019. Ghana Living Standards Survey (GLSS) 7: Main Report. Ghana Statistical Service, Republic of Ghana.

<sup>3</sup> NBS, 2020. Nigeria Living Standards Survey (2018/2019): A Survey Report by the Nigerian National Bureau of Statistics (in collaboration with the World Bank. National Bureau of Statistics and the World Bank, The Federal Republic of Nigeria.

- A review of the literature on the topic, supplemented by responses to questionnaires targeting three groups of stakeholders (energy suppliers; end-users; interest groups) helped identify a number of drivers and barriers that influence the effectiveness of policy development on the subject of clean energy for cooking in rural communities in the countries examined.
- The barriers could be broadly summarised into four:
  1. The supply chain of cleaner fuels to rural areas, that is, the access of cleaner fuels in rural communities.
  2. The unaffordability of cooking fuels and technologies in rural areas.
  3. The lack of awareness of clean cooking technologies and its benefits.
  4. The lack of gender mainstreaming in energy access.
- Whereas the main drivers include:
  1. Women empowerment and promoting women as agents of change.
  2. Higher rates of education, especially for girls.
  3. Better health impacts from clean fuels/technologies
  4. A cleaner environment for all
- Despite efforts in all three countries to align with the SDG7 and United Nations' Sustainable Energy for All (SE4ALL) initiative's common target of achieving universal access to affordable, reliable, sustainable, and modern energy for all by 2030, energy policies are set out in multiple strategy documents and plans which are marked with inconsistencies, ambiguities, and pose various challenges.

		Fiji	Ghana	Nigeria
Population in 2018 (millions)		0.89	29.80	195.90
GDP in 2018 (Current USD billion)		5.58	65.32	397.19
Land area (km <sup>2</sup> )		18,270	227,540	910,770
Population density (People/km <sup>2</sup> )		48.40	131.00	215.00
Proportion of the population with access to clean cooking	2000	n.a	5.90%	<5.00%
	2005	n.a	9.40%	<5.00%
	2010	38.00%	14.00%	<5.00%
	2015	n.a	20.40%	5.40%
	2018	56.00%	24.90%	9.20%
Population without access (millions)	2018	0.39	22.10	177.90
Population relying on traditional use of biomass (millions)	2018	0.17	22.00	142.30

**Table 1** Rates of access to clean energy for cooking in Fiji, Ghana and Nigeria (FBoS, 2018;<sup>1</sup> IEA, 2020;<sup>2</sup> WB, 2021)<sup>3</sup>

<sup>1</sup>FBoS, 2018. Household survey data from 2017 census. Fiji Bureau of Statistics, Personal Communication in June 2018 via email.

<sup>2</sup>IEA, 2020. SDG7: Data and Projections - Access to clean cooking. International Energy Agency.

<sup>3</sup>WB, 2021. World Bank Open Data. The World Bank Group, <https://data.worldbank.org> (accessed on 8 September 2021).

# RECOMMENDATIONS

The policy pathways below are proposed to present individual governments and partnering international development organisations with options to consider while developing and implementing effective and targeted policies to drive the clean energy cooking space in individual countries in the Global South. This is done on the basis of best practice identified in reviewed literature and guidance documents and of responses collected from identified stakeholders.

The project team's vision is that achieving access to sustainable clean energy for cooking in rural communities in the Global South will improve health and environmental conditions therein (especially with regards to women and children and fighting deforestation) while simultaneously presenting a golden opportunity for improved economic empowerment through shifting energy and workforce markets towards renewables. In order to deliver this vision, the following recommendations are grouped to (A) reflect action that can be taken in the short-term (within 1-2 years), and (B) propose components of a framework to guide longer-term future action.

## A) Short-term action

1. Establish a public body/Governmental agency to regulate, provide guidance, and support with tapping into existing international funds for clean energy projects in rural communities in the Global South and ensuring their adequate employment through defined monitoring and auditing practices.
2. Mobilise funding in clean cooking fuels and technologies for (i) uptake by end-users, (ii) research and development to reduce the costs of clean cooking technologies, (iii) capacity building and re-skilling of existing workforces, (iv) programs and projects to be delivered by public bodies and institutions. This will make fuel and technologies for cooking affordable to end-users.
3. Allocate resources to civil society organisations (CSOs), faith-based organisations (FBOs), community-based organisations (CBOs), and small-scale providers of clean fuel or technology. Governments or local governments should collaborate with CSOs, CBOs and FBOs to encourage clean cooking initiatives. These organisations can promote improved biomass cookstoves, provide trainings, support with the storage of cookstoves, and raise public awareness of the risks posed by current cooking practices and the benefits of a transition towards cleaner fuels/technologies. As part of their training programs, communities should be encouraged to replant trees and woodlots to ensure sustainable use of resources.
4. Collect information and data on clean cooking demand in rural communities. Government departments can collaborate with academic institutions and Bureaus of Statistics to collect household fuel and energy demand, income levels, and other relevant data that can inform more targeted enabling policy for clean cooking fuel and technology access in rural communities.
5. Governments should elaborate and adopt policies that empower government agencies and public bodies to develop quality assurance and quality control programmes to ensure the compliance of all components of clean energy systems with internationally acclaimed standards to boost their durability and preserve their functionality.

## B) Framework to guide long-term action

6. Integrating gender considerations into clean cooking policies and initiatives – Governments should recognise women's important role in clean cooking fuel and technologies uptake by rural communities. Policies must put women at the centre of clean cooking technologies uptake and strategise ways to increase participation in clean cooking initiatives, especially in leadership and technical roles.
7. Aligning National Policies, Strategies and Action Plans to prioritise clean cooking fuels and technologies. Governments must explicitly state their position on clean fuels and technology access and ensure that this position is consistently supported in cross-cutting sectoral policies (e.g. growth strategies, investment strategies, education strategies, etc.). A clear *direction* in national energy policy documents and related plans will provide certainty for suppliers and end-users and promote activities, programs, and projects undertaken by local governments, departments, and ministries.
8. Increasing and designing new financing options and risk-reducing mechanisms for suppliers of clean fuels or technologies. Governments, financial institutions, and the private sector need to collaborate to discuss strategies to support the private sector in reaching remote rural communities. Governments must investigate financing options such as concessional loans, subsidies, tax holidays, and others for applicability.
9. Governments should financially incentivise energy suppliers to supply clean energy to rural and remote communities – this can be done through tax rebates and shifting current government subsidies towards renewables and other financial mechanisms.



**10.** Design, promote and implement well-intended educational intervention programmes aimed at postgraduate studies targeting clean energy access for cooking services in the rural and semi-rural communities to promote the aggressive adoption.

**11.** National energy policies should address lopsided subsidy intervention and competing demand for unproductive, and environment-degrading uses of agro-residues and wastes. In this effort, Governments should for example ensure consistency in supporting a biomass to biogas cookstove intervention and programmes.



This policy brief was produced as part of a research action project delivered through the ACU-British Council partnered Commonwealth Futures Climate Research Cohort, supporting 26 rising-star researchers to bring local knowledge to a global stage during the year of the landmark 26th United Nations Climate Change Conference (COP26).

This unique and diverse cohort are working to build international collaborations and engage with experts to influence issues related to climate and environment in their communities and beyond.

The cohort convenes researchers with expertise in a range of disciplines, and who have a deep understanding of communities disproportionately impacted by climate change. Reflecting the diversity of the Commonwealth, members of cohort are based at 25 ACU member universities from 16 countries. Throughout 2021, the 26 researchers have attended a series of expert-led workshops, designed and delivered a series of peer-led research-to-action projects, benefitted from mentorship by senior academics and experts in the sector, and identified opportunities to further their engagement with global climate stakeholders.

### **Get involved:**

[www.acu.ac.uk/get-involved/cop26-commonwealth-futures-climate-research-cohort/research-to-action-projects/](http://www.acu.ac.uk/get-involved/cop26-commonwealth-futures-climate-research-cohort/research-to-action-projects/)

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