

BEYOND FIRE: HOW TO ACHIEVE SUSTAINABLE COOKING

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BEYOND FIRE:
HOW TO ACHIEVE
SUSTAINABLE COOKING

BRIEF PROFILE:



Toby Couture is Founder and Director of E3 Analytics, an international renewable energy consultancy based in Berlin that focuses on energy strategy, policy, rural electrification, as well as economic and financial analysis. He has worked with over forty countries around the world on the economic, financial, and policy aspects of renewable energy development, including in Asia, the Pacific region, the Middle East, Africa, and the Americas.

Introduction

This report argues that focusing on improved cook stoves is neither a truly long-term nor a truly sustainable solution to the challenge of cooking:

1. Much of the biomass used in cook stoves is not sustainably harvested
2. It is often not “renewable” due to unsustainable rates of deforestation, soil loss, desertification, etc.
3. Cooking also contributes to a host of other social and economic problems (gender inequality, poor health, low child literacy, etc.) that hinder economic diversification, entrench social injustices, and undermine long-term economic prosperity.



Introduction

Finally, the demographics:

4. The population of Sub-Saharan Africa (SSA) is projected to almost **triple** by 2060: to **2.7 billion** from **1 billion** in 2015

At such a high rate of population growth, continuing to rely on firewood and charcoal will become less and less sustainable, regardless of how efficiently the biomass is harvested, produced, or consumed.

Thus, this report argues that we need to support rural and remote populations to embark on a fundamental transition away from wood and charcoal



The Scale of the Challenge

93% : Percentage of Household in SSA that rely on wood or charcoal in part or in full for their daily cooking needs

3 Billion : people worldwide still reliant on wood or charcoal for their cooking needs

4.3 Million : pre-mature deaths caused each year by indoor air pollution

And yet, **low income levels in rural and remote areas continue to limit the uptake of more sustainable cooking solutions**

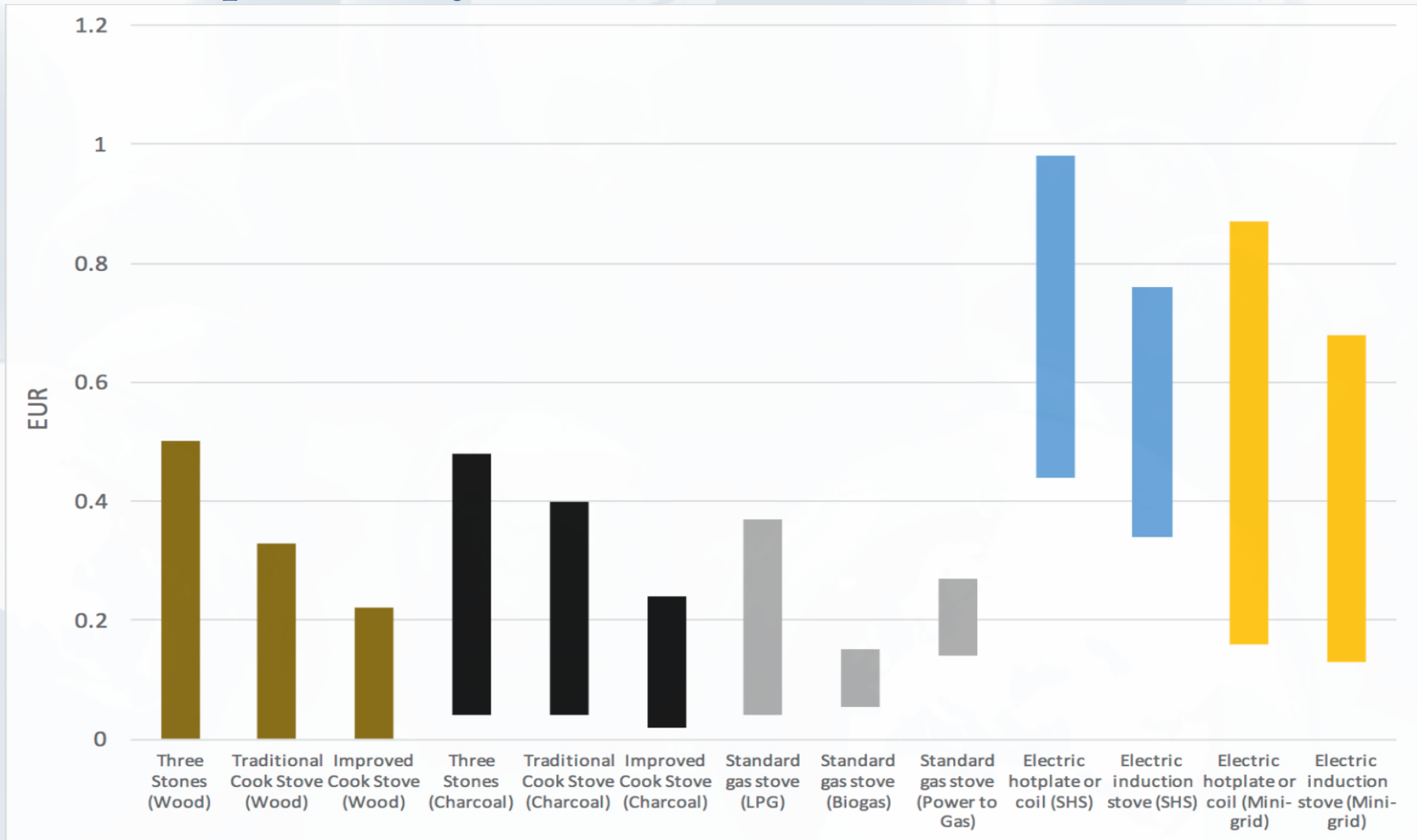


What are the alternatives?

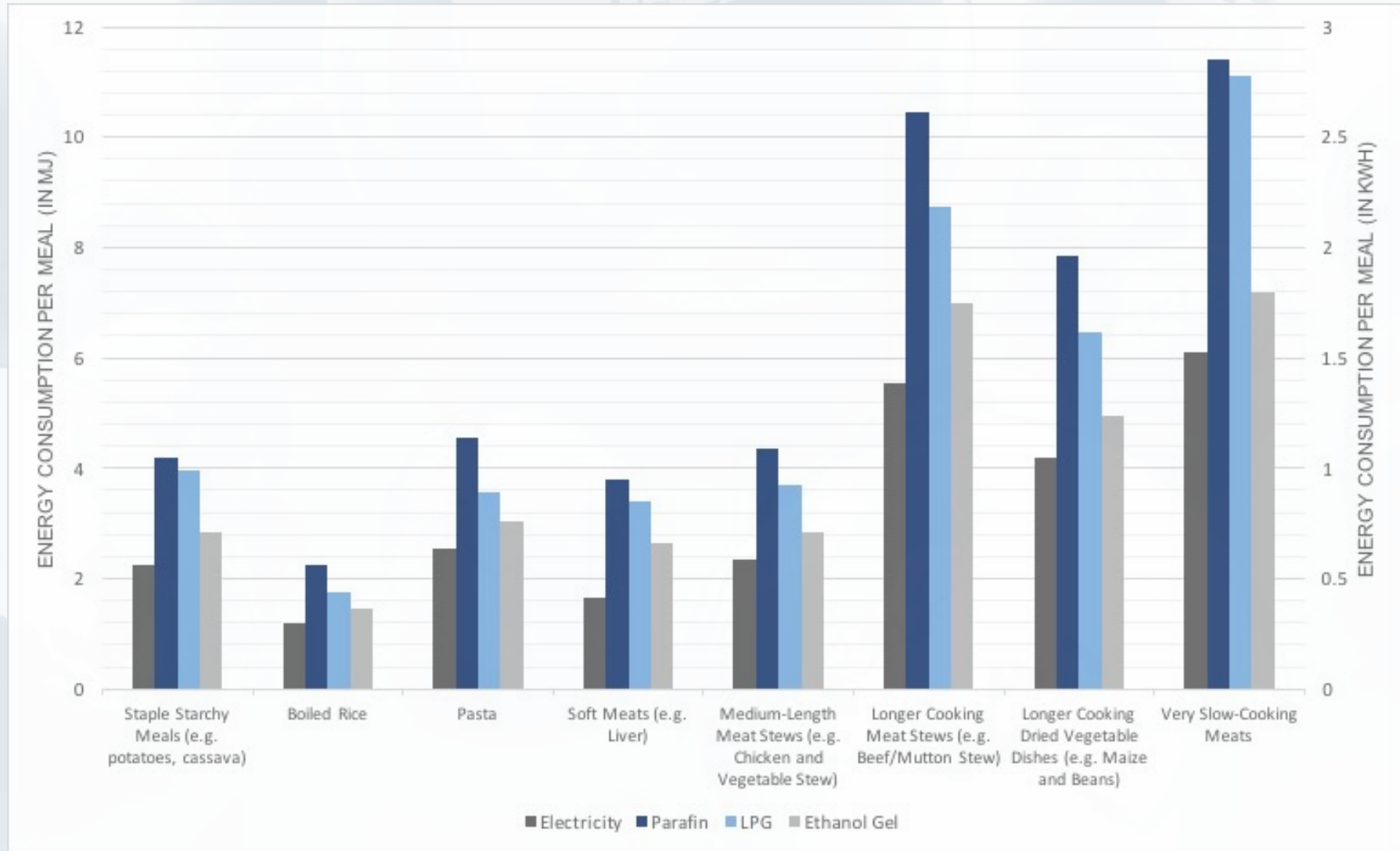
Four Alternatives Analysed

- This report aims to critically evaluate the viability and scalability of existing alternatives, with a focus on four (4) non mutually exclusive pathways:
 1. The use of **solar home systems** (SHS) to power electric cooking appliances;
 2. Renewably-powered **mini-grids** to power electric cooking appliances;
 3. **Distributed biogas systems** powered by agricultural and other wastes;
 4. Renewably-generated **power to gas** (P2G) for use with conventional gas stoves (synthetic methane distributed in cylinders like LPG).

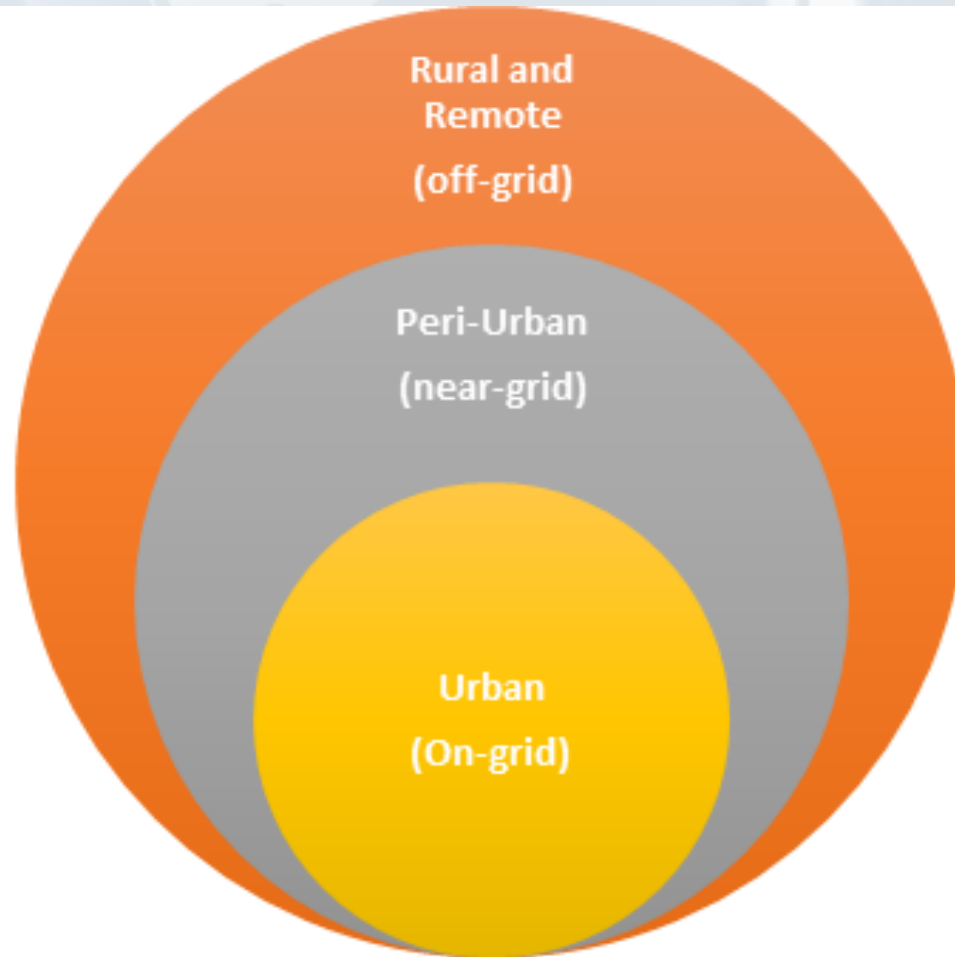
Cost Ranges of Different Cooking Options (in EUR/person/day)



Energy Consumption per Meal (Household of 5)



Different Regions Will Need Different Solutions



Three Key Concepts

- **1GJ per person per year:** estimated annual cooking-related energy use
- **Displacement Rate:** the actual rate at which new cooking technologies reduce firewood / charcoal consumption:
 - For biogas, the displacement rate found to range from 66-80%
 - For PV or electric cooking options, the displacement rate found to range between 10 – 40%
- **Reversion Risk:** the risk that citizens that have access to cleaner cooking fuels “revert” to traditional cooking fuels due to economic, social, or behavioral factors

Concluding Remarks

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- Transforming the cooking sector for those at the Bottom of the Pyramid is one of the great challenges of the 21st Century
- New technologies, new business models, as well as new financing models will be needed



Concluding Remarks

- Governments should fundamentally reform **fossil fuel subsidies** (which often support middle-and-upper income citizens) to support a rapid scale-up in sustainable cooking technologies (which overwhelmingly benefit rural and lower income residents)
- International climate finance should target the cooking sector as a top priority



THANK YOU!

QUESTIONS?

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DOWNLOAD THE FULL REPORT:

https://www.worldfuturecouncil.org/file/2016/10/WFC_BeyondFire_web-version.pdf