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EXECUTIVE SUMMARY

Indonesia's Next Cooking Transition

Shifting to non-fossil cooking

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Subsidized liquefied petroleum gas (LPG) is the primary energy source for cooking in most Indonesian households: 84% of households use LPG for cooking, and this figure increased by 5.5% per year between 2013 and 2022. While LPG has encouraged rapid adoption of clean cooking in Indonesia, the majority of LPG in Indonesia is imported: in 2023, demand for LPG was at 8 million tonnes, with domestic production at only 2 million tonnes, leading to an import bill of IDR 74 trillion (USD 4.8 billion). The LPG subsidy (IDR 80.2 trillion/USD 5.14 billion in 2024) has thus resulted in substantial financial strains on the government's budget along with energy security concerns. Meanwhile, in 2025 the national budget deficit is projected to reach IDR 662 trillion (USD 42.4 billion), making subsidy reform an urgent priority.

Universal LPG subsidies are challenging because the subsidies are not effectively targeted. Although the 3-kg LPG subsidy is intended to support low-income households, in practice it is equally used by all income deciles, making it regressive. Meanwhile, the use of firewood for cooking is still most prevalent among the poorest households, reflecting the limitations of LPG subsidies in reaching some poor households. The ongoing reliance on biomass is exposing these households—especially women and girls—to toxic indoor air pollution and the additional drudgery of collecting firewood.

To reduce dependency on LPG, the Government of Indonesia has been exploring several alternatives for clean cooking solutions, primarily focusing on induction stoves, dimethyl ether (DME), and piped natural gas ("city gas"). We have analyzed these options to provide a clear conceptual roadmap with practical steps for policy-makers on adopting non-fossil cooking technologies in an inclusive way.

Our findings show that induction is the most viable cooking solution for on-grid households for the following reasons:

1. Induction is cheaper for households and the government in a scenario when LPG is not subsidized. This is because cooking with unsubsidized LPG is more expensive than

cooking with induction, even on the highest household electricity tariff (IDR 182,400/ USD 11.70 per month for cooking on electricity compared with IDR 151,403/USD 9.71 per month for cooking on unsubsidised LPG). According to our analysis, based on these costs, households would save between IDR 25,904 (USD 1.66) and IDR 35,703 (USD 2.29) a month by switching to induction from unsubsidized LPG.

2. Public spending to upgrade the electricity supply to enable the use of induction can also support broader electrification goals, such as for cooling, electric vehicles, rooftop solar, and home batteries.
3. Electrification combined with renewables would provide long-term compatibility with Indonesia's decarbonization goals.
4. DME and city gas, while technically feasible, would lock Indonesia into continued reliance on fossil fuels and large subsidies: DME is economically unviable without substantial subsidies, and the expansion of natural gas would require massive infrastructure investments that would have limited end use and pose stranded asset risks.

Induction would directly benefit households connected to the grid in areas with a reliable electricity supply. The subsidy savings from not using LPG would also free up public funding that could be used to provide targeted clean cooking solutions for rural and remote households. In other words, induction would need to be part of a broader strategy to provide universal access to clean cooking.

Scaling up induction entails both challenges and opportunities. During fieldwork conducted to understand households' experiences, infrastructure readiness, and barriers to uptake of induction, we investigated user experiences in 100 households that had previously been provided with an induction stove as part of a government pilot. The key findings were as follows:

- More than 66% of respondents felt that induction stoves were simpler to use than LPG stoves, more than 50% felt they were safer, and around 40% felt they were cheaper and easier to clean.
- Around 40% of respondents felt that induction stoves were slower than LPG stoves.
- More than 66% mentioned the need to replace cookware as a major drawback (induction requires ferromagnetic cookware).
- Other key issues included higher electricity tariffs, high upfront costs (where stoves and electricity upgrades were not subsidized), and limited access to repair services.
- Fuel-stacking is still common, with most households continuing to use LPG alongside induction stoves, though with substantially reduced LPG usage.

The single largest barrier to induction adoption is the current approach to LPG and electricity subsidies. Because LPG subsidies are universally available, households have limited incentive to shift to alternatives. However, the need to protect people on low income from higher energy prices necessitates a deeper analysis.

In one scenario analyzed, the government could maintain LPG subsidies for low-income households and swap LPG subsidies for induction subsidies for well-off households. The savings on LPG subsidies could be directed into the capital investment required for adopting induction.

If LPG subsidies were maintained for the bottom 60% of households and phased out for the top 40%, the savings would be about IDR 7.61 trillion (USD 459 million) per year. Alternatively, phasing out LPG subsidies for the top 60% households could increase the savings to IDR 11.87 trillion (USD 717 million) per year.

The capital investment required for induction adoption among the top 40% of households ranges from IDR 50.83 trillion to IDR 77.41 trillion (USD 3.12 billion to USD 4.75 billion) without meter upgrades. With meter upgrades, the investment ranges from IDR 95.39 trillion to IDR 158.1 trillion (USD 5.85 billion to USD 9.7 billion). The fiscal breakeven is reached in year 3 without meter upgrades and in year 5 with upgrades.

Beyond this point, the annual net savings continue to grow, demonstrating that targeted LPG subsidy reform can free up fiscal space while advancing progress toward Indonesia's clean cooking and energy transition goals.

In another scenario, similar results could be achieved if the government chose to maintain LPG subsidies for only the bottom 40% of households, as required by law. In this scenario, the potential savings could increase to IDR 11.87 trillion (USD 717 million) per year. These potential savings illustrate the magnitude of the fiscal space that could be reallocated to support electrification efforts and social programs.

In both scenarios, breakeven is achieved within 3 to 5 years, after which the net savings increase significantly each year. This demonstrates that reallocating subsidies to electrification could enhance fiscal efficiency while advancing Indonesia's clean cooking and energy transition goals.

Eventually, the government could also include lower-income households and small businesses in the transition to induction, with capital costs being offset by lower ongoing outlays for LPG subsidies.

Our survey results for household users suggest that savings have indeed been made—though lower than the theoretical amounts suggested above. Assuming a base price of IDR 21,000 per cylinder, households could save around IDR 37,789 (USD 2.44) a month on LPG costs.

Ultimately, though, this transition is not just a technical shift; it is a political economy decision that requires bold, upfront action to secure greater fiscal space and energy resilience in the years ahead.

Electricity tariffs would also need to be reformed. Under Indonesia's current tariff structure, electricity rates are determined by installed capacity (VA). This means that the households with the highest electricity subsidies (450 VA and some 900 VA connections) will automatically be charged higher per-kWh rates when they upgrade to support the use of induction stoves. In fact, their electricity bills will more than triple just by having a higher capacity connection, even if they use no more electricity. This capacity-based pricing discourages households from upgrading or switching to electric cooking. A block tariff system, where the price of electricity is based on consumption tiers rather than capacity, could offer a more transparent and equitable framework.

Our survey results reinforce previous findings that women are the primary cooks; therefore, the transition to non-fossil cooking must address their needs and perspectives. Gender equality and social inclusion (GESI) considerations must be embedded in planning and implementation to ensure that women, who are the most affected by cooking fuel choices, are meaningfully consulted and empowered to participate in decision making. This would mean identifying practical barriers (such as affordability and electricity infrastructure constraints for low-income households), targeting subsidies at women, and providing inclusive community engagement.

The report concludes with a policy roadmap to further promote the use of induction cooking. The roadmap sets out the following measures.

1. Make electricity consumption and upgrades more affordable.

- Revise regulations to reduce the voltage upgrade costs.
- Introduce block tariffs to protect low-consumption households while enabling cost recovery.
- Prioritize grid upgrades in areas with sufficient reserves.
- Fund improvements to household connections and plan for rural and off-grid expansion, such as the New Electricity Installation Assistance Program developed by Indonesia's Ministry of Energy and Mineral Resources.

2. Implement subsidies for induction stoves.

- Provide means-tested support for induction stoves and induction-compliant cookware.
- Reduce dependence on LPG through one-off connection subsidies.

3. Ensure induction equipment suits consumer needs.

- Conduct gender-sensitive needs assessments to guide product design.
- Partner with manufacturers to ensure that functionality matches regional cooking habits.

4. Reform LPG subsidies.

- Test approaches to better target LPG subsidies to women from low-income households, such as recipient-based subsidies (e.g., cash transfers).
- Reform LPG subsidies, with clear milestones and public awareness.

5. Integrate GESI into policy frameworks and budgeting.

- Embed GESI into policy, budgeting, and monitoring and evaluation frameworks.
- Allocate subsidies and training directly to women for empowerment.

6. Run public education campaigns.

- Launch targeted campaigns to promote induction cooking.
- Address cultural habits and engage women as well as men in decision making.

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