

➤ Preparation of a Clean Cooking Solutions Roadmap and Investment Prospectus for Guatemala, Honduras, and Nicaragua

Summary Presentation

JUNE 2015



Agenda

Background and context on the project

Guatemala

Nicaragua

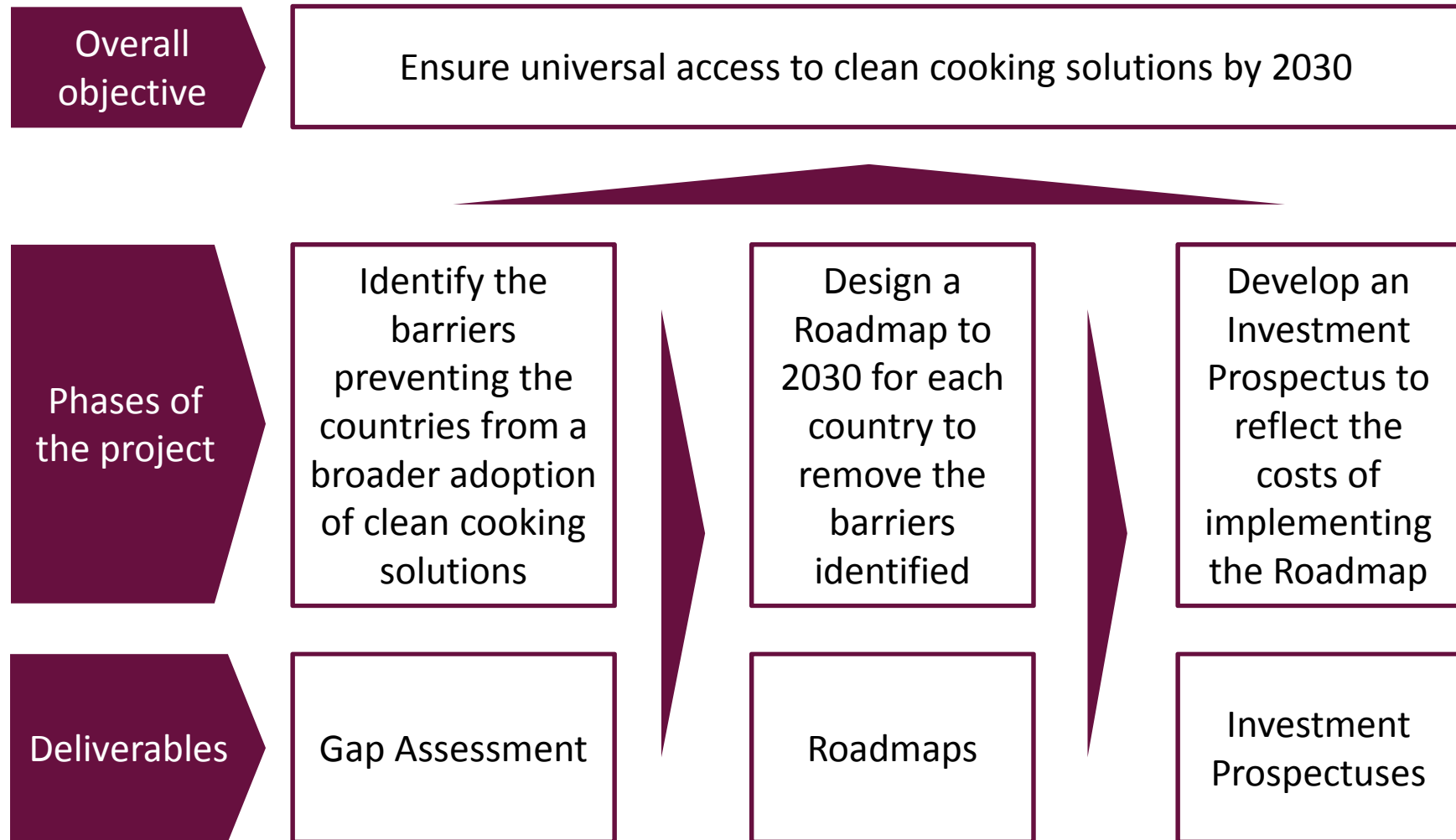
Approach to investor outreach

Next Steps

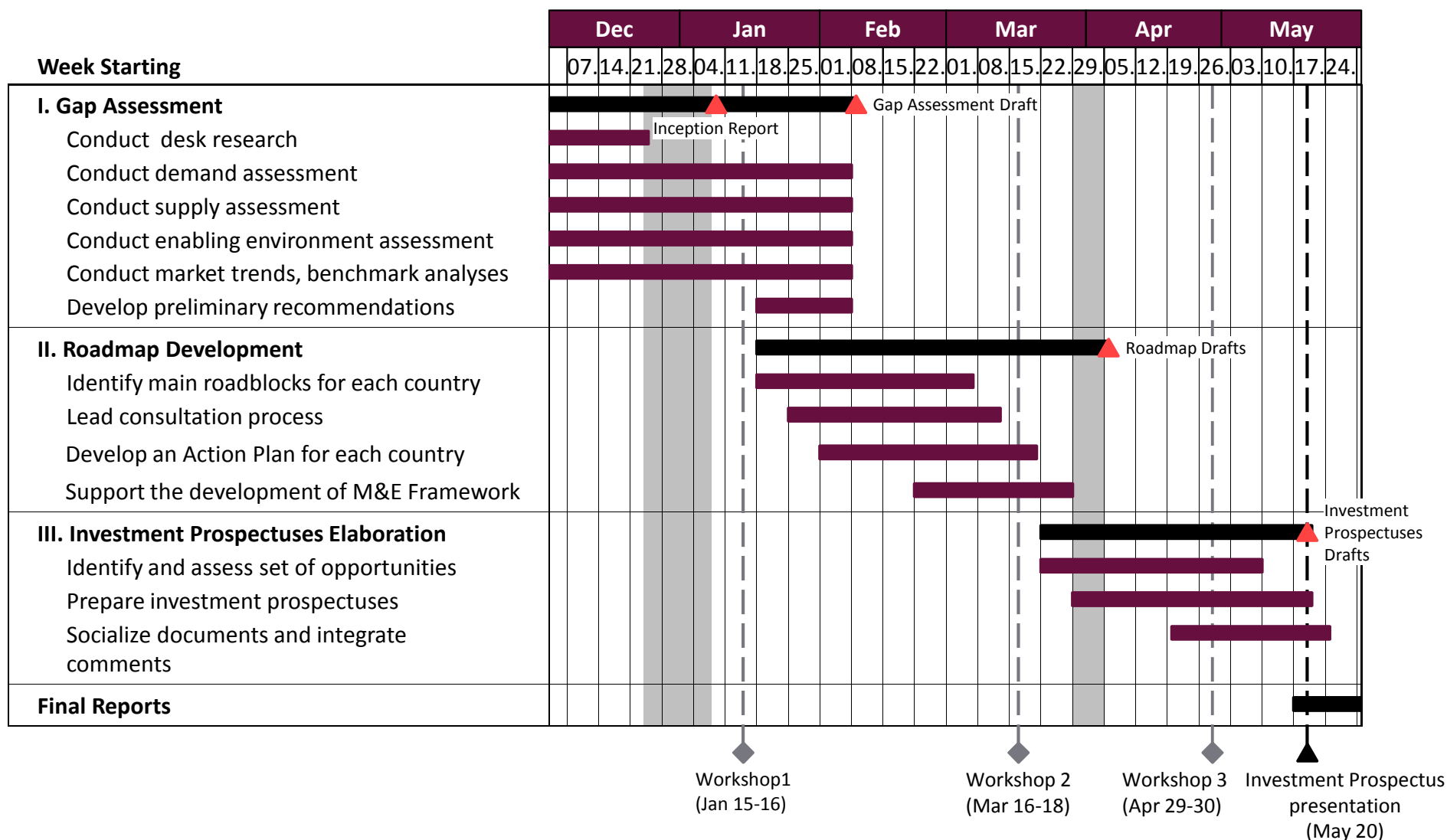
The WB LAC Sustainable Energy group has led this project with the support of Dalberg and extensive contribution by country stakeholders

- The World Bank (WB) Group has over 20 years of experience in working to scale clean cooking solutions in South and East Asia, Sub-Saharan Africa and Central America.
- The on-going engagements of the WB in these regions include the Central America Clean Cooking Initiative (CACCI).
- CACCI aims to provide technical assistance to the governments of Guatemala, Honduras and Nicaragua and support them in eradicating the dependency on traditional stoves by 2030.
- The project presented in this document is part of the WB - CACCI efforts.
- This project has been funded by the initiative Sustainable Energy for All (SE4ALL) and CACCI. SE4All is a global initiative focused on providing universal access to energy, improving energy efficiency and increasing the use of sustainable energy.
- The WB hired Dalberg Global Development Advisors to support the focus countries of this assignment, Guatemala, Honduras and Nicaragua, throughout this project.

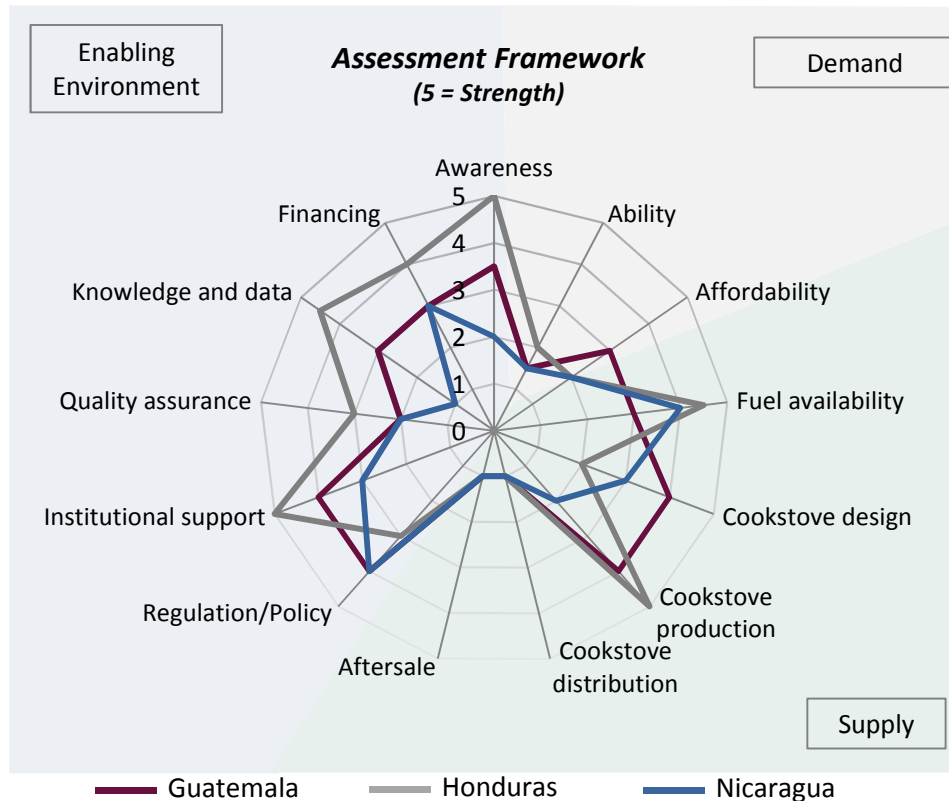
The overall objective of this project is for the countries to design their own path towards universal access to clean cooking by 2030



This project has been completed on a span of 6 months



The team has used a Clean Cooking Solutions Ecosystem Framework to identify the relative strengths and weaknesses within each country



For the Gap Assessment the team takes an **ecosystem approach** to evaluate the gaps and barriers and considers the determinants of:

- **Demand:** including awareness, ability (usage) & affordability
- **Supply:** including fuel availability, stove design, production, distribution and after-sale support
- **Country Enabling Environment:** including policy, institutional support, quality assurance, data and access to finance

The insights of the Gap Assessment feed into the Roadmaps and Investment Prospectus.

The Roadmap and Investment Prospectus systematically approach each of the barriers of the framework, nevertheless they place an emphasis on those areas of relative weakness.

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Guatemala

- **Nature of the Challenge**
- **Catalyzing a Transformational Change**
- **Needed investments to transition to Clean Cooking**

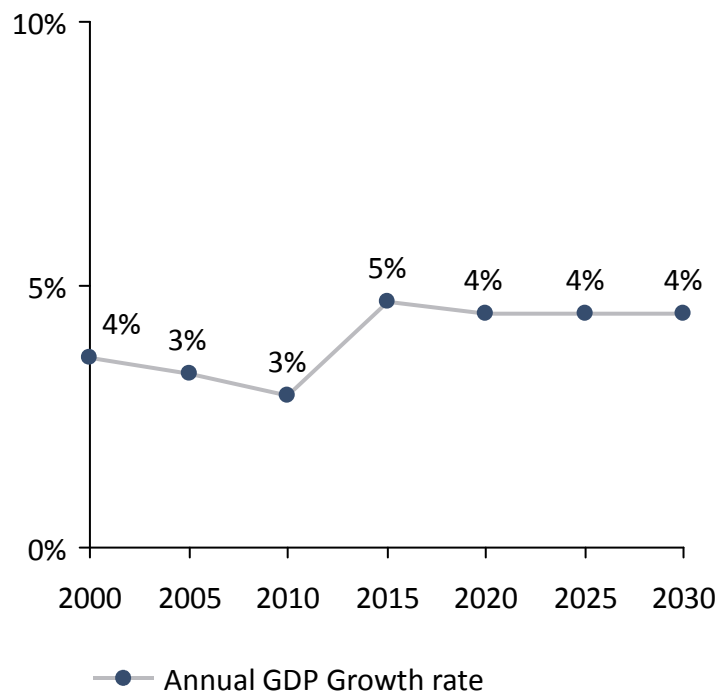
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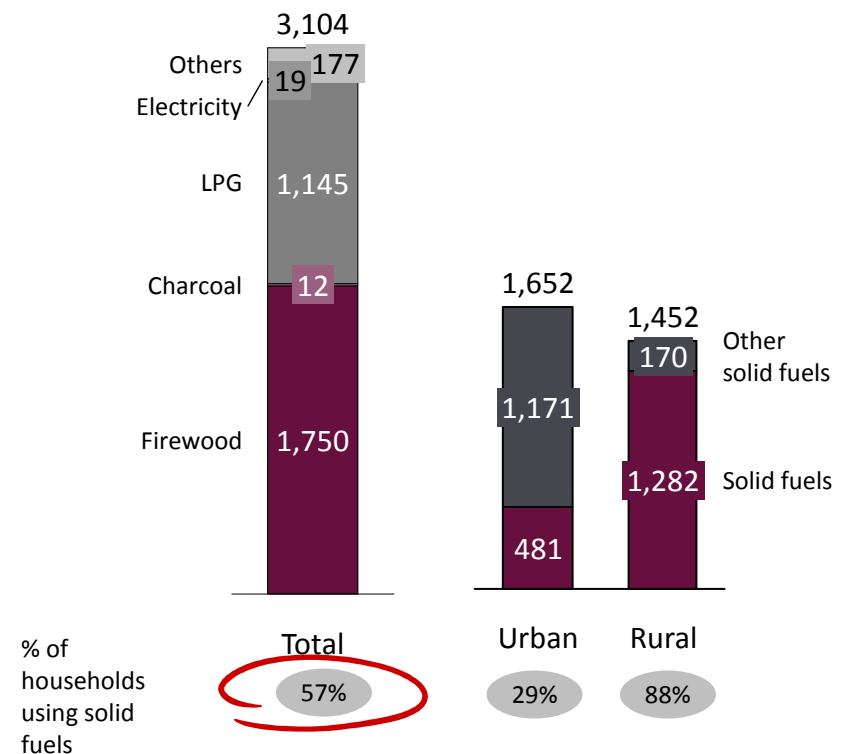
Despite the economic growth experienced by Guatemala, almost 60% of their populations cook primarily with wood

Despite the economic crisis of 2008, the GDP has kept a positive trend



Still, 57% of the households today cook with solid fuels, primarily wood

Primary fuel usage for cooking breakdown (2012)
(000 households)

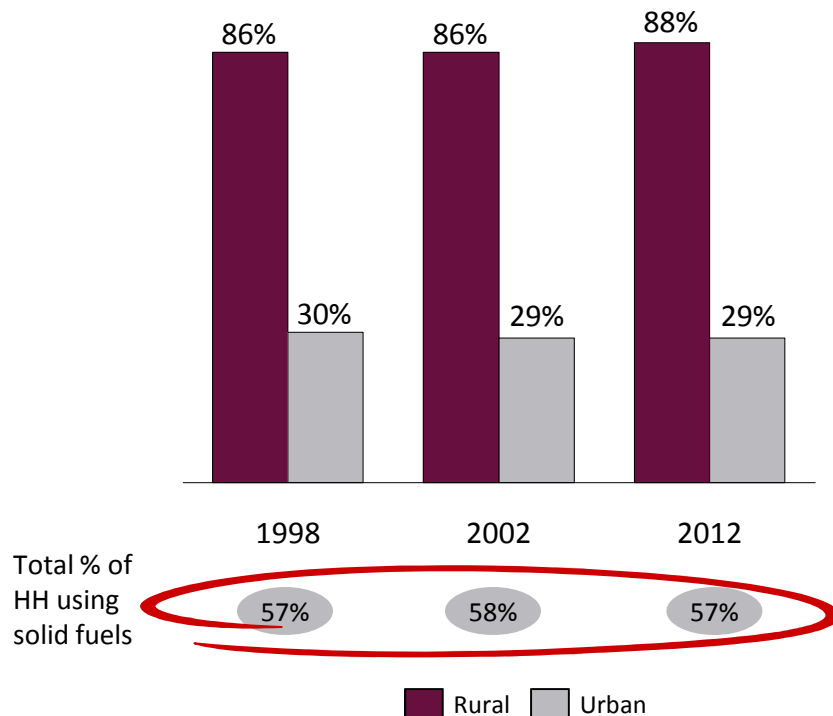


This % has barely decreased in the last 15 years, despite the efforts of the country to mitigate the problem

Rural HH are the main users of solid fuels for cooking and have slightly increased their usage over time

Guatemala has a history of ~40 years promoting clean cooking

Primary fuel usage historically
(% of HH using solid fuels)



- In 1976 the model LORENA (combination from “lodo” mud and “arena” sand) was launched. The stove was disseminated at scale and became the foundation for subsequent refined models.
- In 1996 the Fondo de Inversión Social (FIS) started disseminating ICS (plancha). It is estimated it disseminated 160k stoves until 2008, when the FIS was dismantled.
- Other governmental programs such as FONAPAZ, ProRural, FODIGUA and DICOR have disseminated cookstoves, although the number and the adoption rate is unknown.

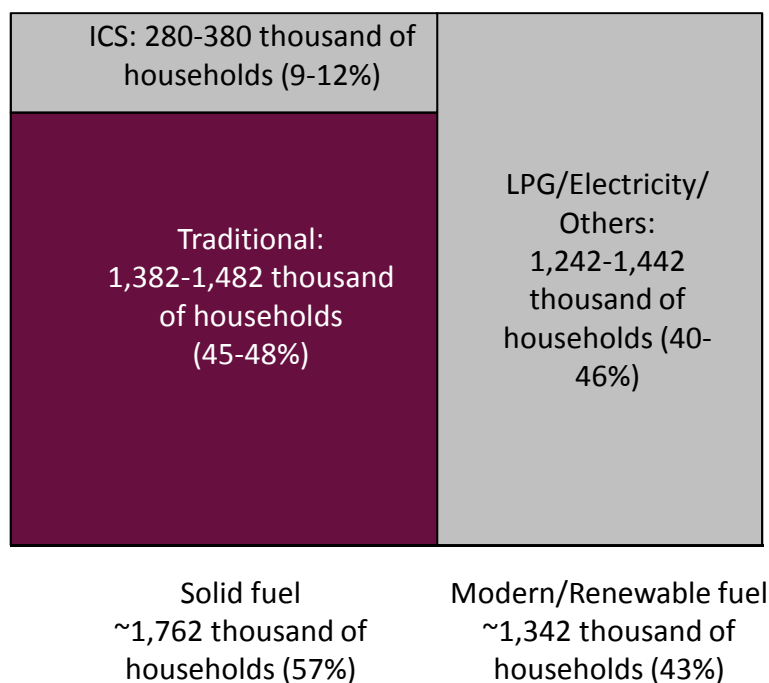
1. 1998 and 2002 use of fuelwood is % of the energy matrix mix and is assumed mainly to be for cooking.

Source: Global Alliance for Clean Cookstoves; Guatemala Cookstoves and Fuels Market Assessment, 2013; Dalberg analysis.

Out of the ~57% HHs that mainly use solid fuels for cooking, the great majority use traditional cookstoves, although fuel stacking is significant

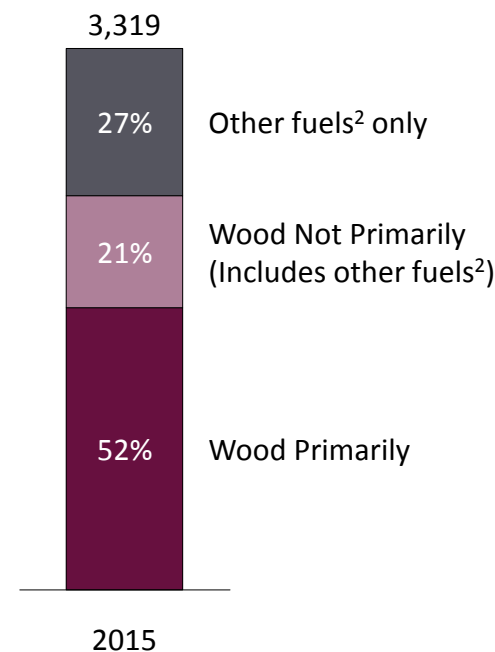
Built-in-place ICS with chimney has been the predominant ICS model

Cookstove penetration by type (2012)
(% of households¹)



~20% of the population use a combination of wood with other fuels

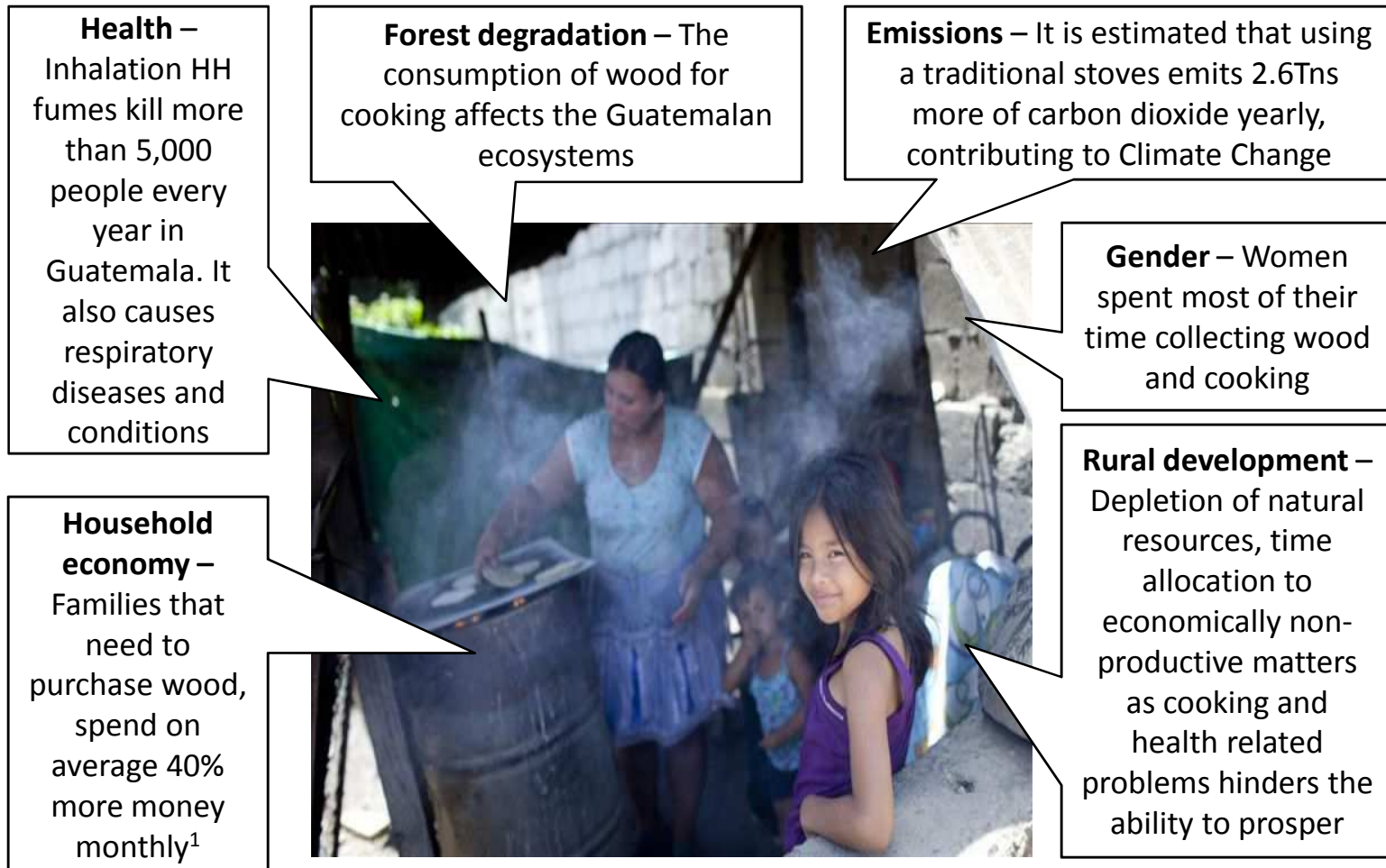
Household fuel use
(000 of households)



1. Estimates assume one cookstove per household; 2. Primarily LPG, Electricity, Kerosene

Source: Global Alliance for Clean Cookstoves; Guatemala Cookstoves and Fuels Market Assessment, 2013; "Resultados de la Investigación de Mercado Secundaria: Segmentación de Mercados e Identificación de Segmentos Prioritarios", Fast-Track Carbon, Febrero 2015; Dalberg analysis.

Cooking with traditional stoves is a multidimensional problem, that severely affects 2.4 million households



1. Compare to monthly expenditure of using LPG stoves, electricity stoves and biomass ICS.

Source: Global Alliance for Clean Cookstoves; Dalberg analysis.

A complex set of challenges has prevented Guatemala from a broader adoption of clean cooking technologies

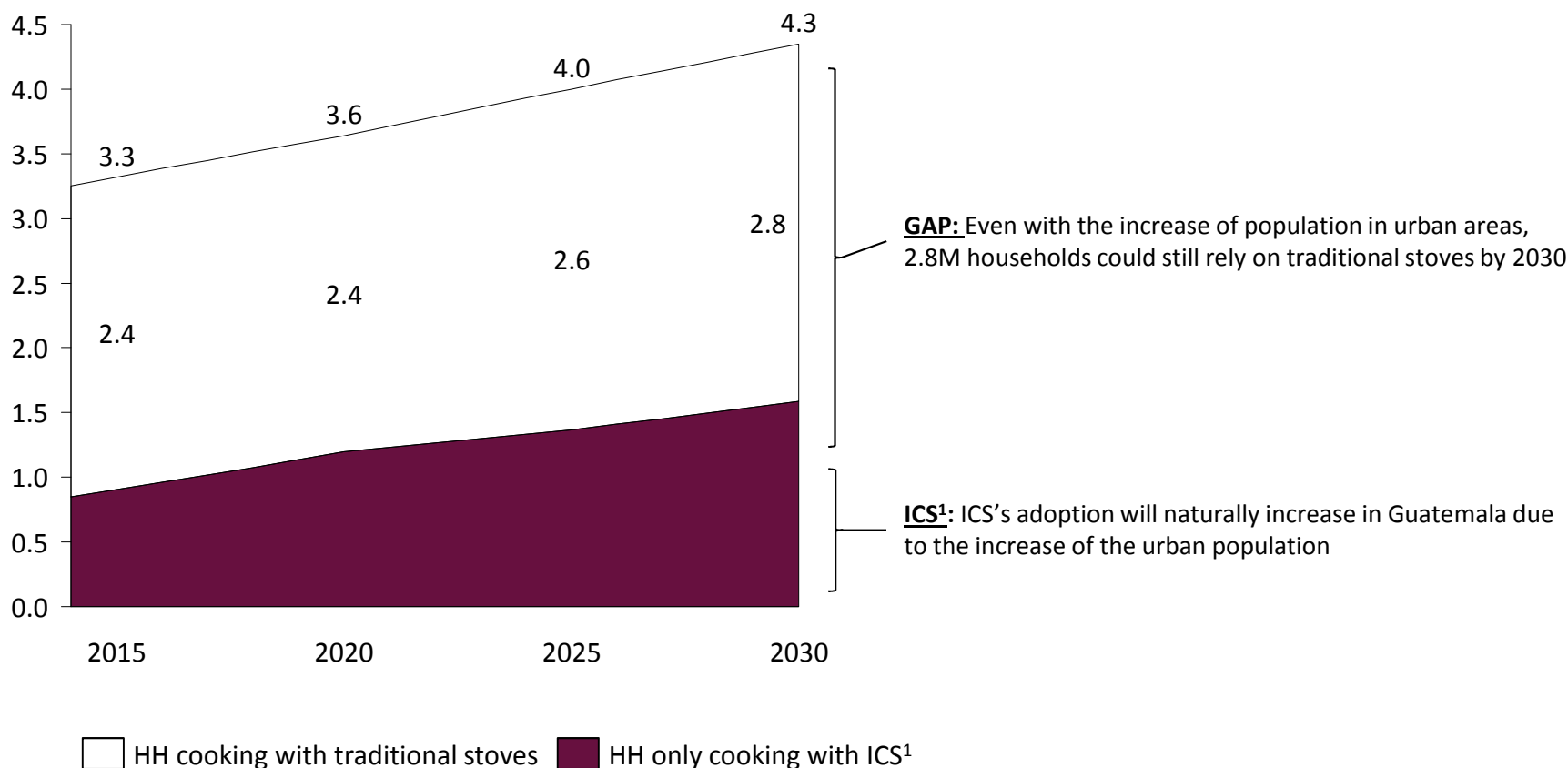
Demand	Supply	Enabling Environment
<ul style="list-style-type: none">• Low awareness about the negative consequences of cooking with traditional stoves and the existence of alternatives.• Limited affordability of existing alternatives, which combined with the existence of programs that heavily subsidize the stoves depress market development.• Little training received by users on installing, using, maintaining and repairing the stoves, leading to eventual breakdowns and mistrust in the technology.	<ul style="list-style-type: none">• Limited availability of fuels that pushes households to use wood instead of LPG, electricity or even sustainable wood.• Narrow variety of models that do not fully adjust at the needs of potential users.• Constrained productive capacity to produce stoves at a significant scale.• Weak distribution networks that rely on NGO and government programs to reach out users.• Inexistent after-sale services that hinder the usage of the stoves over time.	<ul style="list-style-type: none">• Few policies and regulations that promote the usage of cleaner cooking technologies and fuels.• Uncoordinated institutional support that limits the success of programs launched in parallel by several public agencies.• Lack of quality standards that does not guarantee certain efficiency and emissions standards.• Limited knowledge and data, that hinders effective decision making.

INSERT GAP ASSESSMENT DOCUMENT AS BACKUP

In 2015 out of the total 3.3 million HH in Guatemala, 2.4 cooked with traditional stoves, this number could increase to 2.8 HH in 2030

If no additional action is taken, the number of HH cooking with traditional stoves could increase from 2.4 million in 2014 to 2.8 in 2030

Projected evolution of cooking technologies if no additional action is taken
(millions of households)



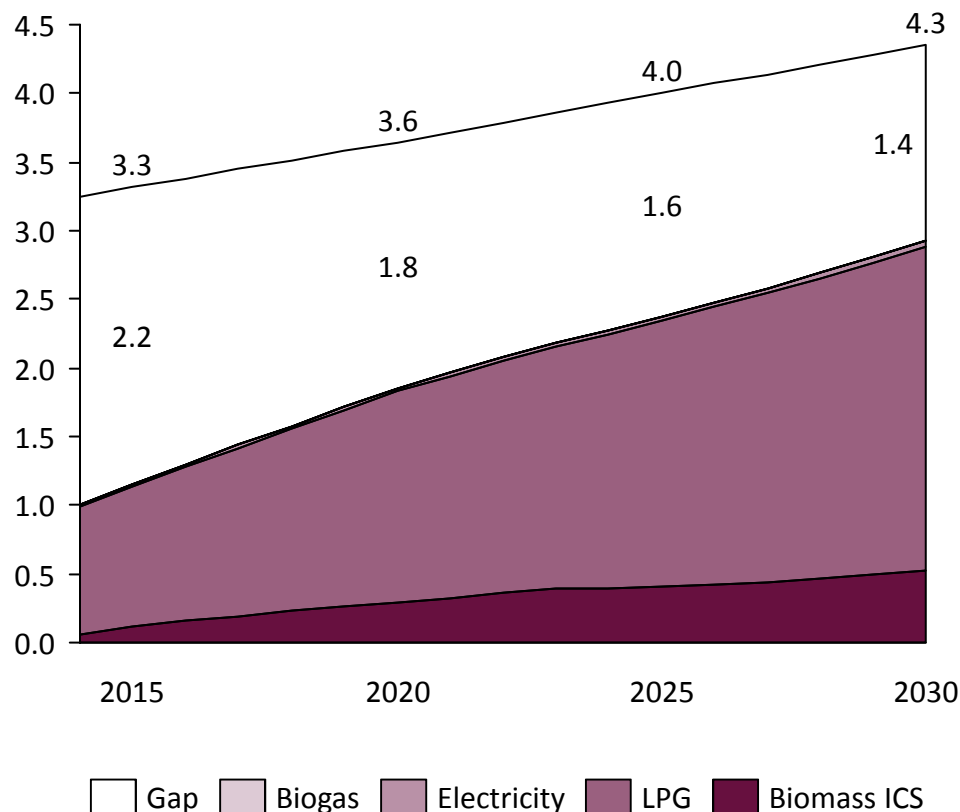
1. ICS includes biomass improved cookstoves, LPG stoves, Electricity stoves and biogas stoves.

Source: Interviews; Desk research; Dalberg analysis.

Even taking into account the aggressive plans to expand LPG and biomass ICS, ~1.4 million HHs could still rely on traditional stoves in 2030

The existing government and country plans to increase the penetration of LPG, electricity and Biomass ICS will only reduce the amount of HH cooking with traditional stoves partially

Projected evolution of cooking technologies under existing plans
(millions of households)



GAP: Even with significant increases in adoption of LPG and improved biomass stoves, 1.4M households could still rely on traditional stoves by 2030

Electricity: Reflects National Energy Policy 2013-2027 goal of increasing the electrification rate to 95% by 2027

LPG: Growth reflects goals of National Energy Policy 2013-2027 to replace the use of firewood in 25% of households by 2027 (*aggressive transition assumed*)

Biomass ICS: Growth from 2014-2023 reflects government plan to promote 650k improved stoves

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All relevant stakeholders in Guatemala have come together to develop a holistic Roadmap

Stakeholders have participated in a series of workshops



The roadmap developed takes an ecosystem approach

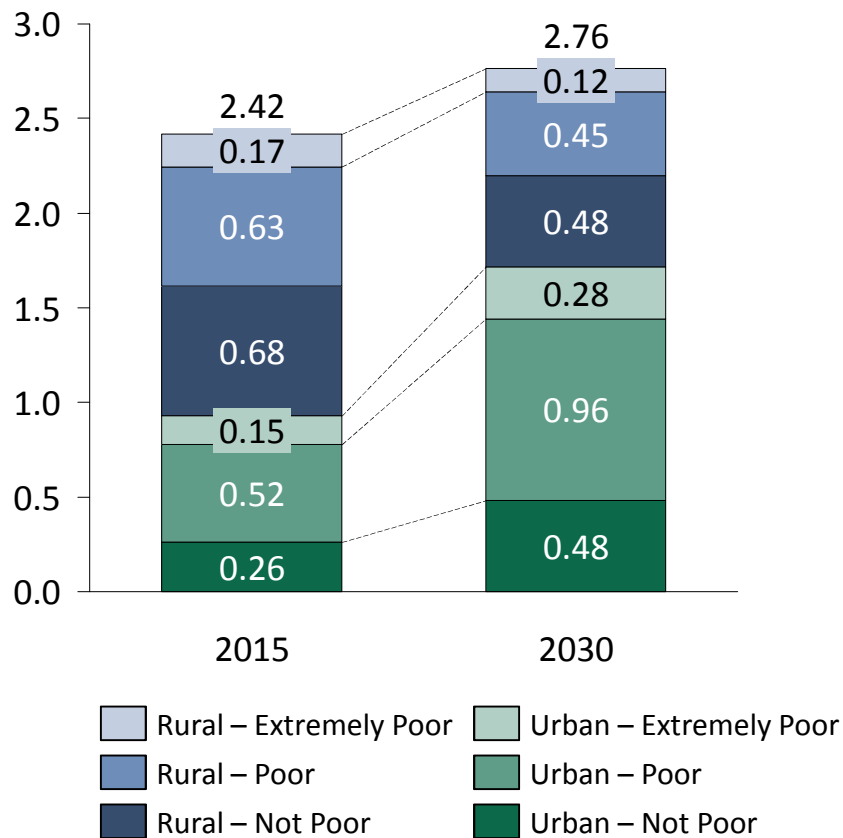
The objectives of the Roadmap are the following:

- Demand:
 - Increase demand of clean cooking solutions
 - Increase usage of clean cooking solutions over time
 - Diversify financing options and affordability
- Supply:
 - Increase the variety of stoves models
 - Scale the up the production of stoves
 - Increase/reinforce the distribution and aftersales networks
- Enabling environment:
 - Ensure policies and regulations are in place
 - Enhance institutional support
 - Evaluate and certificate stoves
 - Collect updated information and make it available

To close the gap, the Roadmap aims to transition different population segments to cleaner technologies using specific strategies

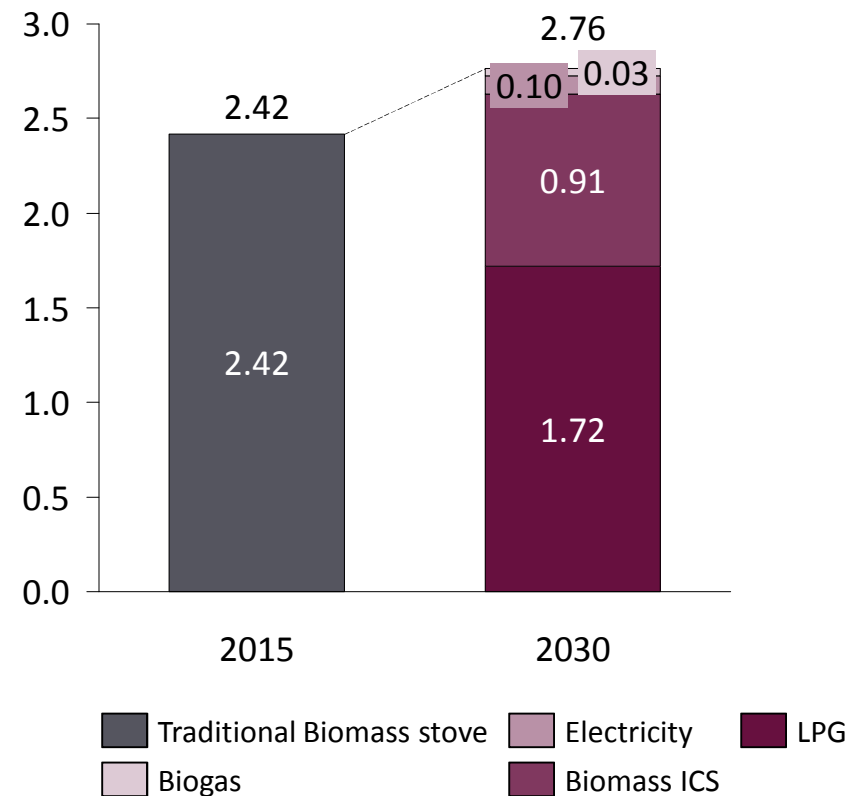
The target population can be categorized by socioeconomic strata and geography

Households (millions)



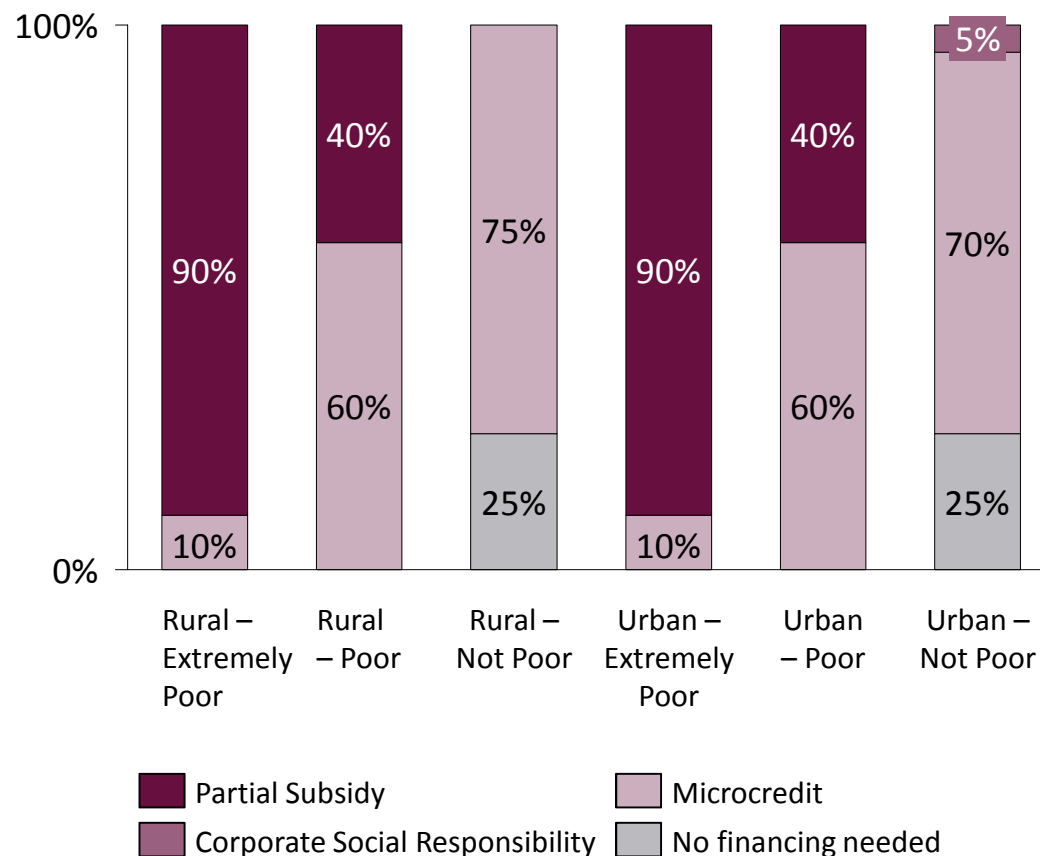
The Roadmap migrates the target population to cleaner fuels

Households (millions)



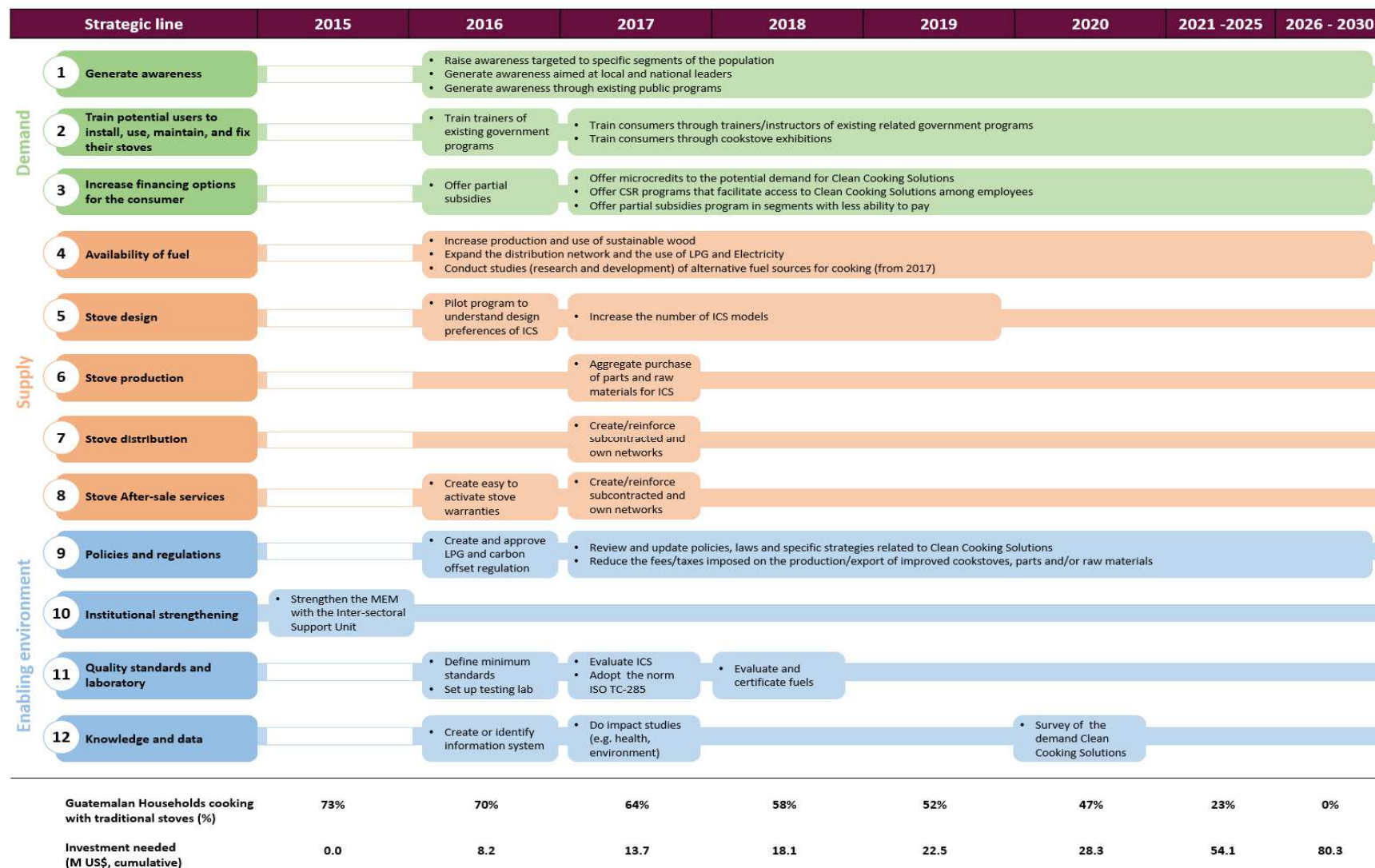
For instance, the Roadmap contemplates different financing mechanisms for different segments to access the technologies

Different type of subsidies, microfinance and CSR initiatives are targeted to different segments



- Partial Subsidy = subsidies 70% of the cost of the ICS
- Microcredit = finance 70% of the cost of the ICS
- Corporate Social Responsibility = finance 70% of the cost of the ICS
- No financing needed: the HH cover the whole cost of the ICS

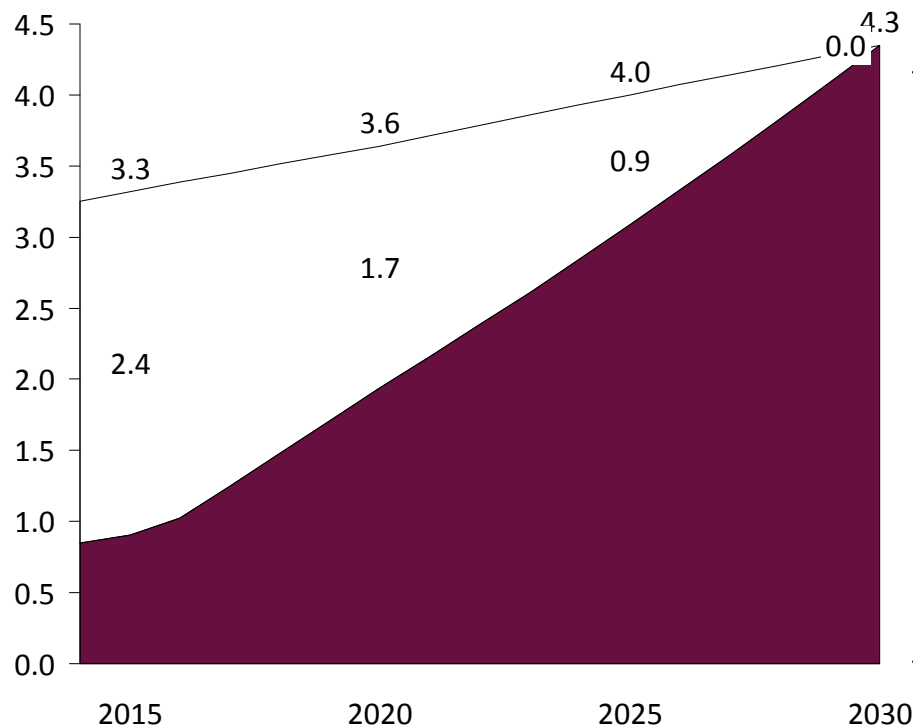
Recognizing that all the Strategic Lines are important, the Roadmap defines the logical sequence between them to maximize impact



The Roadmap aims to eradicate the dependency on traditional stoves and help transition all households to clean cooking solutions by 2030

The correct implementation of the Roadmap would close the gap previously identified, and would enable all Guatemalan households to cook with ICS¹ by 2030

Projected evolution of cooking technologies under the Roadmap
(millions of households)



ICS¹: Growth according to transition defined by population segment and logical sequencing of strategic lines

□ HH cooking with traditional stoves ■ HH only cooking with ICS¹

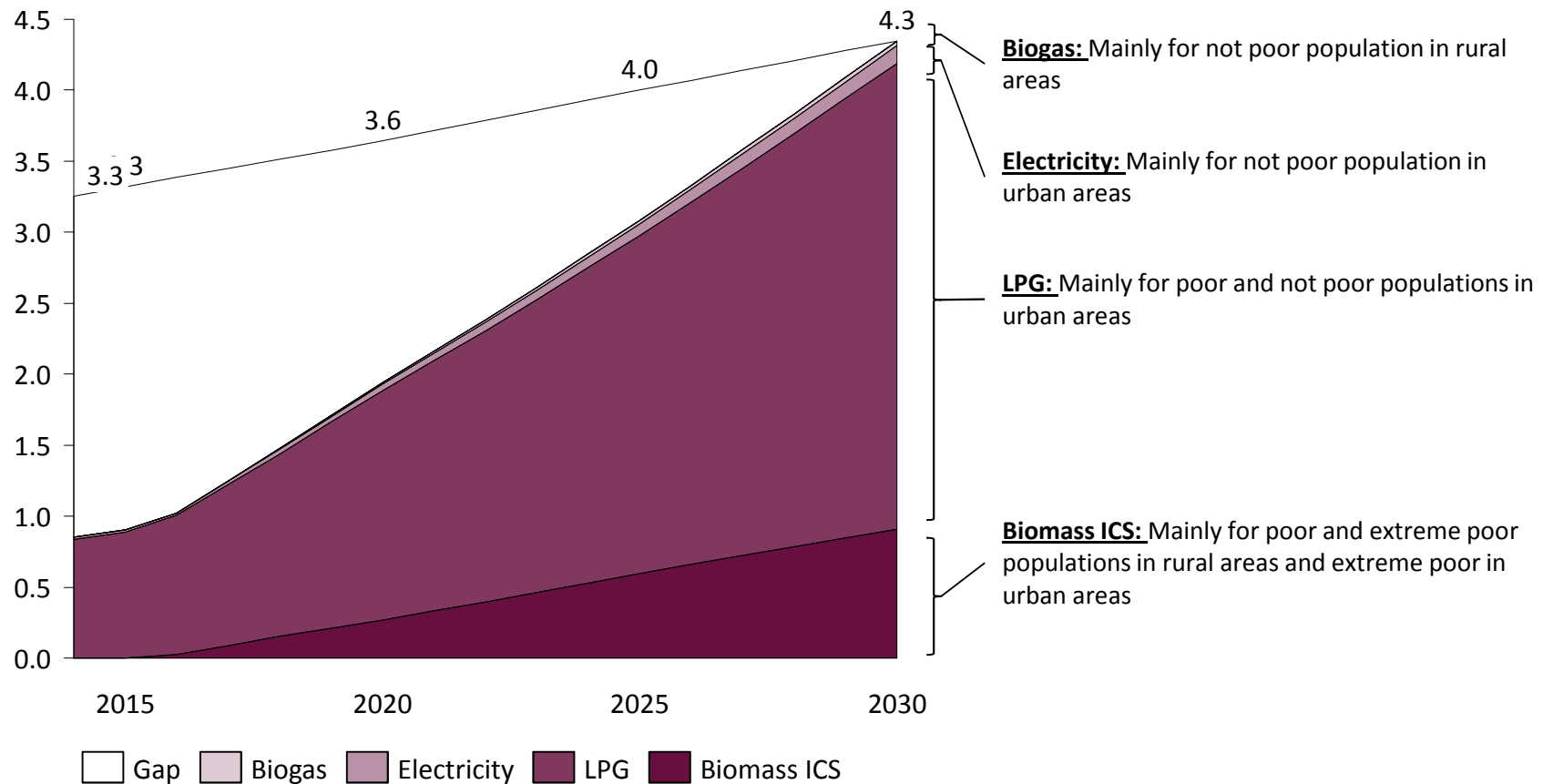
1. ICS includes biomass improved cookstoves, LPG stoves, Electricity stoves and biogas stoves.

Source: Dalberg analysis.

The Roadmap aims to close the gap by increasing the penetration of improved biomass stoves and LPG stoves

In 2030, 75% of the HH¹ will be cooking with LPG, 21% with biomass ICS and the other 4% with other fuels

Projected evolution of cooking technologies under the Roadmap
(millions of households)



1. Does not assume transition from the population that today is cooking with Improve Cooking Solutions to other cleaner technologies.

Source: Dalberg analysis.

In addition, it will significantly impact the health and household finances of those cooking with traditional stoves, as well as the emissions

Health¹

Will reduce deaths from HAP⁴ by **45,000** people, including **15,000** children (from 2016-2030)



Household Finances²

Will reduce household expenditure in fuels for cooking **~40%** per month (**US\$21**)



Emissions³

Will reduce emission gases of carbon dioxide by almost **53 million tons** (from 2016-2030)



Increasing the adoption of clean cooking solutions positively impacts the household's finances and health, leading to poverty reduction and increased prosperity

1. Estimate by projecting the number of deaths that will occur with the actual ratio of deaths from HAP and estimates the new number of deaths that will occur by closing the Gap of people cooking with traditional Stoves. 2. Estimated by comparing the monthly cost of HH that buy wood and cook with traditional wood stoves vs. those using biomass ICS, LPG stoves and electricity stoves. 3. Estimated by projecting annual savings of 2.6 Tons of carbon dioxide gases for each HH that transition to an ICS. 4. Household air pollution. Source: GACC; Desk research; Dalberg analysis.

The Roadmap includes 12 Strategic Lines, 3-5 components per strategic line, and 7-9 activities per component

Categoría	Línea estratégica	Componente	Actividad	Responsable		Cronograma de trabajo		Cronograma detallado																										
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The complete Roadmap can be found in the Annex

INSERT ACTION PLAN DOCUMENT AS BACKUP

Agenda

Background and context on the project

Guatemala

- Nature of the Challenge
- Catalyzing a Transformational Change
- Needed investments to transition to Clean Cooking

Nicaragua

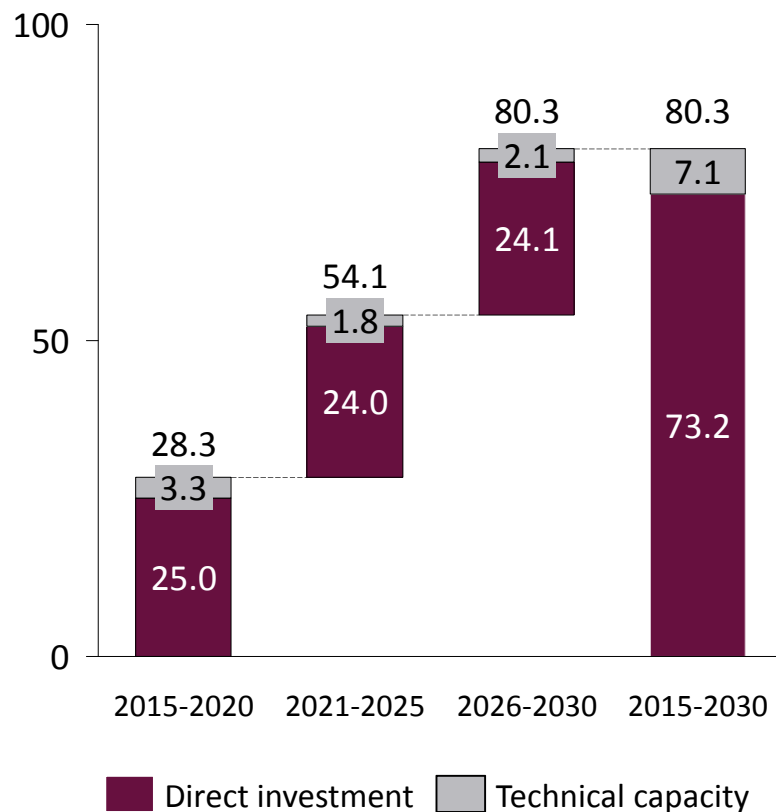
Approach to investor outreach

Next Steps

US\$28 million will be necessary to implement the initiatives defined on the first five years of the Roadmap

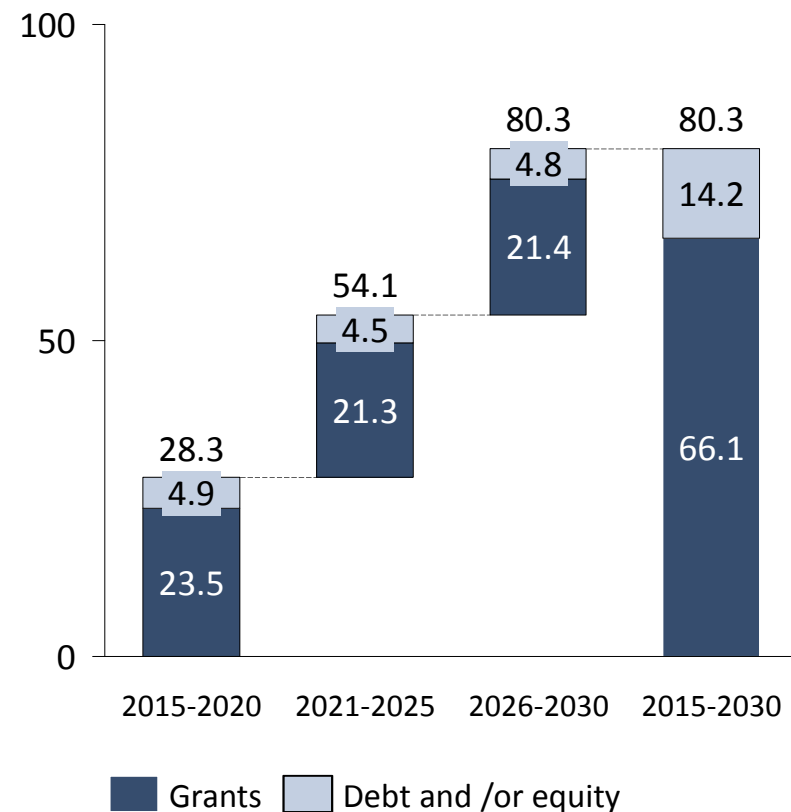
Cost by type of investment are mainly concentrated in direct investment

Estimated cost by type of investment (US\$ millions)



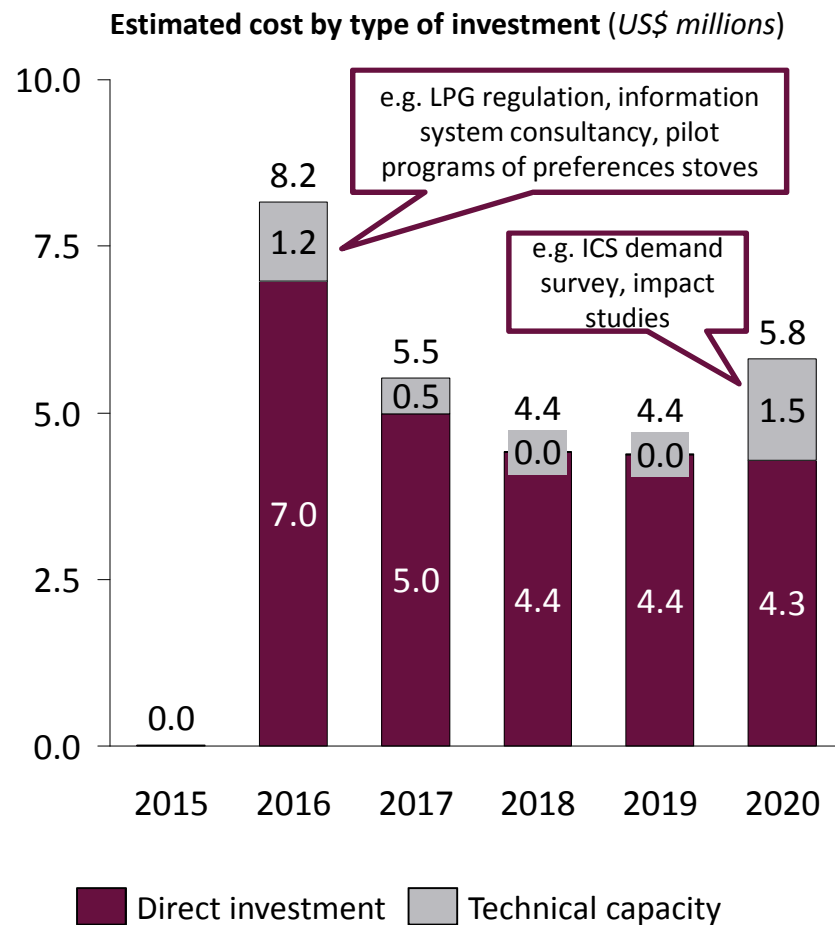
Grants are likely to make up the majority of investment needs for the Roadmap

Estimated cost by type of funds (US\$ millions)

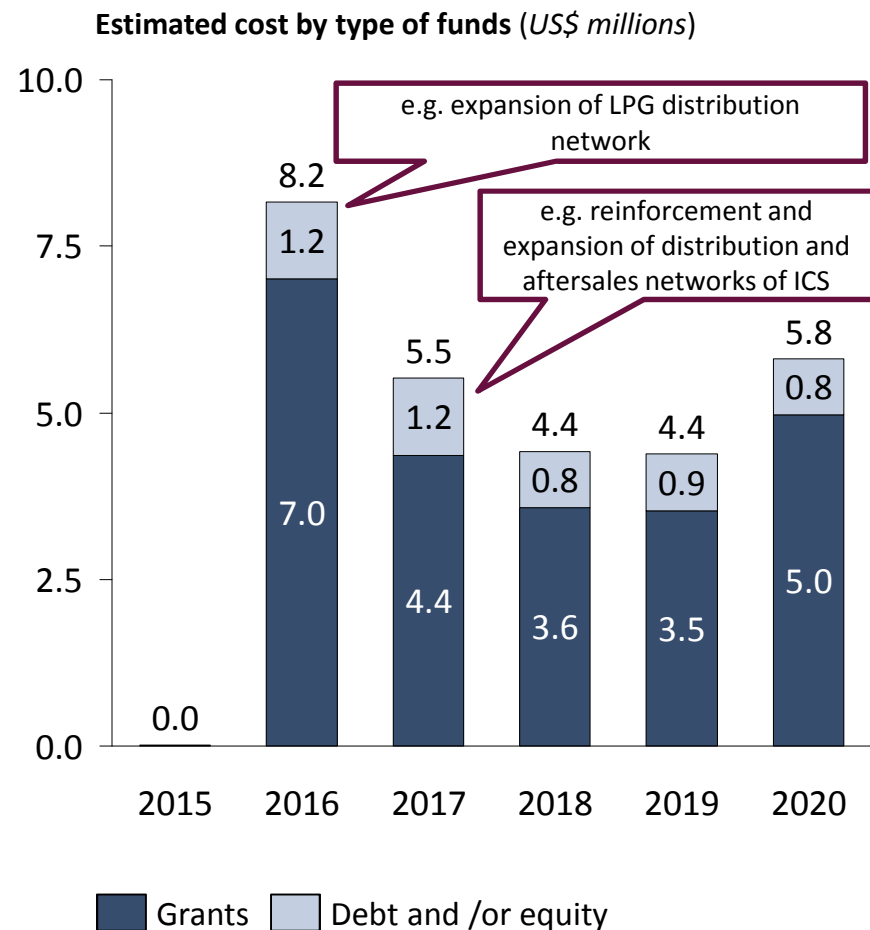


The financing needs are slightly more concentrated during 2016, which focuses on planning the initiatives further

Technical capacity is more needed during 2016 and 2020



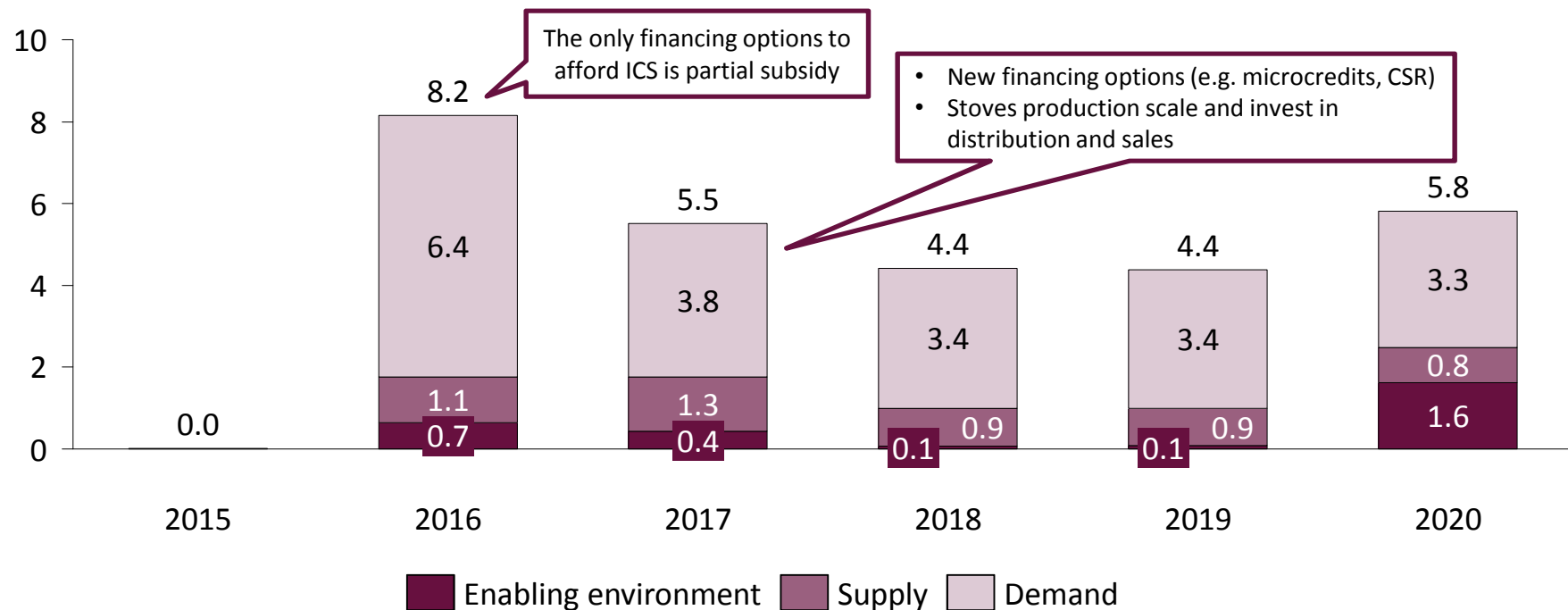
Debt and/or equity funds are concentrated on the first years, to reinforce the supply side



The majority of the investment needed concentrates in strengthening the demand

Overall, the majority of the costs of the Roadmap are concentrated in boosting the demand

Estimated cost by area of investment (US\$ millions)



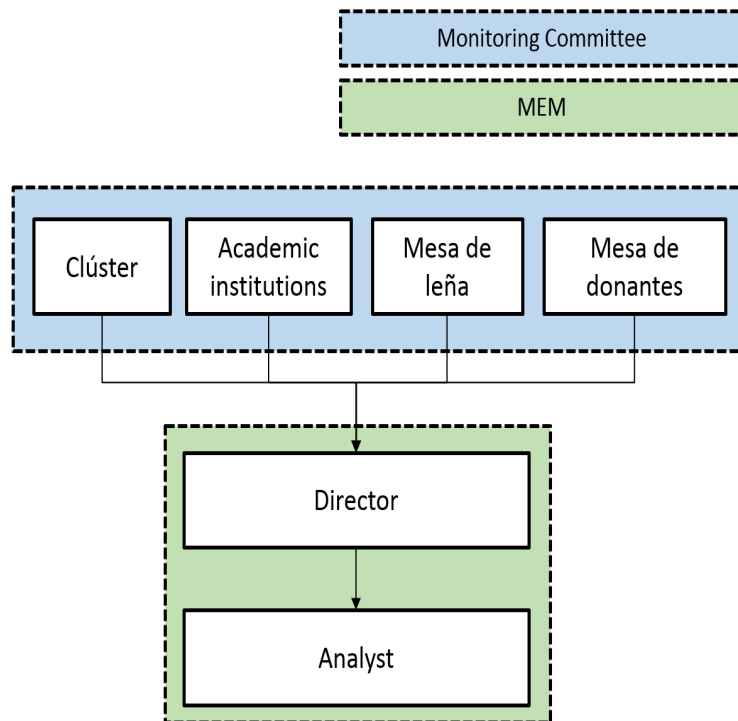
There is a clear focus on strengthening the demand of clean cooking solutions as the cornerstone of developing the clean cooking sector.

Particularly, the majority of the investment needed focuses on increasing the financing options for the consumers

	Strategic line	Investment component	Total (US\$M)
Demand	1. Creating awareness	Include a Clean Cooking Solutions component into existing public programs	0.02
		Include a Clean Cooking Solutions component for authorities and local leaders	0.39
		Include a Clean Cooking Solutions component in the national education curriculum	0.91
		Launch advertising and awareness campaigns	0.60
	2. Training prospective users on how to install, use, maintain and fix their stoves	Train the trainers of existing public programs (e.g. gender empowerment programs)	0.64
		Train final users	0.77
	3. Increase the financing options for the consumer	Strengthen the role of the IMF through a guarantee fund	1.35
		Implement Corporate Social Responsibility programs	0.06
		Implement subsidies programs	15.57
Supply	4. Availability of fuel	Increase the production of sustainable woodfuel	0.00
		Expand the LPG distribution network	3.44
		Develop a study to explore the possibility of diversifying the sources of energy for cooking	0.18
	5. Stove design	Run pilot programs of preferences in the design of ICS	0.18
		Broaden the portfolio of ICS models through a fund for research and development	0.24
	6. Stove production	Train national manufacturers in best practices and managerial skills	0.01
		Increase access to finance for producers in order to scale production	0.00
		Increase bargaining power to aggregate purchase parts and materials	0.87
	7. Stove distribution	Train the distributors in marketing and managerial skills	0.00
		Create subcontracted distribution networks and reinforce own and existing distribution networks.	0.11
	8. Stove After-sale services	Train distributors in after-sale best practices	0.00
		Reinforce the subcontracted after-sale networks as well as strengthen the networks own by the distributor or manufacturer	0.11
		Promote easy to activate stove warranties	0.00
Enabling environment	9. Policies and regulation	Review the policies, regulations, norms and strategic plans that are relevant	0.04
		Study the possibility of reducing tariffs and taxes to the production, import and export of stoves and fuels	0.03
		Work on a regulation that incentivizes the usage of LPG for cooking	0.21
		Work on a carbon offset regulation	0.10
	10. Institutional support	Create a inter-sectorial support unit which owns the Roadmap, socialize, review, and monitor its implementation	0.24
	11. Quality standards and laboratory	Define standards and regulations, testing procedures for ICS and fuels to ensure quality	0.04
		Set up a laboratory to evaluate and certify ICS and fuels	0.19
	12. Knowledge and data	Identify or create an information system able to collect all the needed subsector information	0.15
		Defining, collecting, entering and updating information on supply and demand for ICS	1.16
Do impact studies (e.g. health, environment)		0.70	
Total			28.31

The Roadmap contemplates the creation of a support unit in charge of supervising the implementation of the Roadmap

The support unit would report to a cookstove board



The support unit would be in charge of making sure the Roadmap is successfully implemented

- Coordinate the different activities where the stakeholders participate on.
- Carry out the processes of selecting and contracting advisory and consulting firms and other technical capacity support.
- Monitor the financing needs and keep the accounting books updated.
- Compile, store and keep the need information, for the indicators and parameters of the Roadmap.
- Prepare and present the regular monitoring and update reports of the Roadmap.
- Prepare and present the ad-hoc monitoring and update reports of the Roadmap required by donors.

One of the main responsibilities of the support unit will be to monitor the progress made towards the end goal of the project

Output metrics
% Of households in Guatemala cooking with traditional stoves (as primary or secondary stove)
of biomass ICS adopted
of LPG stoves adopted
of electricity stoves adopted
of biogas stoves adopted

	Strategic line	Progress metrics
Demand	1. Creating awareness	Annual # of prioritized households made aware of the problems associated with cooking with traditional stove and the benefits of ICS
	2. Training prospective users on how to install, use, maintain and fix their stoves	# of training workshops in Clean Cooking Solutions for trainers/instructors of existing public programs
		Annual # of municipal ICS exhibitions
	3. Increase the financing options for the consumer	Annual # of households that access an ICS through a microcredit
		Annual # of households that access an ICS through a CSR
		Annual # of households that access an ICS through a partial subsidies
Supply	4. Availability of fuel	N.A.
	5. Stove design	Annual # of new ICS models finance through the incentive fund
	6. Stove production	Annual # of biomass ICS produced
	7. Stove distribution	Total # of ICS distribution and after-sales stores operating
	8. Stove After-sale services	
Enabling Environment	9. Policies and regulation	Policies, strategies and regulations revised
		Regulation of LPG approved
	10. Institutional support	Annual # of follow up reports of the Roadmap
	11. Quality standards and laboratory	Annual # of biomass ICS models evaluated
	12. Knowledge and data	% of implementation of the information system
		# of surveys targeting the demand for Clean Cooking Solutions
		Annual # of impact studies conducted

Agenda

Background and context on the project

Guatemala

Nicaragua

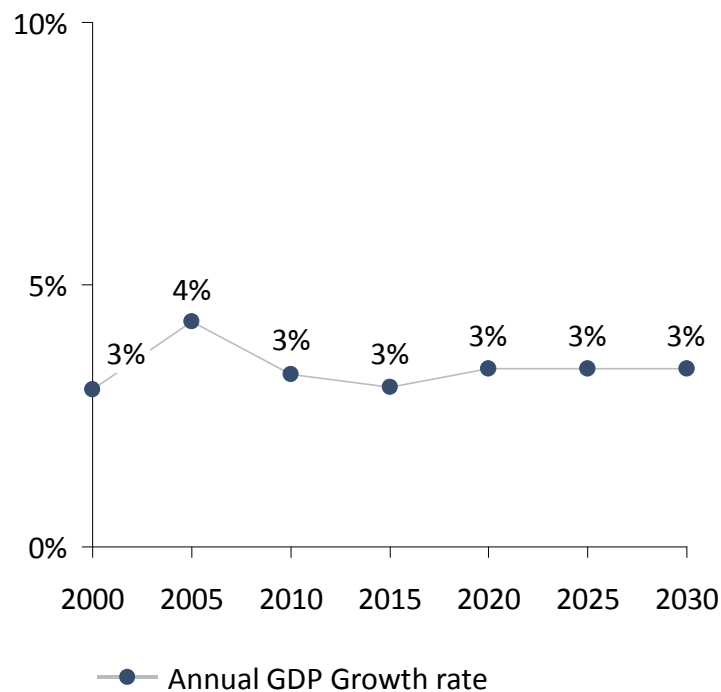
- **Nature of the Challenge**
- **Catalyzing a Transformational Change**
- **Needed investments to transition to Clean Cooking**

Approach to investor outreach

Next Steps

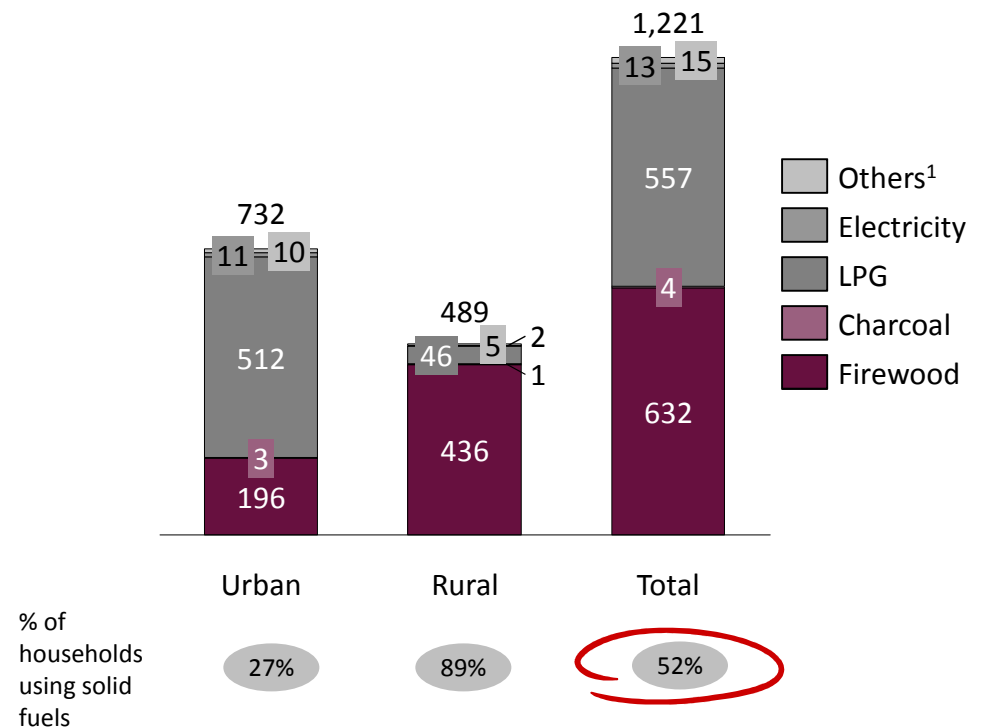
Despite the economic growth experienced by Nicaragua, more than 50% of their populations cook primarily with wood

Despite the economic crisis of 2008, the GDP has kept a positive trend



Still, 52% of the households today cook with solid fuels, primarily wood

Primary fuel usage for cooking breakdown (2011-2012)
(000 households)



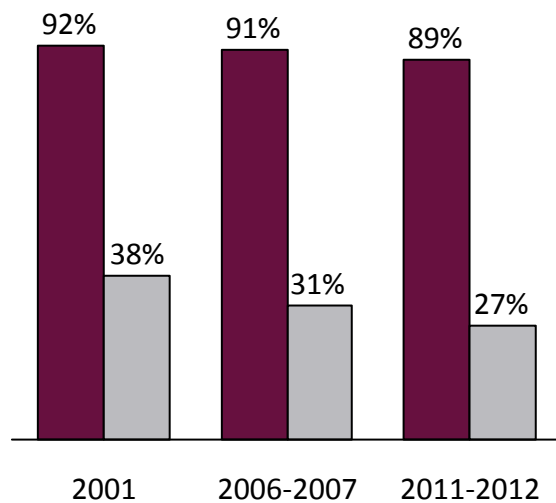
1. Others include Kerosene, other sources of energy and don't cook.

Source: ENDESA 2011-2012; World bank; Dalberg analysis.

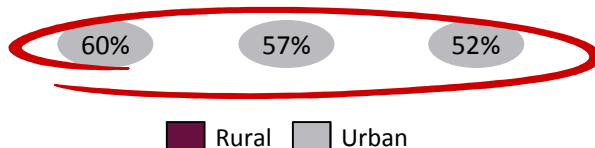
This % has decreased slightly in the last 15 years, particularly in urban areas

the % of HH cooking primarily with wood has barely decreased, mainly in rural areas

Primary fuel usage historically
(% of HH using solid fuels)



Total % of
HH using
solid fuels



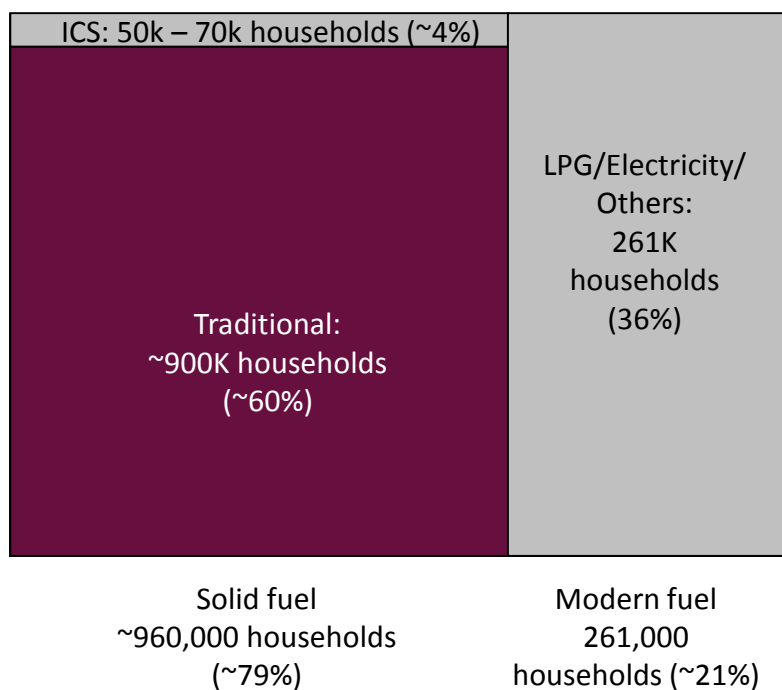
Unlike other countries in the region,
Nicaragua does not have a
long history of public cookstove programs

- Many public institutions in Nicaragua are highly interested in promoting the adoption of clean cooking solutions, but unlike in other countries of the region this has not been translated into massive public programs focused on giving away or heavily subsidizing the stoves.
- The initiatives to promote clean cooking solutions have been mainly led by NGOs and local communities. These initiatives have been rather isolated and have had a modest scale.

Out of the ~52% HHs that mainly use solid fuels for cooking, the great majority use traditional cookstoves, although fuel stacking is significant

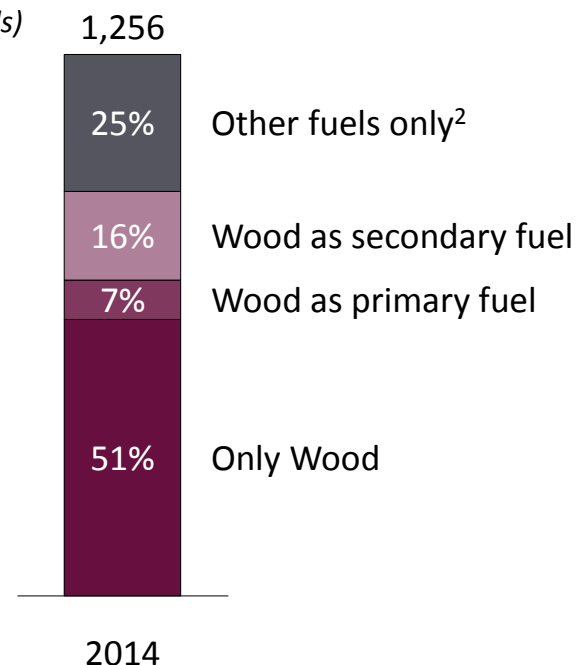
Built-in-place ICS with chimney has been the predominant ICS model (Justa model)

Cookstove penetration by type (2012)
(% of households¹)



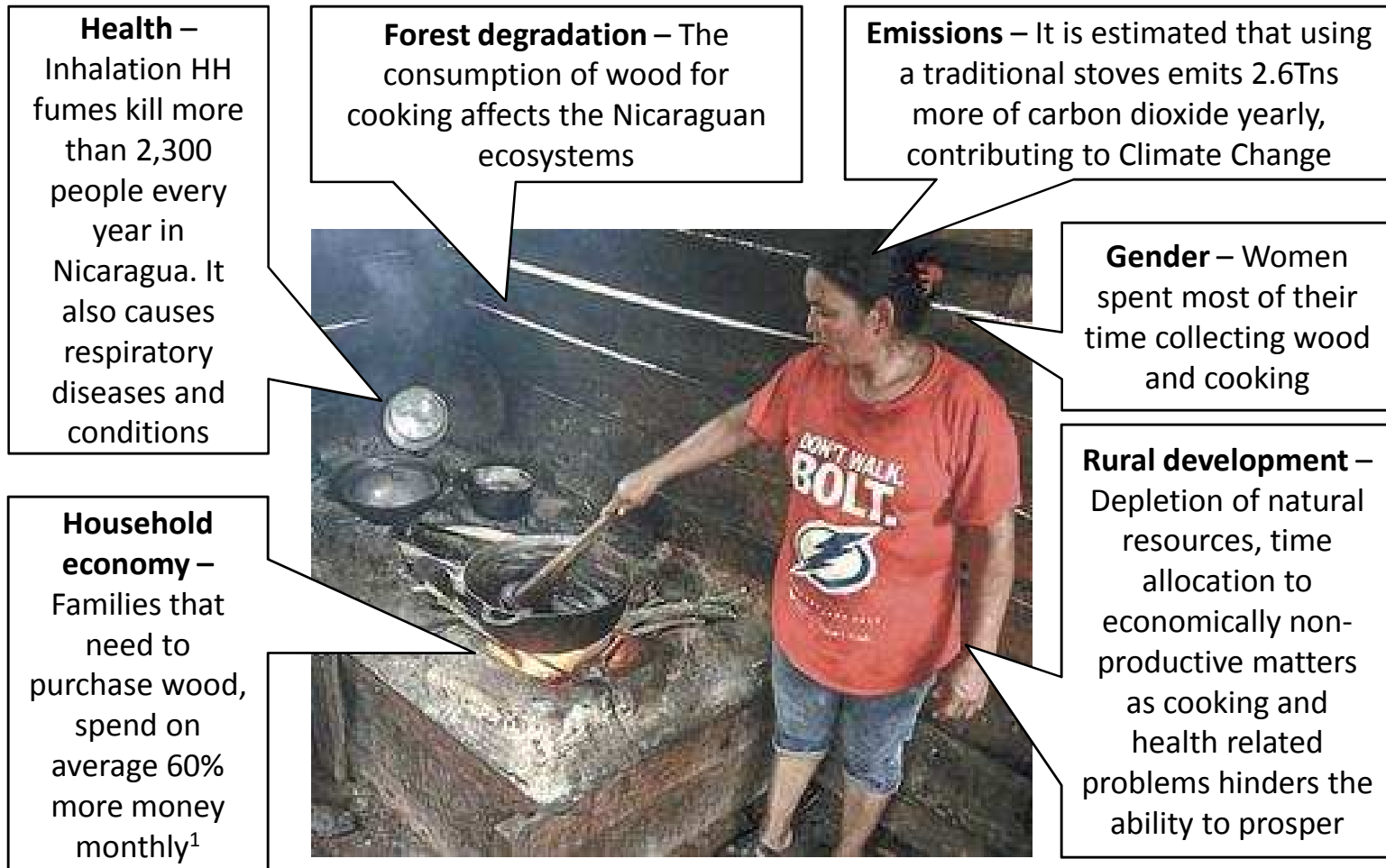
~23% of the population use combination of wood with other fuels

Household fuel use
(000 of households)



1. Estimations assume one cookstove per household; 2. LPG, Electricity, Kerosene
Source: MEM; Survey of firewood consumption in Nicaragua 2007; Dalberg analysis.

Cooking with traditional stoves is a multidimensional problem, that severely affects 0.9 million households



1. Compare to monthly expenditure of using LPG stoves, electricity stoves and biomass ICS.

Source: Global Alliance for Clean Cookstoves; Dalberg analysis.

A complex set of challenges has prevented Nicaragua from a broader adoption of clean cooking technologies

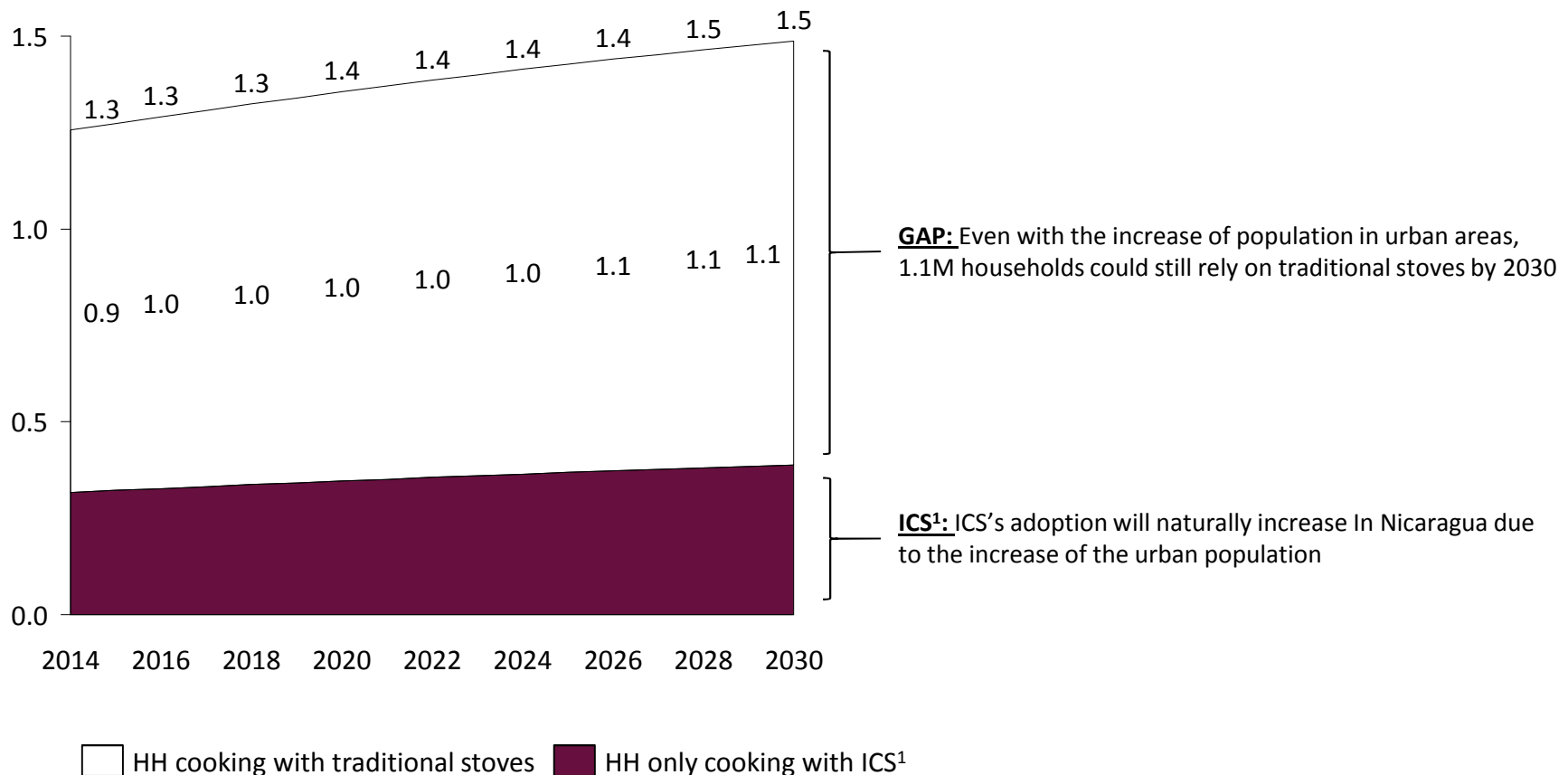
Demand	Supply	Enabling Environment
<ul style="list-style-type: none">• Low awareness about the negative consequences of cooking with traditional stoves and the existence of alternatives.• Limited affordability perceived due to the co-existence of several factors: market prices for cooking solutions are considered high, payment schemes and micro credits are not available, and heavily subsidized programs are reaching a significant amount of population.• Little training received by users on installing, using, maintaining and repairing the stoves, leading to eventual breakdowns and mistrust in the technology.	<ul style="list-style-type: none">• Limited availability of fuels that pushes households to use wood instead of LPG, electricity or even sustainable wood.• Narrow variety of models that do not fully adjust at the needs of potential users.• Constrained productive capacity to produce stoves at a significant scale.• Weak distribution networks that rely on NGO and government programs to reach out users.• Inexistent after-sale services that hinder the usage of the stoves over time.	<ul style="list-style-type: none">• Inadequate policies and regulations to promote the usage of cleaner cooking technologies and fuels beyond the existing National and Strategy Plans.• Uncoordinated institutional support to align different public agencies in launching successful programs.• Lack of quality standards that does not guarantee certain efficiency and emissions standards.• Limited knowledge and data, that hinders effective decision making.

INSERT GAP ASSESSMENT DOCUMENT AS BACKUP

In 2014 out of the total 1.3 M households in Nicaragua, 0.9 M cooked with traditional stoves; This number could increase to 1.1 M in 2030

If no additional action is taken, the number of HH cooking with traditional stoves could increase from 0.9 million in 2014 to 1.1 in 2030

Projected evolution of cooking technologies if no additional action is taken
(millions of households)



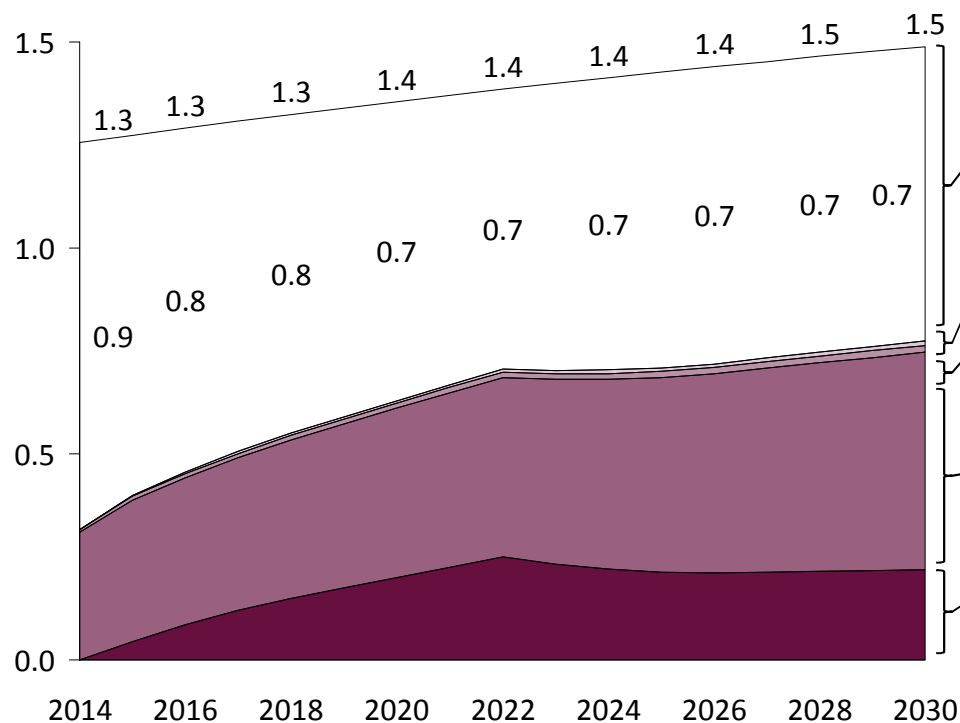
1. ICS includes biomass improved cookstoves, LPG stoves, Electricity stoves and biogas stoves.

Source: Interviews; Desk research; Dalberg analysis.

The current plans to increase the penetration of LPG and biomass ICS are not enough: ~0.7 M households could still rely on traditional stoves in 2030

The existing government and country plans to increase the penetration of LPG, electricity and Biomass ICS will only reduce the amount of HH cooking with traditional stoves partially

Projected evolution of cooking technologies under existing plans
(millions of households)



Gap Biogas Electricity LPG Biomass ICS

GAP: Even with significant increases in adoption of improve biomass stoves and LPG, 0.7M households could still rely on traditional stoves by 2030

Biogas: Growth reflects SNV program of 6,000 Biogas by 2017

Electricity: Growth reflects SE4ALL goal of increasing the electrification rate to 100% by 2030

LPG: Growth projected by urbanization rates of the population

Biomass ICS: Growth from 2015-2022 reflects government plan "National Program for Sustainable Use of Firewood and Charcoal 2014-2022" of 400,000 stoves

Agenda

Background and context on the project

Guatemala

Nicaragua

- Nature of the Challenge
- Catalyzing a Transformational Change
- Needed investments to transition to Clean Cooking

Approach to investor outreach

Next Steps

All relevant stakeholders in Nicaragua have come together to develop a holistic Roadmap

Stakeholders have participated in a series of workshops



The roadmap developed takes an ecosystem approach

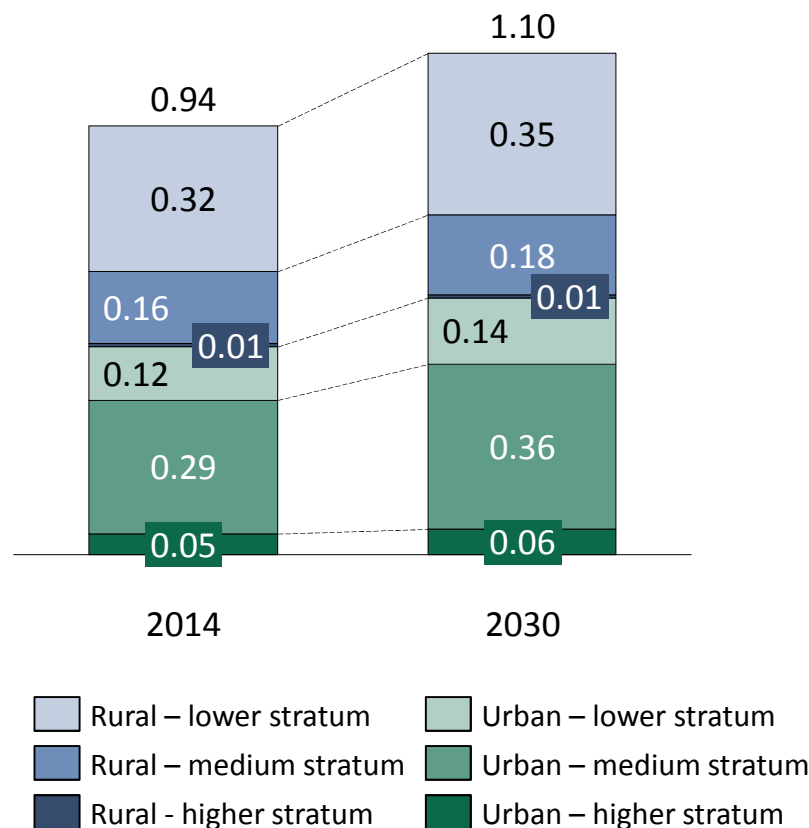
The objectives of the Roadmap are the following:

- Demand:
 - Increase demand of clean cooking solutions
 - Increase usage of clean cooking solutions over time
 - Diversify financing options and affordability
- Supply:
 - Increase the variety of stoves models
 - Scale the up the production of stoves
 - Increase/reinforce the distribution and aftersales networks
- Enabling environment:
 - Ensure policies and regulations are in place
 - Enhance institutional support
 - Evaluate and certificate stoves
 - Collect updated information and make it available

To close the gap, the Roadmap aims to transition different population segments to cleaner technologies using specific strategies

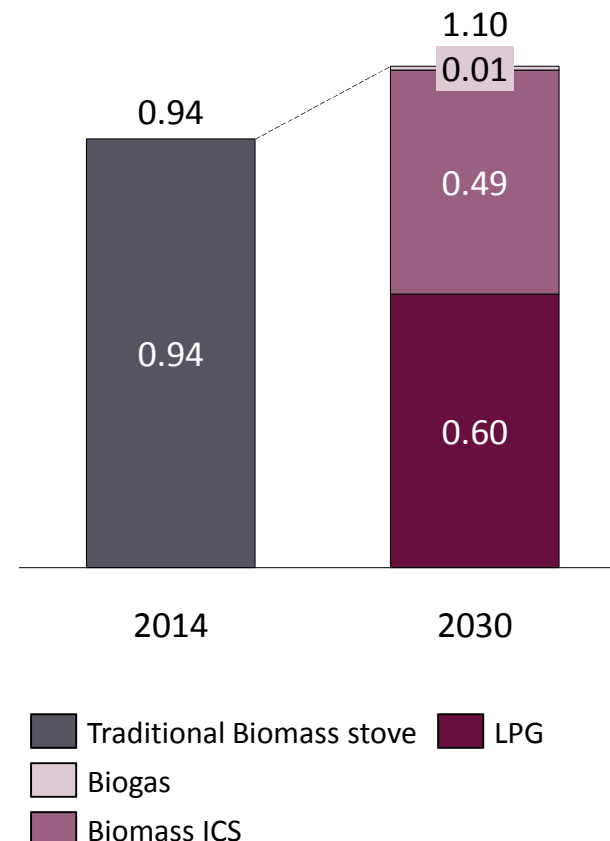
The target population can be categorized by socioeconomic strata and geography

Households (millions)



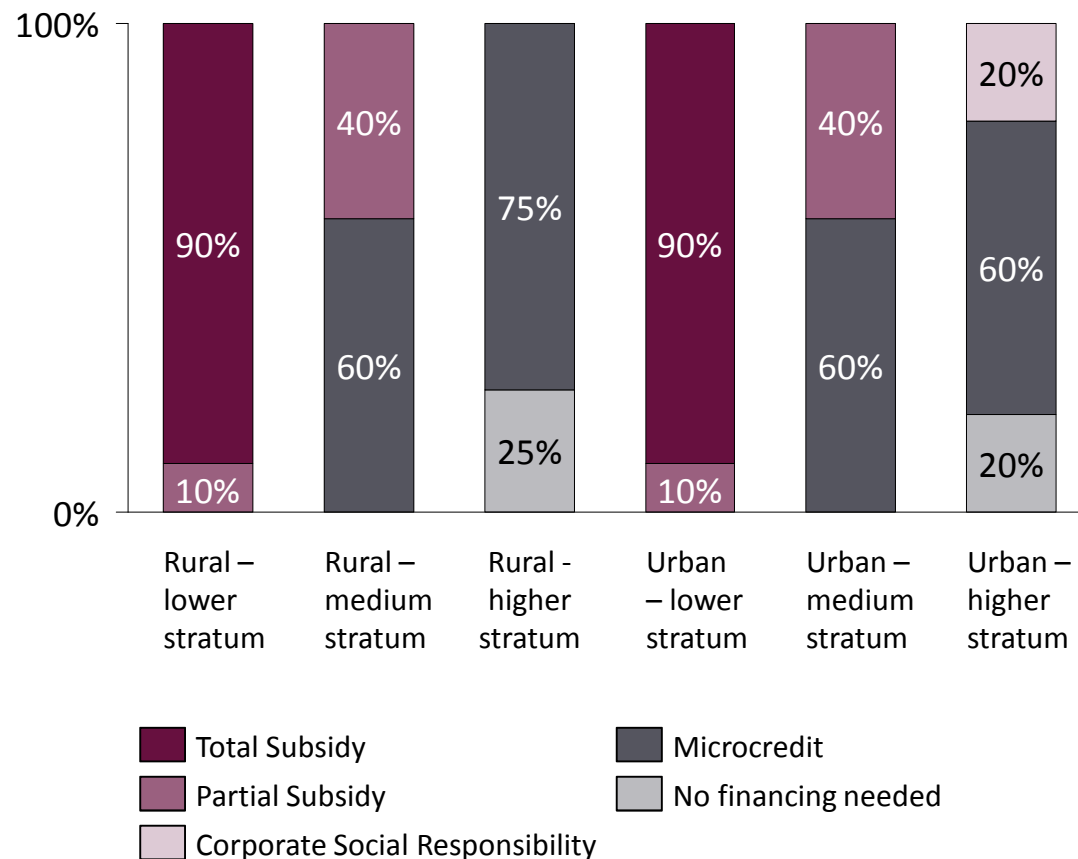
The Roadmap migrates the target population to cleaner fuels

Households (millions)



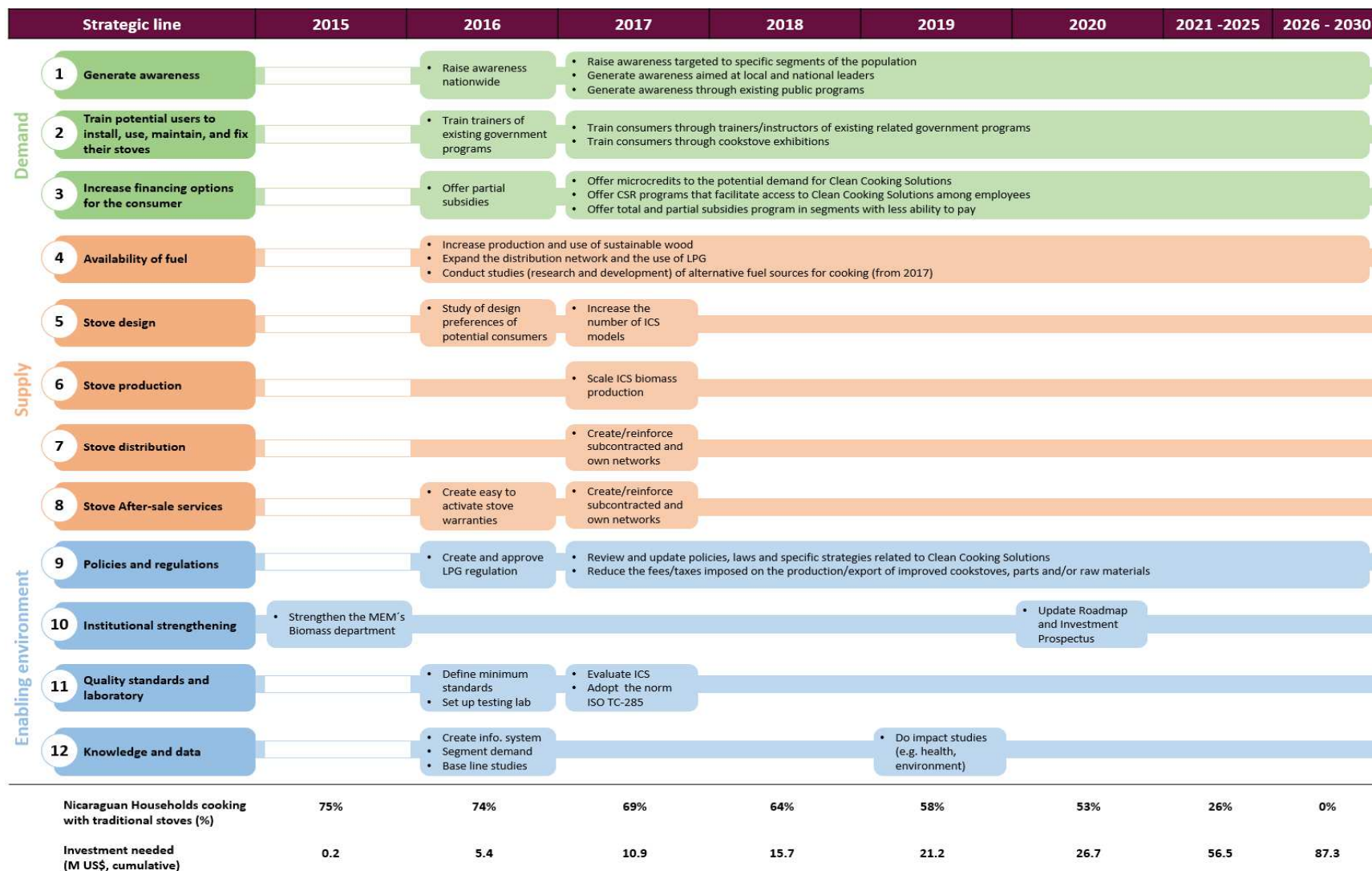
For instance, the Roadmap contemplates different financing mechanisms for different segments to access the technologies

Different type of subsidies, microfinance and CSR initiatives are targeted to different segments



- Total Subsidy = subsidies 100% of the cost of the ICS
- Partial Subsidy = subsidies 70% of the cost of the ICS
- Microcredit = finance 70% of the cost of the ICS
- Corporate Social Responsibility = finance 70% of the cost of the ICS
- No financing needed: the HH cover the whole cost of the ICS

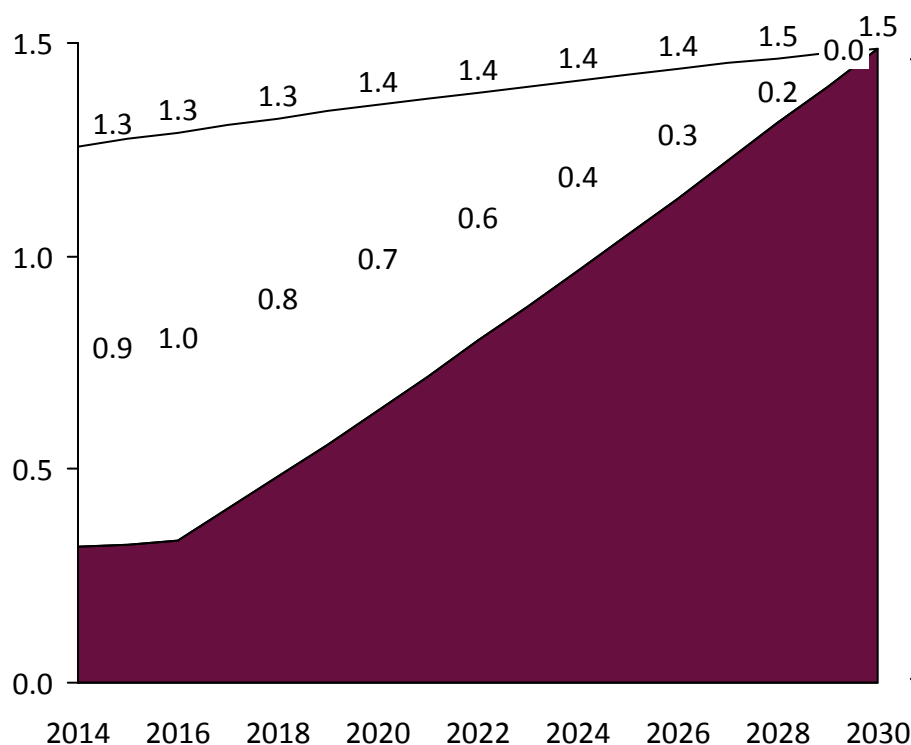
Recognizing that all the Strategic Lines are important, the Roadmap defines the logical sequence between them to maximize impact



The Roadmap aims to eradicate the dependency on traditional stoves and help transition all households to clean cooking solutions by 2030

The correct implementation of the Roadmap would close the gap previously identified, and would enable all Nicaraguan households to cook with ICS¹ by 2030

Projected evolution of cooking technologies under the Roadmap
(millions of households)



ICS¹: Growth according to transition defined by population segment and logical sequencing of strategic lines

□ HH cooking with traditional stoves ■ HH only cooking with ICS¹

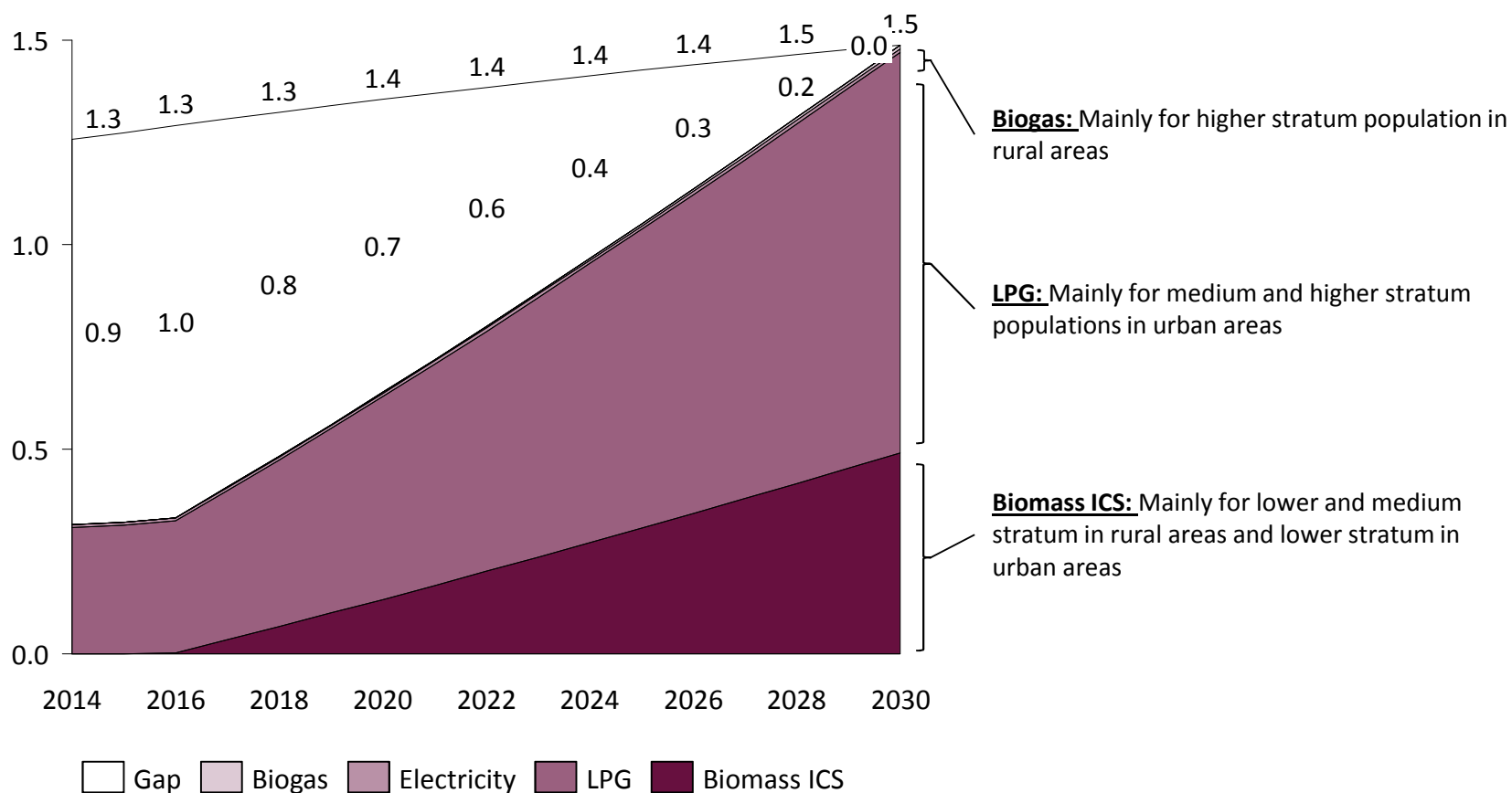
1. ICS includes biomass improved cookstoves, LPG stoves, Electricity stoves and biogas stoves.

Source: Dalberg analysis.

The Roadmap aims to increase the penetration of biomass and LPG stoves to close the gap of households cooking with traditional stoves

In 2030, 66% of the HH¹ will be cooking with LPG, 33% with biomass ICS and the other 1% with other fuels

Projected evolution of cooking technologies under the Roadmap
(millions of households)



1. Does not assume transition from the population that today is cooking with Improve Cooking Solutions to other cleaner technologies.

Source: Dalberg analysis.

In addition, it will significantly impact the health and household finances of those cooking with traditional stoves, as well as the emissions

Health¹

Will reduce deaths from HAP⁴ by **21,000** people, including **2,500** children (from 2016-2030)



Household Finances²

Will reduce household expenditure in fuels for cooking **~60%** per month (**US\$34**)



Emissions³

Will reduce emission gases of carbon dioxide by almost **21 million tons** (from 2016-2030)



Increasing the adoption of clean cooking solutions positively impacts the household's finances and health, leading to poverty reduction and increased prosperity

1. Estimate by projecting the number of deaths that will occur with the actual ratio of deaths from HAP and estimates the new number of deaths that will occur by closing the Gap of people cooking with traditional Stoves. 2. Estimated by comparing the monthly cost of HH that buy wood and cook with traditional wood stoves vs. those using biomass ICS, LPG stoves and electricity stoves. 3. Estimated by projecting annual savings of 2.6 Tons of carbon dioxide gases for each HH that transition to an ICS. 4. Household air pollution. Source: GACC; Desk research; Dalberg analysis.

The Roadmap includes 12 Strategic Lines, 3-5 components per strategic line, and 7-9 activities per component

				Nombre		Responsable		Co-responsables		Cronograma de trabajo		Cronograma detallado																		
Categoría	Línea estratégica	Componente	Actividad	Nombre	Responsable	Co-responsables	Fecha Inicial	Fecha Final	I-2015	II-2015	III-2015	IV-2015	I-2016	II-2016	III-2016	IV-2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
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The complete Roadmap can be found on the Annex

INSERT ACTION PLAN DOCUMENT AS BACKUP

Agenda

Background and context on the project

Guatemala

Nicaragua

- Nature of the Challenge
- Catalyzing a Transformational Change
- Needed investments to transition to Clean Cooking

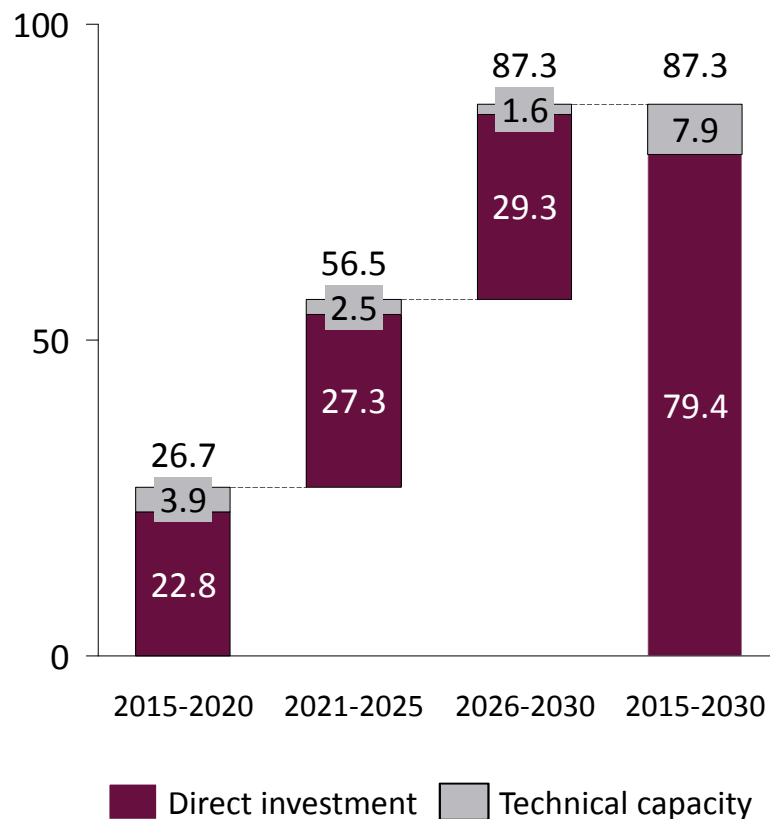
Approach to investor outreach

Next Steps

US\$27 million will be necessary to implement the initiatives defined on the first five years of the Roadmap

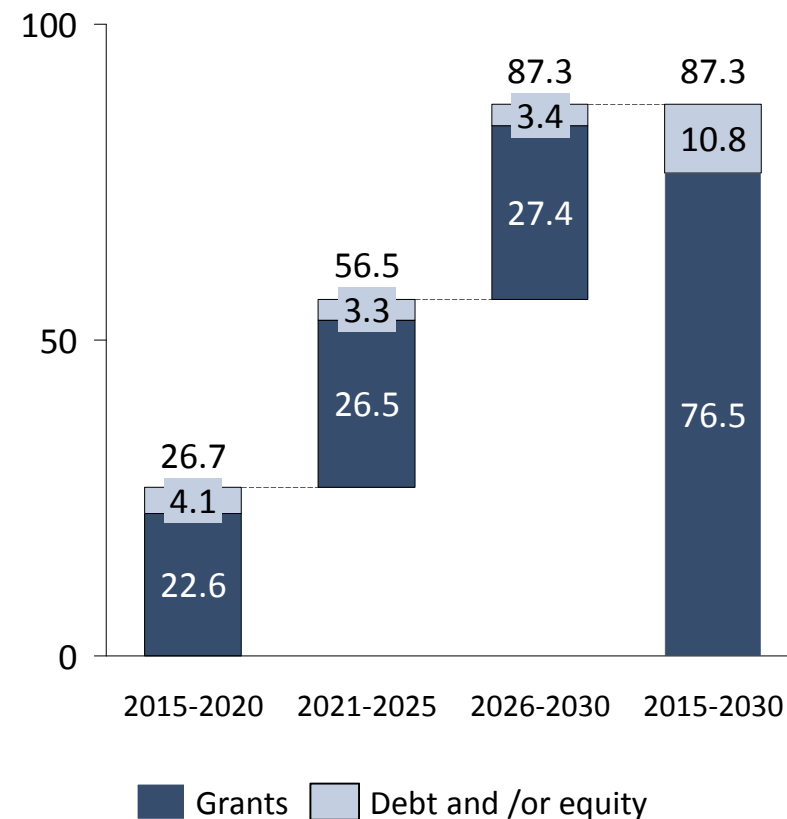
Cost by type of investment are mainly concentrated in direct investments

Estimated cost by type of investment (US\$ millions)



Grants are likely to make up the majority of investment needs for the Roadmap

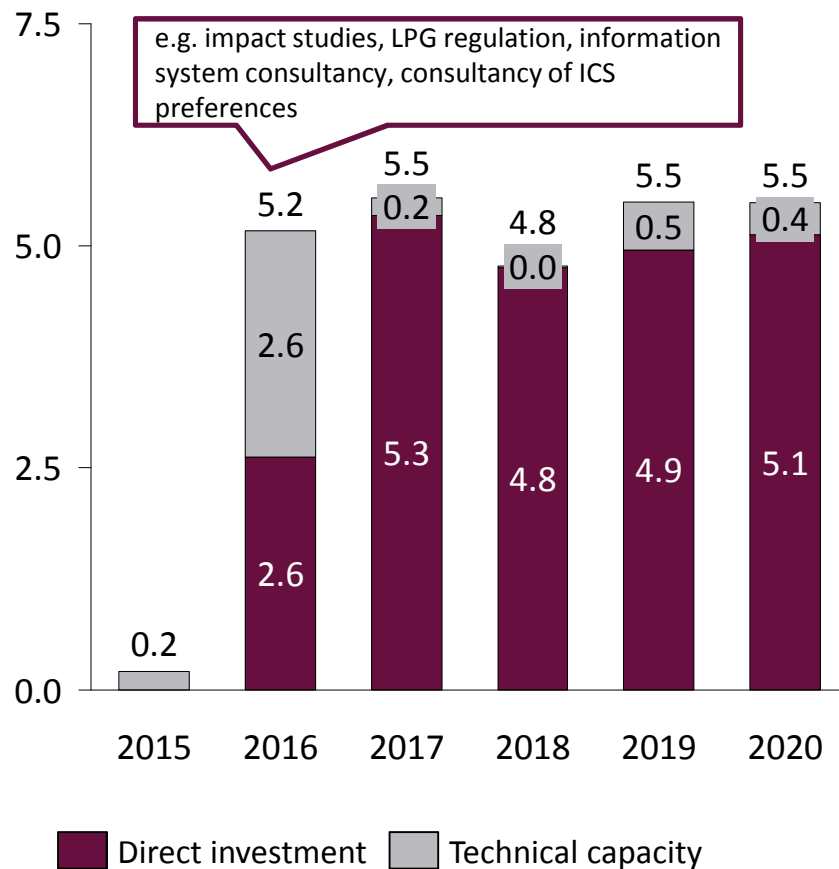
Estimated cost by type of funds (US\$ millions)



The financing needs for the short term are distributed among the period 2016-2020

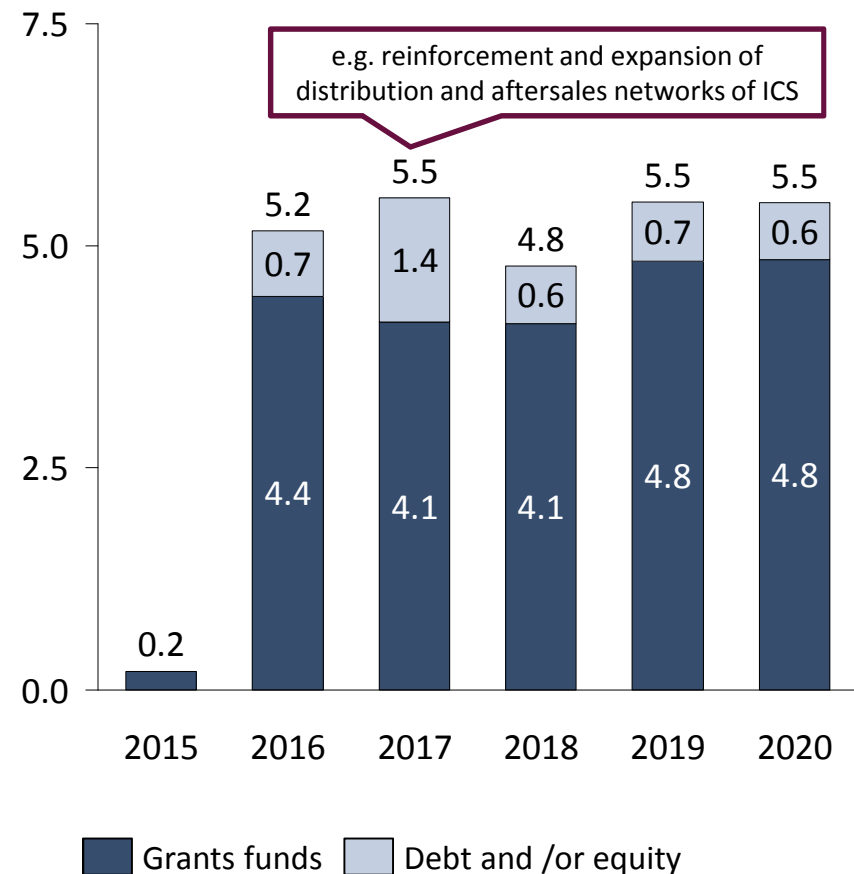
Technical capacity is more needed during 2016

Estimated cost by type of investment (US\$ millions)



Debt and/or equity funds focused on reinforcing the supply are concentrated on 2017

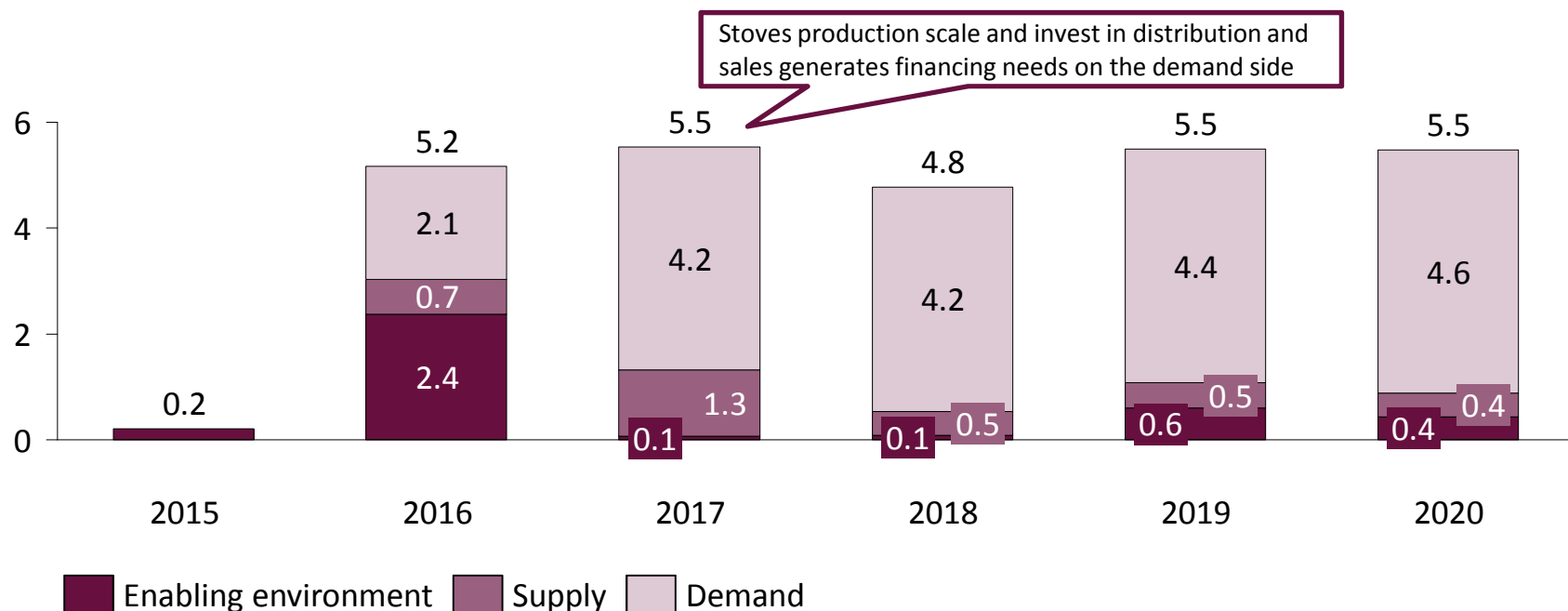
Estimated cost by type of funds (US\$ millions)



The majority of the investment needed concentrates in strengthening the demand

Overall, the majority of the costs of the Roadmap are concentrated in boosting the demand

Estimated cost by area of investment (US\$ millions)



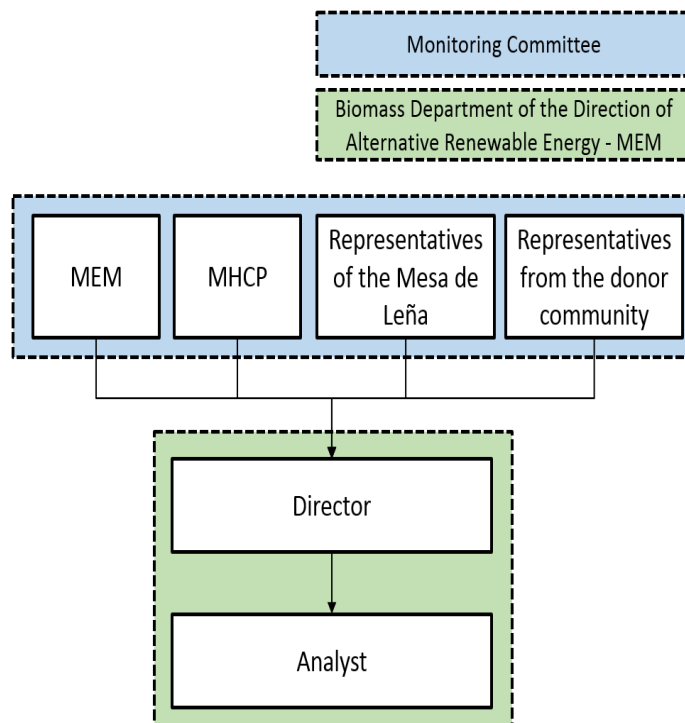
There is a clear focus on strengthening the demand of clean cooking solutions as the cornerstone of developing the clean cooking sector.

Particularly, the majority of the investment needed focuses on increasing the financing options for the consumers

	Strategic line	Investment component	Total (US\$M)
Demand	1. Creating awareness	Include a Clean Cooking Solutions component into existing public programs	0.02
		Include a Clean Cooking Solutions component for authorities and local leaders	0.04
		Include a Clean Cooking Solutions component in the curriculum of Elementary and Secondary Education	0.23
		Launch advertising and awareness campaigns	1.29
	2. Training prospective users on how to install, use, maintain and fix their stoves	Train the trainers of existing public programs (e.g. gender empowerment programs)	0.08
		Train final users	1.19
	3. Increase the financing options for the consumer	Strengthen the role of the IMF through a guarantee fund	0.22
		Implement Corporate Social Responsibility programs	0.08
		Implement subsidies programs	16.46
Supply	4. Availability of fuel	Increase the production of sustainable woodfuel	1.06
		Expand the LPG distribution network	0.93
		Develop a study to explore the possibility of diversifying the sources of energy for cooking	0.18
	5. Stove design	Study of preferences in the design of ICS	0.35
		Broaden the portfolio of ICS models through a fund for research and development	0.14
	6. Stove production	Train national manufacturers in best practices and managerial skills	0.01
		Increase access to finance for producers in order to scale production	0.01
		Increase bargaining power to aggregate purchase parts and materials	0.00
	7. Stove distribution	Train the distributors in marketing and managerial skills	0.00
		Create subcontracted distribution networks and reinforce own and existing distribution networks.	0.30
	8. Stove After-sale services	Train distributors in after-sale best practices	0.00
		Reinforce the subcontracted after-sale networks as well as strengthen the networks own by the distributor or manufacturer	0.30
		Promote easy to activate stove warranties	0.00
Enabling environment	9. Policies and regulation	Review the policies, regulations, norms and strategic plans that are relevant	0.04
		Study the possibility of reducing tariffs and taxes to the production, import and export of stoves and fuels	0.03
		Work on a regulation that incentivizes the usage of LPG for cooking	0.21
	10. Institutional support	Create a inter-sectorial support unit which owns the Roadmap, socialize, review, and monitor its implementation	0.78
	11. Quality standards and laboratory	Define standards and regulations, testing procedures for ICS and fuels to ensure quality	0.02
		Set up a laboratory to evaluate and certify ICS and fuels	0.17
	12. Knowledge and data	Identify or create an information system able to collect all the needed subsector information	0.29
		Defining, collecting, entering and updating information on supply and demand for ICS	1.16
		Do impact studies (e.g. health, environment)	1.05
Total			26.66

The Roadmap contemplates the creation of a support unit in charge of supervising the implementation of the Roadmap

The support unit would report to a cookstove board



The support unit would be in charge of making sure the Roadmap is successfully implemented

- Coordinate the different activities where the stakeholders participate on.
- Carry out the processes of selecting and contracting advisory and consulting firms and other technical capacity support.
- Monitor the financing needs and keep the accounting books updated.
- Compile, store and keep the need information, for the indicators and parameters of the Roadmap.
- Prepare and present the regular monitoring and update reports of the Roadmap.
- Prepare and present the ad-hoc monitoring and update reports of the Roadmap required by donors.

One of the main responsibilities of the support unit will be to monitor the progress made

Output metrics
% Of households in Nicaragua cooking with traditional stoves (as primary or secondary stove)
of biomass ICS adopted
of LPG stoves adopted
of biogas stoves adopted

	Strategic line	Progress metrics
Demand	1. Creating awareness	Annual # of national awareness campaigns
		Annual # of prioritized households made aware of the problems associated with cooking with traditional stove and the benefits of ICS
	2. Training prospective users on how to install, use, maintain and fix their stoves	# of training workshops in Clean Cooking Solutions for trainers/instructors of existing public programs
		Annual # of municipal ICS fairs
	3. Increase the financing options for the consumer	Annual # of households that access an ICS through a microcredit
		Annual # of households that access an ICS through a CSR
		Annual # of households that access an ICS through a total subsidies
		Annual # of households that access an ICS through a partial subsidies
Supply	4. Availability of fuel	Annual # of new hectares of sustainable woodfuel
	5. Stove design	Annual # of new ICS models finance through the incentive fund
	6. Stove production	Annual # of biomass ICS produced
	7. Stove distribution	Total # of ICS distribution and after-sales stores operating
	8. Stove After-sale services	
Enabling Environment	9. Policies and regulation	Policies, strategies and regulations revised
		Regulation of LPG approved
	10. Institutional support	Annual # of follow up reports of the Roadmap
	11. Quality standards and laboratory	Annual # of biomass ICS models evaluated
	12. Knowledge and data	% of implementation of the information system
		# of surveys targeting the demand for Clean Cooking Solutions
		Annual # of impact studies conducted

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Nicaragua

Approach to investor outreach

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The investor outreach strategy is aimed at delivering meaningful commitments to support the implementation of the Roadmap



1 A wide range of stakeholders could be potentially interested in supporting the implementation of the Roadmap (I/II)

	Guatemala	Nicaragua
Public Sector	<ul style="list-style-type: none"> • Ministry of Energy and Mines (MEM) • Ministry of Public Health (MSPAS) • Ministry on Environment and Natural Resources (MARN) • Ministry of Economy (MINECO) • Ministry of Public Finance (MINFIN) • Ministry of Agriculture, Livestock and Food Security (MAGA) • Ministry of Social Development (MIDES) • Ministry of Education (MINEDUC) • National Institute of Forests (INAB) • National Council of Protected Areas (CONAP) 	<ul style="list-style-type: none"> • Ministry of Energy and Mines (MEM) • Ministry of Health (MINSa) • Ministry of Household Economy (MEFCCA) • Ministry of Industry and Commerce (MIFIC) • Ministry of Tax Revenue (MHCP) • Ministry of Education (MINED) • Ministry of Women (MINIM) • National Institute of Forests (INAFOR)
Private Sector	<ul style="list-style-type: none"> • Jaguar Energy • CentraRSE • FUNDESA • Cementos Progreso • GoldCorp (Montana Exploradora de Guatemala) • Grupo TOMZA (LPG Guatemala) 	<ul style="list-style-type: none"> • HEMCO (Minería, Energía y Forestal) • B2Gold • El Grupo Pellas • Unión Nicaragüense para la Responsabilidad Social Empresarial (uniRSE) • Tropigas (LPG Nicaragua)
	<ul style="list-style-type: none"> • CEMEX • Integración Centroamericana por la Responsabilidad Social Empresarial (INTEGRARSE) 	
Multilaterals	<ul style="list-style-type: none"> • The World Bank (WB) • The Inter-American Development Bank (IDB) • Central American Bank of Economic Integration (CBIE) • International Renewable Energy Agency (IRENA) • Latin American Energy Organization (OLADE) 	
Bilaterals	<ul style="list-style-type: none"> • Dutch Development Bank (FMO) • German Organization for International Development (GIZ) • Canadian Agency for International Development (ACDI) • Korean International Cooperation Agency (KOICA) • United States Agency for International Development (USAID) 	

1 A wide range of stakeholders could be potentially interested in supporting the implementation of the Roadmap (II/II)

	Organization		Entry Point
Social Investors		The action community for global impact investing (TONIIC)	Some desire concessionary financial returns; others seek market-plus returns. Some investors commit to a specific mission focus, such as education or health care, while others embrace a broader agenda
		Pomona Impact	Small Growing Businesses across Central America (target firms that improve the lives of people living in the bottom of the economic pyramid and benefit the environment)
		Agora Partnerships	Accelerate Women Now (AWN) initiative; Invest in high-growth companies focused on solving social problems
		Global Impact Investing (GIIN)	Impact investments are investments made into companies, organizations, and funds with the intention to generate measurable social and environmental impact alongside a financial return
		Omidyar Network	Education; Financial inclusion
		Root Capital	Empowering women; Sustaining the Environment
		The Rockefeller Foundation	Smart Power for Rural Development; Social Impact Bonds
		Global Alliance For Clean Cookstoves	Cookstoves; Market Development

Different channels can be used to conduct the investors outreach

- Conducting personal Interviews
- Organizing pledge conference
- Attending conferences related to cookstoves's entry points

NON-EXHAUSTIVE

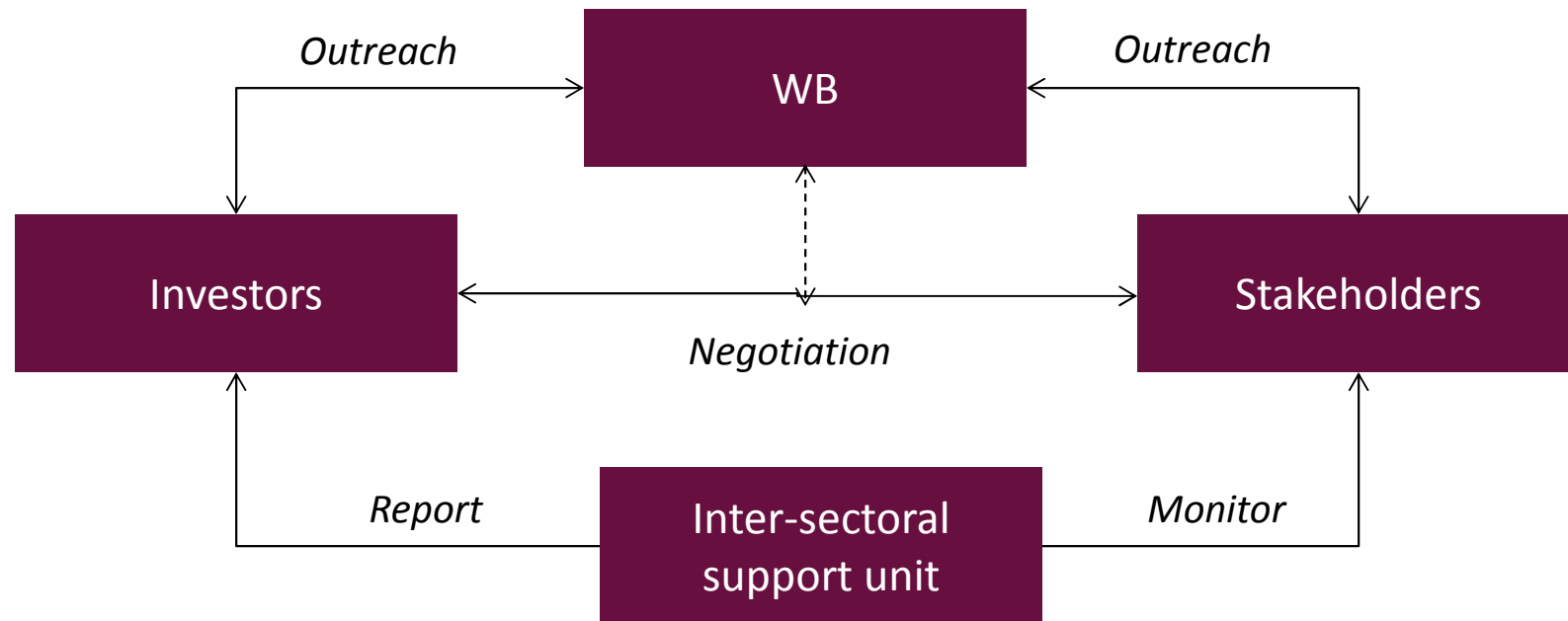


3 Potential investors can be segmented and matched to specific investment categories

ILLUSTRATIVE

Type of Investor	Area of investment	Type of investment	Examples
Impact Investors	Supporting the supply	Equity/Debt	<ul style="list-style-type: none">• Expanding/reinforcing the distribution networks• Expanding the variety of stove models
Multilaterals	Enhancing the Enabling Environment	Equity/Debt (policy based loans)	<ul style="list-style-type: none">• Developing policies to enhance the usage of sustainable fuels
		Grants	<ul style="list-style-type: none">• Funding impact evaluations, landscape studies
Governments	Reinforcing the demand	Grants	<ul style="list-style-type: none">• Awareness campaigns• Integrating cookstoves component on national education curricula
Private sector	Reinforcing the demand	Grants (Corporate Social Responsibility)	<ul style="list-style-type: none">• Financing stoves to employees/communities of influence

5 Securing meaningful investment commitments will require alignment between the in-country stakeholders and the investors



- The WB will manage the outreach to investors and facilitate the conversations between potential donors and stakeholders, matching them based on interest and potential.
- The WB will potentially participate in the negotiations between investors and stakeholders and define investment conditions.
- Finally, the Inter-Sectoral Support Unit will act as a Project Management Office (PMO) and will be in charge of ensuring the effective implementation of the plan, the correct usage of the funds, and the reporting to the investors (unless specified by the investors).

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