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## **Global Alliance for Clean Cookstoves**

Mexico Market Assessment

Intervention Options

# Introduction

- This Market Assessment was conducted by Accenture Development Partnerships (ADP), the not-for-profit arm of the global management consultancy, Accenture, on behalf of the Global Alliance for Clean Cookstoves (the Alliance).
- It is intended to provide a high level snapshot of the sector that can then be used in conjunction with a number of research papers, consumer surveys and other sources (most published on the Alliance's website) to enhance sector market understanding and help the Alliance decide which countries and regions to prioritize.
- It is one of sixteen such assessments completed by the Alliance to:
  - Enhance sector market intelligence and knowledge.; and
  - Contribute to a process leading to the Alliance deciding which regions/countries it will prioritize.
- Full slate of market assessments include studies in: Bangladesh, Brazil, Colombia, East Timor, Ethiopia, Ghana, Indonesia, Kenya, Mexico, Nigeria, Peru, Rwanda, South Africa, Tanzania, Uganda and Vietnam.
- Each assessment has two parts:
  - Sector Mapping – an objective mapping of the sector.
  - Intervention Options – suggestions for removing the many barriers that currently prevent the creation of a thriving market for clean cooking solutions.
- In each Alliance study a combination of ADP and local consultants spent 4-6 weeks in country conducting a combination of primary (in-depth interviews) and secondary research. They used the same Market Assessment 'Toolkit' for each country so that comparisons can be made. The Toolkit is available free of charge to all organizations wishing to use it in other countries.
- **The Alliance wishes to acknowledge the generous support of the following donors for the market assessments: Barr Foundation, Dow Corning Corporation, Shell Corporation, Shell Foundation, and the governments of Canada, Finland, and Spain.**

*This market assessment was produced by Accenture Development Partnerships (ADP) on behalf of the Alliance. The findings, interpretations, and conclusions expressed in this work do not necessarily reflect the views of the Global Alliance for Clean Cookstoves or its partners. The Alliance does not guarantee the accuracy of the data.*

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# Sector Mapping (1/2)

Mexico, a 113 million person middle-income emerging market with an abundant supply of natural resources and a number of strong industries, has positioned itself as a regional power. However, a significant part of the population (22%) has not received the benefits of the country's recent economic growth and still lives in high and very high levels of marginality, mostly in rural areas. It is estimated that over six million households use firewood as primary or secondary fuel source to cook, and are affected by indoor air pollution.

Historically the government lacked data to understand the magnitude and complexity of the problem, but in recent years, very detailed information has been compiled, and multiple programs have been launched to address poverty and indoor air pollution. However, the main driver for the government's cookstove dissemination programs targeting 600,000 families by 2012 has been environmental as part of a national commitment to reduce GHG emissions by 50% between 2000 and 2050.

Addressing the Mexican market is challenging because of the country's large geography and extreme dispersal of the communities, including almost five million people living in rural communities without access to roads. In addition, the diversity of the population and their traditions - especially those of the more than six million indigenous communities whose mother tongue is not Spanish - not only requires adaptations of the cookstoves, but also of the programs and their approach.

Although the existence of a large number of prior cookstove projects and market players in Mexico is encouraging, more coordinated efforts could help address existing gaps in the cookstove value chain, such as awareness raising, cookstove certification, distribution, monitoring and maintenance. This coordination of efforts - maybe through an independent organization - could help address the lack of long term vision that some programs have had, partially due to government changes every six years.

# Mexico Sector Mapping

	Summary of Findings
<i>Social and Environmental Impact</i>	<ul style="list-style-type: none"> <li>• Top government priorities such as eliminating extreme poverty, and reducing deforestation and carbon emissions have been the major drivers for cookstove programs in Mexico in recent years</li> <li>• Due to the country's recent economic growth, funding has not been a limiting factor for cookstove programs and most improved cookstoves distributed have been fully subsidized</li> </ul>
<i>Consumers</i>	<ul style="list-style-type: none"> <li>• Households living in marginal or very marginal conditions in small communities -mostly in rural areas- are the main consumers of fire wood for cooking, including 95% of indigenous communities. Even when electricity and gas are available, these communities cannot afford it, so improved biomass stoves are the only alternative for them</li> <li>• Mexican cooking habits require that any stove solution has at minimum an iron skillet (called "comal"), but a single stove solution is not possible since the diversity of cooking traditions due to large ethnic, climate and topology differences requires stove adaptations by region</li> </ul>
<i>Cookstove Industry</i>	<ul style="list-style-type: none"> <li>• Although many organizations have pursued improved cookstoves initiatives in Mexico and several models have been developed and installed across the country, in total they have only addressed about 10% of the potential market, so there is an opportunity to coordinate efforts to address the remaining 90% in a quicker more efficient way -this includes the need for an official standards, testing and accreditation organization for stove designs, stove manufacturers and stove builders</li> </ul>
<i>Carbon Financing</i>	<ul style="list-style-type: none"> <li>• While there are three carbon cookstove programs in progress both in the CDM and voluntary market pending registration or validation for 2012, all focused on the long-term use of the stoves, coordination between the government and carbon credit developers will be critical to the further development of this high potential carbon market to avoid falling under "additionality" rule in future programs</li> </ul>

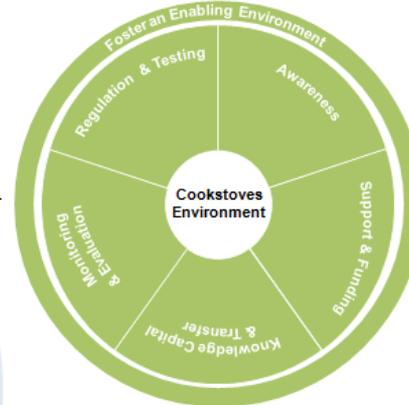
# Implications for Intervention Options

- The existence of a large number of previous initiatives in Mexico is encouraging and future initiatives can leverage many lessons learned.
- To maximise efforts at a national scale, it is critical to develop a holistic long-term program that can connect the many market players working in silos today.
- Several NGOs and international organizations (e.g. FAO) agree that distribution of stoves without a comprehensive induction, training, follow-up and monitoring program is not sustainable and results in minimal adoption.
- To fully address the potential target market of over six million households, implementers must consider the wide range of traditions of the different ethnic groups across the country. Multiple stove designs might be needed, all of which require at least one iron skillet or “comal.”
- There is opportunity to generate awareness and create programs to mitigate health and social hazards, especially around safety and cost.
- Gaps in the cookstove value chain need to be addressed, particularly around official standards, testing authorities, stove distribution, usage monitoring and maintenance programs.
- A financing scheme that includes at least a small cost to the owner instead of full subsidies -even if it is through microcredit- would yield better adoption rates and sustained stove use.
- The prospects of cookstove carbon credits are positive, particularly in the voluntary markets. Open POAs are attractive as they allow smaller implementers to participate, and they can be leveraged for many types of projects across the entire country.

# Executive Summary

As a result of the Mexico cookstove market assessment, seven intervention options have been identified through the sections of Fostering an Enabling Environment and six intervention options have been identified through the Enhancing Demand and Strengthening Supply.

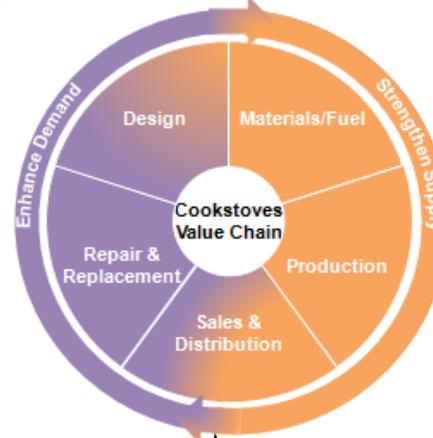
## Fostering an Enabling Environment



## Fostering an Enabling Environment Intervention Options

1. Awareness
2. Support & Funding
3. Regulation & Testing

## Enhancing Demand and Strengthening Supply: Cookstoves Value Chain



## Enhancing Demand and Strengthening Supply Intervention Options

1. Design
2. Sales & Distribution
3. Repair & Replacement

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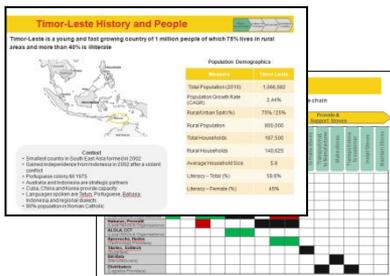
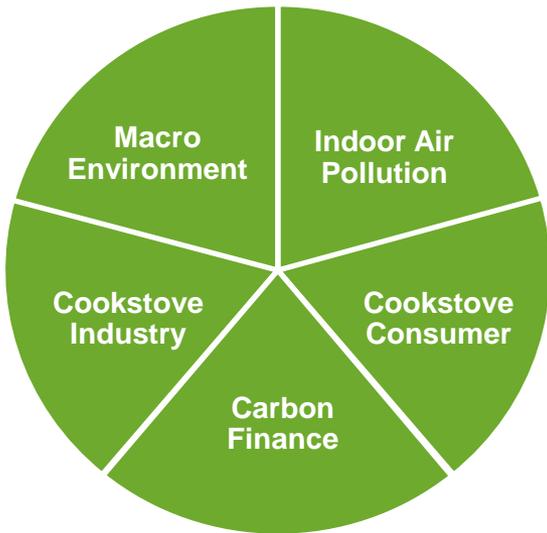
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# Project Approach

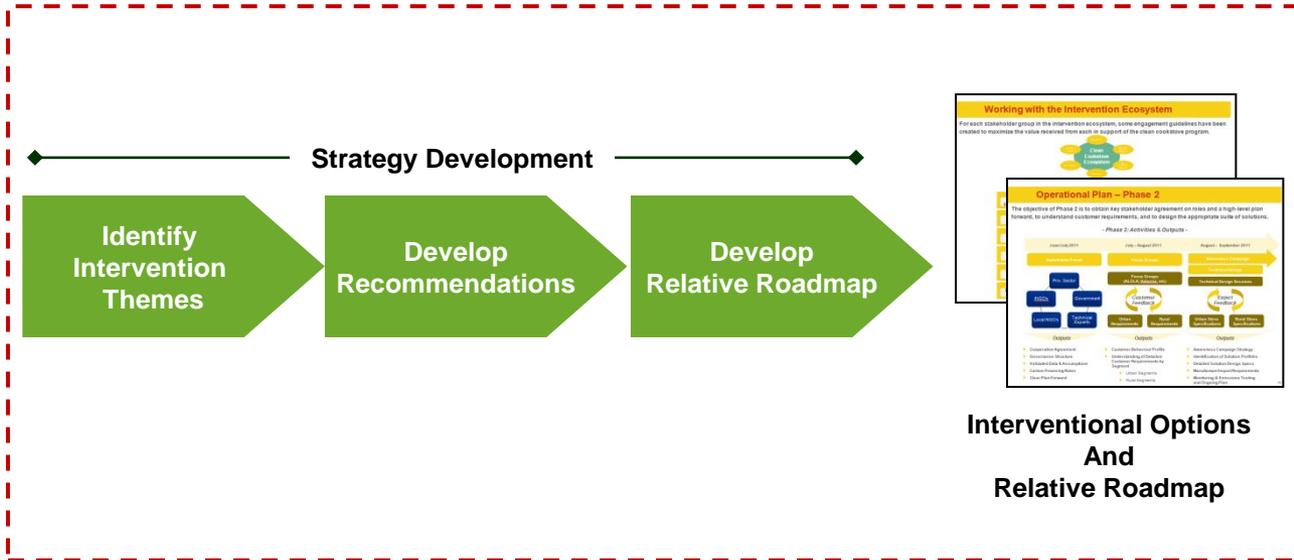
A structured approach first assessed the market for a cookstove industry and then used the sector mapping output to develop the intervention options and Relative Roadmap.

◀ Sector Mapping ▶



Sector Map

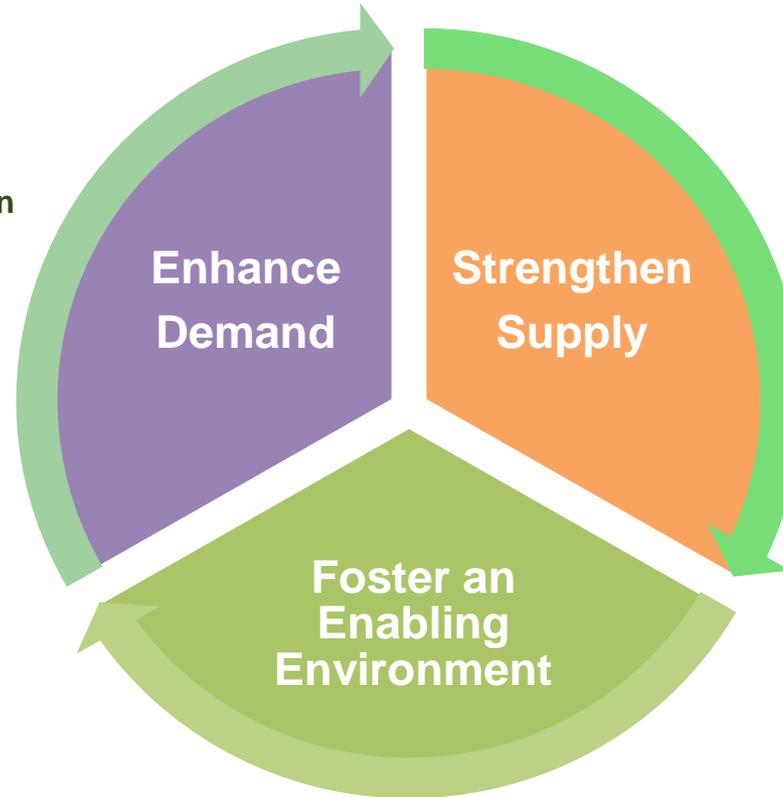
*Focus of This Deliverable*



# Project Approach

A three-pronged strategy has been developed to spur the clean cookstoves market.

- Understand and motivate the user as a customer
- Reach the last mile
- Finance the purchase of clean cookstoves and fuels
- Develop better cookstove technologies and a broader menu of options

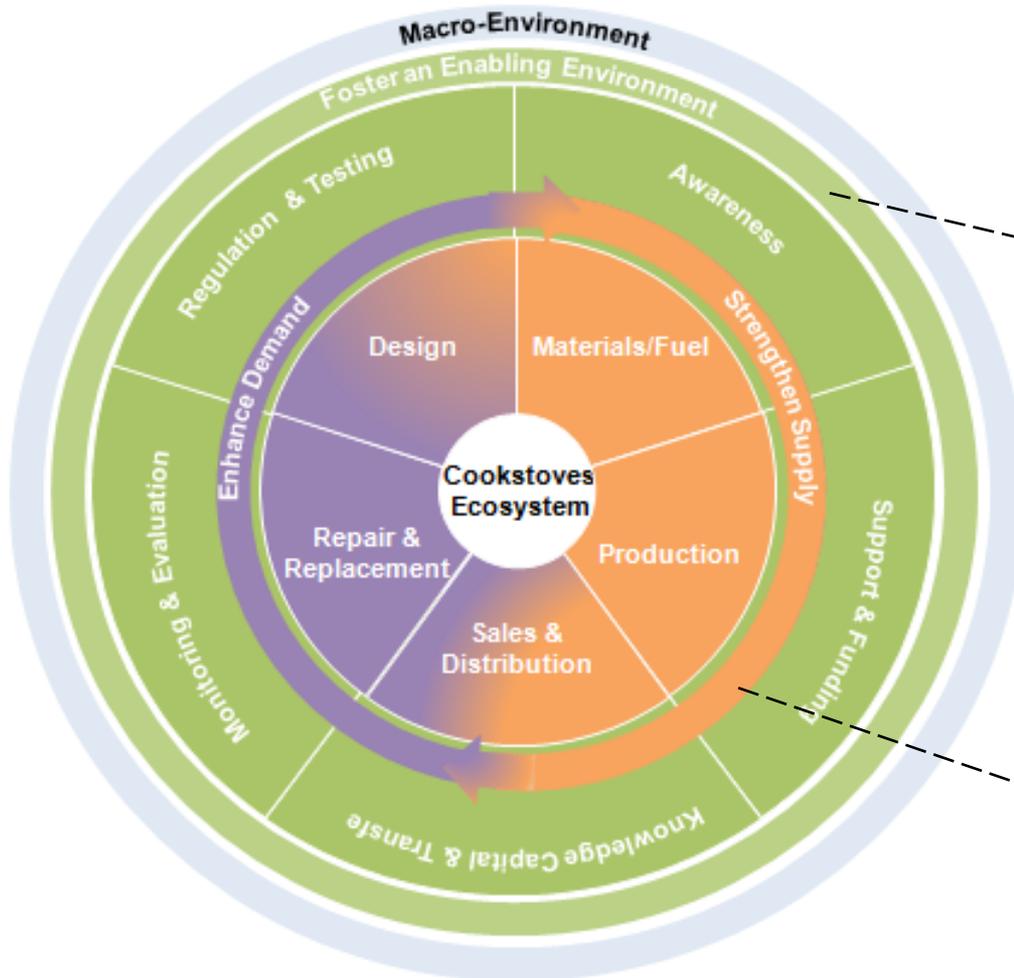


- Finance clean cookstoves and fuels at scale
- Access carbon finance
- Build an inclusive value chain for clean cookstoves and fuels
- Gather better market intelligence
- Ensure access for vulnerable populations (humanitarian)

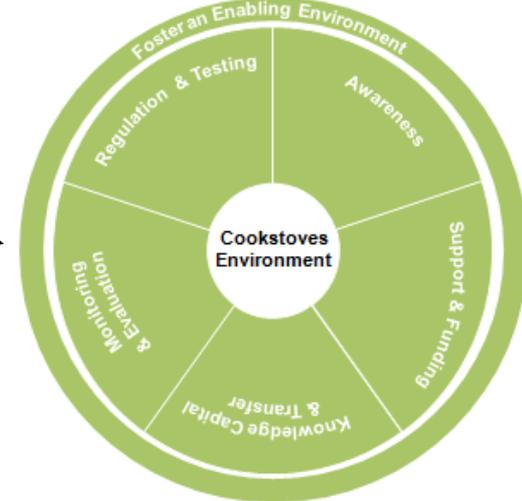
- Promote international standards and rigorous testing protocols, locally and globally
- Champion the sector to build awareness
- Further document the evidence base (health, climate, and gender)
- Engage national and local stakeholders
- Develop credible monitoring and evaluation systems

# Project Approach

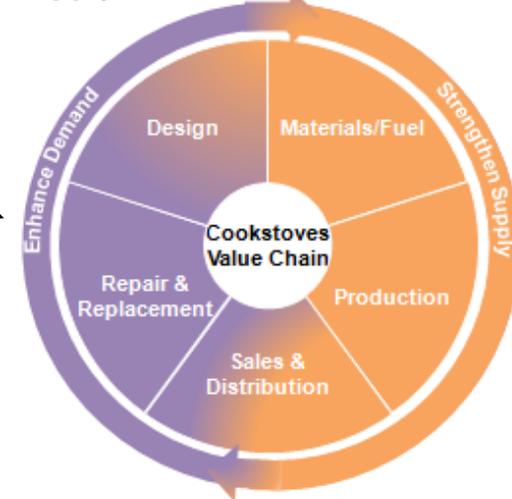
The Interventions are analyzed according to their impact to the three-pronged strategy.



## Fostering an Enabling Environment



## Enhancing Demand and Strengthening Supply: Cookstoves Value Chain



**Macro-Environment: Not in Scope for Intervention Options**

# The Case for Action Now

The end of carbon financing for non-least developed countries from official markets and the upcoming government change demand action now so as not to lose the momentum built in recent years.

## - The Case for Action -

### *What's Happening?*

Huge ICS market of over six million households, since less than 600 thousand households are currently addressed by government programs

The government is the major funder of cookstoves programs, but the current funding program ends December 2012

Large focus on fuel efficiency since some regions are suffering from deforestation

### *So What?*

There are several million households that are not being covered by government or NGO cookstove programmes

Political elections in July 2012 may change government funding of cookstove projects

Improved cookstoves supports the agricultural and environmental agenda to save on fuel usage

### *Why Now?*

Now is the time to promote cookstoves, with the aim of the post-2012 government making them a priority

Carbon financing on the official markets will stop accepting applications from Mexico (and other non-LDC) at the end of 2012 so implementers need to act quickly

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# Fostering an Enabling Environment

## The market today

Although inequality remains a key issue in Mexico, the recent strengthening of the economy has allowed the government to invest heavily in national initiatives – including improved cookstoves.

Due to limited available income, many households continue to use biomass as the primary cooking fuel even when gas and electricity are accessible, and this is unlikely to change in the short-medium term. As such, improved wood burning stoves are critical to address IAP.

The government's focus on reducing GHG emissions has led to substantial funding for ICS and as such, the Mexican cookstove market is dominated by government initiatives. However, partly due to the scale of the country and dispersed nature of the population, only 10% of the target market have received ICS.

The private sector, although notably smaller is focusing on addressing the areas not currently served by government programs. The majority of programs within the private and NGO sectors distribute in-situ improved wood burning stoves (similar to those in government projects), although there are a number of solar cookers in the market. Several NGOs have also focused on improving cooking practices as a method of reducing fuel use and associated IAP.

At present, the academic sector is involved in the industry

primarily through research, focusing on stove design and the impact on deforestation.

There are currently three carbon financed ICS initiatives pending registration or validation, with two of these being open PoAs. Mexico lost the status of LDC in 2012, and as such can no longer benefit from the CDM scheme, resulting in a dependence on the voluntary carbon market. Whilst still in its infancy, these PoAs have considerable potential to increase access to carbon financing for ICS implementers nationwide, and are likely to receive support from the government due to the aggressive national GHG reduction targets.

At present, there is no national, independent stove testing centre and although the government is aware of the need to establish a facility (and associated cookstoves standards), testing is currently contracted out, with success measured against government regulations. A lack of transparency in this process has led to concerns about government tenders and the standards of stoves implemented.

The lack of standards has meant that many of the households who benefitted from previous initiatives may have received stoves of a poor quality, hence offering lower emission reductions than intended.

# Fostering an Enabling Environment

Social development and environmental protection remain the key government drivers for ICS in Mexico. There is a lack of awareness within the general population regarding the health impacts of IAP, potentially due to the absence of the Health Ministry from current initiatives. This is due in part to the magnitude of other health/social issues in country e.g. diabetes, drug violence.

Long term support and funding also remains an issue, with most current government funding due to expire in 2012, and NGOs lacking stability due to dependence on donors for key projects. The sector is heavily fragmented; even within government initiatives, many projects are siloed by region. This raises concerns for the future of ICS initiatives, as the administration changes every six years, resulting in reorganization of an already fragile system. Many government initiatives focus on cookstove distribution, with little visibility to long term stove use.

Although the market has numerous players across each sector as well as considerable support within government, the success to date has been hindered by several key factors. A lack of stove standards and transparency makes it difficult for manufacturers to differentiate their products, population demographics complicates distribution and there is a lack of awareness of health implications/project coordination within central government. In addition, many projects focus on stove distribution, with limited focus on

project follow up and long term stove maintenance or correct cooking practice. Ideally carbon financing will address this through improved M&E.



*Mayan household using an improved cookstove*

# Fostering an Enabling Environment

## Building the market for the future

The intervention options presented with regard to fostering an enabling environment focus on three areas: Regulation & Testing, Awareness and Support & Funding.

The key area to address is the absence of a testing centre and associated regulations. The progress made by IPN in association with SEDESOL should be built upon to create national standards available for all ICS distributors. INE-CGCENICA are well placed to take the role of coordinating this effort and establishing the necessary framework. Since most stoves are built in-situ, it is also advisable to implement a method of certifying masons, to ensure that the stoves built in the field are of a suitable standard to guarantee the improvements experienced in the laboratory. Due to the size of the country, it may make sense in the long term to decentralize the testing with local facilities/training centers to improve access for rural implementers.

Although there is extensive government support for ICS initiatives, the gap around awareness of the health implications must be addressed. As such, completing a study to show the return on investment with regard to medical costs and life expectancy would hopefully create buy in from the Health Ministry. Increasing engagement from the Health Ministry will also enable health benefits to be monitored centrally going forward and act as a focal point to communicate with and educate the wider

community. A key example of this would be training local health professionals to educate patients about IAP during standard check ups, as well as through larger awareness campaigns. Awareness campaigns, whether funded by the government, NGOs or private sector, need to be multi-channel to ensure the majority of the target population is contacted. The key media in rural areas remains local radio, although TV and newspapers are also accessible for many.

With regard to support and funding, a national coordinating framework should be established, ideally led by a current in-country player with current connections to the major stakeholders. This will increase transparency to current projects, lowering the barriers to entry for new entrants, reduce duplication of effort and potentially identify synergies between the various parties involved in the ICS sector.

Strengthening the private sector will also build an industry that is less vulnerable due to a decreased dependency on government subsidy and support. A market based approach would provide a more sustainable model, although key steps must be taken to enable this shift. The implementers would benefit from basic business support e.g. training/access to capital and need to be able to differentiate their product/service through an independent testing facility/masons certification, thus enabling the general population to make informed decisions.

# Foster an Enabling Environment

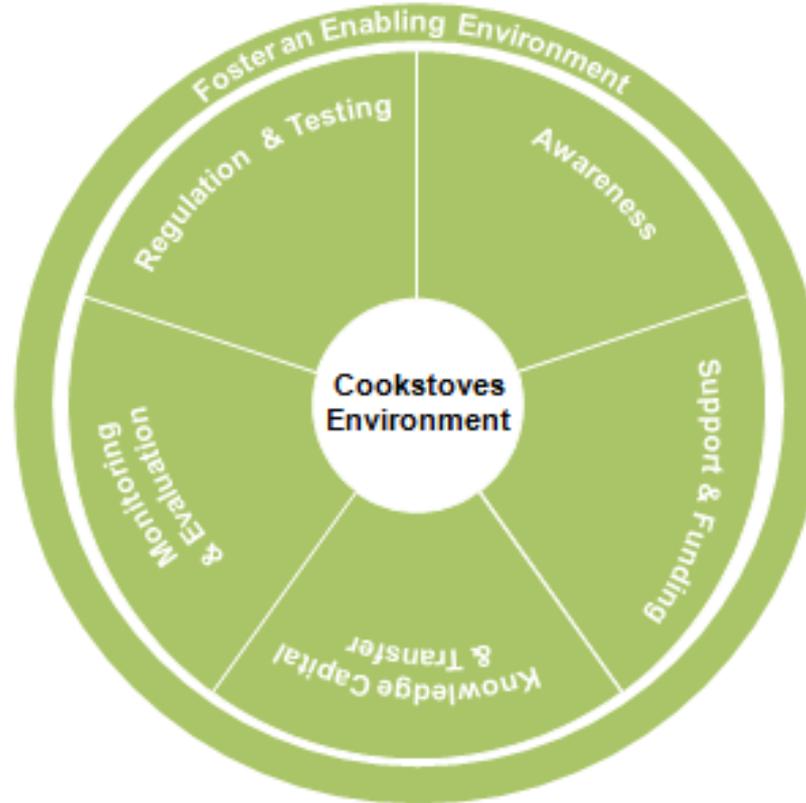
Through gaps identified in the Enabling Environment, Intervention options will focus on Awareness, Support & Funding and Regulation & Testing.

## Regulation & Testing

- ✓ Indoor Air Quality Standards
- ~ Cookstove Standards
- ~ Fuel Standards
- ✗ Standard Enforcement

## Monitoring & Evaluation

- ~ Monitoring implementations
- ✗ Tracking and Quantifying Success



## Awareness

- ✗ Consumer Awareness
- ✗ Stakeholder Awareness
  - ✗ Government
  - ✗ Private Sector

## Support & Funding

- ~ Government
- ~ INGOs and Associations
- ~ Local NGOs and Associations
- ✗ Private Sector
- ~ Academics

## Knowledge Capital & Transfer:

- ~ Health
- ✓ Environment
- ✓ Gender
- ~ Consumer Research

**KEY:** ✓ Advanced/ Favorable    ~ Has Potential/ Neutral    ✗ None/ Unfavorable    □ Focus Area

# Regulation & Testing

**Stove standards, testing and certification is important to ensure that households are receiving safe and efficient improved cookstoves.**

## Situation

There is no national stove standard being used in Mexico. Government and NGOs develop their own requirements and contract out their own testing. Some stove manufacturers do not believe there is transparency in the government tender process.

## Rationale

- Since there is no regulations on stoves distributed, some prior models were not well-designed and are not being utilized
- An efficient market approach requires certification of stove designs, stove materials and finished stoves quality, as well as stove builders competency and accreditation

## Intervention Options

	Involved Parties	Likelihood of Success	Budget	Estimated Time
1. Develop national official standards and certification for stoves, stove parts, manufacturers, and stove builders	IPN, INE-DGCENICA, Academia, Alliance	High	Low	1.5 years
2. Build one or more official testing facilities	INE-DGCENICA	High	High	3 months

# Regulation & Testing

Stakeholders are aware of the issue of standards, testing and certification. Several organizations have started work on creating standards and certifications.

## - Intervention -

**1. Develop national official standards and certification for stoves, stove parts, manufacturers, and stove builders**

**2. Build one or more official testing facilities**

## - Actions -

- Designate INE-CGCENICA as the national official stove standard lead agency to coordinate efforts with all stakeholders
- Develop a national stove standard that incorporates international standards and efficiency ratings, but also considers requirements specific to regions of Mexico (e.g. iron skillet, grill, height, etc.)
- In the short term, IPN to continue to develop interim cookstove tender standards for SEDESOL
- In the long term, understand how to transition from IPN standards (which are just for SEDESOL tenders) to the national standard
- Create certification process to ensure that in situ construction stoves are built and maintained properly. Encourage the development of a market of certified masons that users can call directly

- Invest and support at least one official testing facility to work with the national official stove standards and certification process being developed

## - Rationale -

While the national standard is being developed, an interim set of standards is needed for the stoves planned to be distributed via the SEDESOL tender in 2012. IPN was chosen by SEDESOL to create these standards

DGCENICA-INE has been working on the creation of a national standard in coordination with multiple stakeholders and they have extensive experience with materials testing, However, it may take several years before the official standards are agreed upon and become official

Standards for stove parts and a certification process for stove builders is needed in Mexico because a large part of the improved stoves are in situ construction not pre-manufactured

To execute the official standard, funding for a lab is needed

**Indoor air pollution is the case for change for cookstove programs in several countries, but in Mexico there is low priority among government for the health impacts of open fires.**

### Situation

- Government: IAP is not the main focus as current cookstove programs sponsored by the government are driven by social development and reducing deforestation, and not by promoting the health benefits of improved cookstoves
- Consumer: adoption of some subsidized stoves has been low as a result of lack of training and follow-up

### Rationale

- Although big efforts have been made by the Ministries of Environment, Social Development and Food & Agriculture, involvement of the Health Ministry would help step up the interventions required to address the remaining 90% of households suffering from IAP
- Many households do not understand why they need new cookstoves and what benefits they will receive

### Intervention Options

	Involved Parties	Likelihood of Success	Budget	Estimated Time
3. Conduct study on ROI of health benefits due to improved stoves	Academia, Alliance	Large	Low	6 months
4. Encourage Ministry of Health to become more involved	Ministry of Health, Alliance	Medium	Low	6 months
5. Develop national awareness campaign	Government (e.g. SEDESOL) Alliance	Large	Large	1 year

## Greater involvement by health organisations will improve awareness of open fire health impacts.

### - Intervention -

### - Actions -

### - Rationale -

**3. Conduct study on return on investment (ROI) of health benefits due to improved cookstoves**

- Calculate medical cost savings of switching from open fire to an improved cookstove
- Quantify improvements in life expectancy and quality of life
- Attribute cost savings from government medical programmes to cookstove programs

Interviews with communities have yielded several accounts of improved health, especially around asthma and other respiratory issues after receiving improved cookstoves. Overwhelmingly, improved cookstove users say they have better quality of life since they are no longer exposed to direct smoke for most hours of the day

**4. Encourage Ministry of Health to become more involved in studies, campaigns, etc.**

- Educate on health effects of open fires
- Present results of health savings report
- Petition the Ministry of Health to support health tracking of communities who have switched to improved cookstoves to validate cost savings
- Require that rural doctors and medical staff provide education on clean cookstoves during regular patient checkups

In other countries, the Ministry of Health is a key supporter. In Mexico, government support is coming from agriculture and social development ministries. Involvement of the health ministry will ensure greater awareness of the dangers of open fire, and grant more credibility to clean cookstove implementers

**5. Develop national awareness campaign on the dangers of open fires to health**

- Fund a mainstream media campaign to educate the public on dangers of open fires and alternative options (particularly through rural radio to reach key target segments not reachable otherwise, but also TV, newspaper and online if possible to put the issue in the national agenda)

There has been some interest from mainstream media to participate in a cookstove awareness campaign. This will create demand for clean cookstoves

# Support & Funding

**Successful cookstove initiatives require consistent funding to allow for growth of small pilot programs and achieve long-term sustainable impact.**

## Situation

There is no comprehensive long-term strategy for the cookstoves sector in Mexico. Major government funding will run out at the end of 2012, and no future funding has been established. NGOs are dependent on inconsistent donor funding.

## Rationale

- Government is the major funder, but each new administration changes priorities (every 6 years)
- No coordination of program funding at the national level—government and NGOs work in silos
- Majority of funding is for one-time distribution of stoves, but does not address crucial follow-up activities such as maintenance, education and replacement

## Intervention Options

	Involved Parties	Likelihood of Success	Budget	Estimated Time
6. Establish a national coordinating body for cookstove programs	Comision Intersecretarial or an INGO (e.g. GIZ), Alliance	High	Low	1.5 years
7. Create a market-based solution that is less vulnerable to drastic changes in government funding	Coordinating Body, Funders, Everyone in the Cookstove Value Chain, Alliance	Medium	Medium	1.5 years

# Support & Funding

Interventions are necessary from a top down approach (national coordinating body) and well as developing leadership in the local communities.

- Intervention-

**6. Establish a national coordinating body for cookstove programs**

- Actions -

- Work to identify a key partner who will take on the role of a coordinating body for cookstove programs
- The coordinating body should be a partner already existing within the country, who has good influence over a large network (e.g. Comision Intersecretarial, INE-DGCENICA, SEMARNAT, SEDESOL, or an INGO such as GIZ, who has successfully performed this role in other countries like Peru)

- Rationale -

Government and NGOs currently work in silos. There is limited visibility of overall national progress, and no checks around possible intervention overlaps, synergies between projects, or collection of lessons learnt

**7. Create a market-based solution that is less vulnerable to drastic changes in government funding**

- Coordinating body to work with partners who have experience with fostering social enterprises to identify high-potential entrepreneurs
- Work with funding agencies to establish seed capital
- Develop a market scheme of local certified stove masons, stove materials suppliers, and portable stove retailers where they have a profit and social incentive to continue with cookstoves after initial funding is complete
- Create jobs by teaching marketable skills for positions such as factory workers and masons and encourage certification

The current cookstoves program is dominated by government subsidies, and it is very vulnerable to changes in the political agenda and subsequent budget allocations. A successful market-based solution would be only partially subsidised (not fully like today), and would ensure that all areas of the value chain are covered (e.g. stove maintenance). By creating a profit structure that encourages workers to continue after initial funding is gone, it will ensure continuation of the cookstove market, even when there is not consistent funding from government or NGOs

# Cookstoves Value Chain

## Design of products in the market today

Although the vast majority of ICS in Mexico are in-situ, wood burning stoves (the Patsari being the most common), a large section of rural communities still use open fires (inside or outside, depending on local custom) due to limited access to capital. Previous initiatives focused on improved, portable stoves – with the Ecocina the most prominent portable wood stove still in the market. All stoves incorporate a skillet to make tortillas, a staple food in Mexico.

Although the basic stove principles are consistent across Mexico, there are very distinct regional preferences, and several previous implementers have experienced suppressed demand by not catering to the local market. These differences relate to the design (number/size of burners, skillets etc.), but also to the functional aspects – with some areas using the stoves to reduce the number of insects within the households or to heat water.

There are also several solar cookers in the market although the market share is very small. They are not suitable for the majority of households, as they cannot be used to cook tortillas. Solar cookers are best viewed as an

additional, supporting stove to reduce dependence on biofuels (reducing IAP and cost of cooking). The success of the stoves depends on the climate and culture of the region.



*Ecocina stove*

## Sales & distribution

Sales are restricted by very limited access to capital within the poorest (and most vulnerable) households. As such, most cookstove initiatives distribute subsidized stoves. This impedes the ability to disseminate stoves at the desired market rate.

Despite the subsidies and the presence of several microfinance companies, households are still restricted due to the high interest rates on loans.

The subsidies have also resulted in reduced buy-in from the communities as the households have less vested interest in the use and maintenance of the stoves. This is compounded by the lack of adequate training and support for the families with regard to best practice for cooking and stove maintenance. This is a key gap in terms of long term sustainability. It also causes issues for carbon financed projects, due to the long term nature of carbon emission reduction required to justify the initial investment.

Due to the small, disperse nature of the rural communities, last mile distribution is both logistically complex and costly for stove implementers. Unfortunately, this disproportionately impacts the most vulnerable, who are living with the poorest infrastructure.

## Repair & Replacement

Families with low household income often lack funds to maintain stoves once purchased, with dire consequences for the long term benefits of the initial investment. The poor training and lack of on-going support exacerbate the issue. Even if households are trained at the point of stove implementation, the maintenance is unlikely to be required until several months later.

A key source of funding for stove maintenance is carbon financing, although this is a very volatile source to be dependent on, especially since only voluntary markets can now be used. This volatility makes it difficult to convince implementers of the return on investment, especially given the significant upfront costs required.

However, the expected introduction of open PoAs will lower barriers for stove distributors as well as provide support for on-going M&E and associated stove maintenance. The issue then becomes additionally, very difficult (if not impossible) for fully funded projects to demonstrate.

## Supply and demand enhancement

In order to address demand, the stoves must be affordable and of a suitable design for the local target market. With regard to the stove design, increased transparency amongst players with regard to the key requirements per region would reduce rejection rates from the communities and hence lower the regret cost for existing players and lower barriers for new entrants. Gathering this data from successful projects will be beneficial, but it is also vital to learn from failed projects – this could be difficult since many implementers may be reluctant to share this information for fear of impacting future claims for funding.

The government could build upon its already extensive information about local communities that it has acquired through programs such as the *Oportunidades* program. This visibility to the key characteristics required for each region will allow a more diverse range of tailored stoves to be produced, increasing demand and hence supply.

Also key to stimulating demand is improved financing options for households. Moving away from a fully subsidized model will increase consumer buy-in, improving long term stove maintenance. Interesting examples of innovative financing approaches are the micro financing model implemented by the NGO U'yo'olche and the community savings schemes used in several regions.

Support from key community members and institutions will also help to stimulate demand and support within rural areas. This is crucial since the implementers may face opposition due to the personal nature of ingrained cooking practices. These 'community representatives' can also be used to support and educate the local community with regard to IAP, improved cooking practices and stove maintenance.

Although last mile distribution is a major issue, there are examples of successful models in Mexico which can be used as best practice to implement similar procedures or ideally can be partnered with to ensure the most vulnerable have access to stoves. This will be of most benefit to portable stove producers and those stoves requiring materials which are difficult to source locally. A key partner could be DICONSA through the Rural Supply program (PAR).

Carbon financing is a key tool to address stove maintenance and long term sustainability of initiatives. This is due to the stringent M&E requirements and the experience available through the PoA with regard to stove maintenance. PoA entry criteria can also be used to ensure implementers are using best practice within their programs. However, there must be a move away from fully subsidized programs if this funding is to be utilized.

# Enhance Demand and Strengthen Supply

Intervention Options

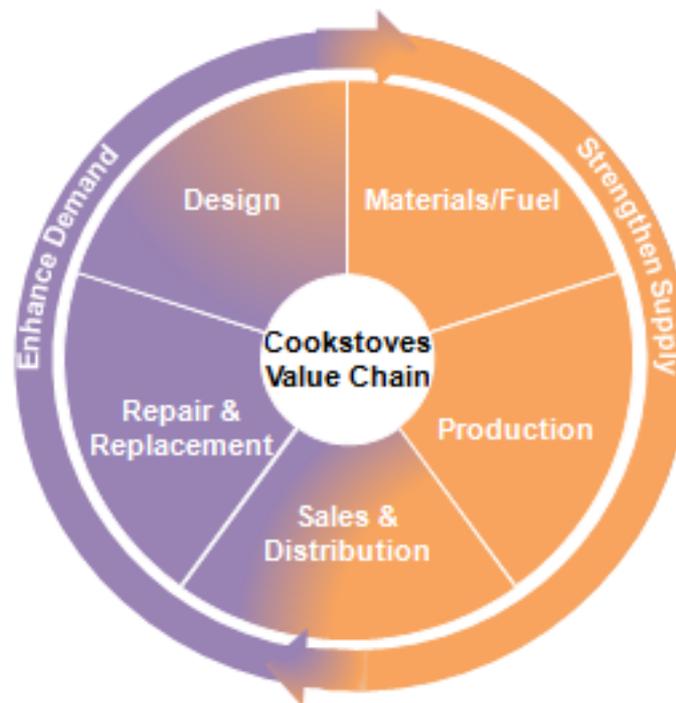
Through gaps identified in the Cookstoves Value Chain, Intervention options will focus on Design, Sales & Distribution and Repair & Replacement.

## Design

- ~ Stove Type
  - ~ Fixed
  - ~ Portable
  - ✗ Biogas Digester
  - ✓ Solar
- ✓ R&D
  - ✓ Private
  - ✓ Gov't/Academics

## Repair & Replacement

- ✗ Supply of Repair Skills and Parts
- ✗ Post-sales Service



## Materials/Fuel

- ✓ Stove Raw Material Supply
- ✓ Stove Raw Materials Cost
- ~ Fuel Value Chain
  - ✓ Biomass
  - ✗ Clean Coal
  - ✓ Solar/Biogas
  - ~ Petro based
- ✗ Cost of Clean Fuels

## Production

- ✗ Scalability
  - ✗ Handmade
  - ✗ Masons
  - ~ Factory
- ~ Producer Fragmentation
- ~ Producer Financing
- ~ Access to Capital

## Sales & Distribution

- ~ Financing Purchasing (micro-credit)
- ~ Carbon Financing
- ✓ Customer Segmentation
- ✗ Last Mile Distribution
- ✗ Reach Vulnerable Populations

**KEY:** ✓ Advanced/ Favorable   ~ Has Potential/ Neutral   ✗ None/ Unfavorable   ■ Focus Area

**Regions throughout Mexico prefer different cookstove designs. When regional preferences are not considered, stoves have been abandoned because they do not meet the local need.**

### Situation

No one type of cookstove is the solution for the entire country. Different regions have different cooking and custom preferences, which influence stove design (e.g. number of burners, number and size of iron skillet and grills, stove height, chimney type, local availability of fuels and materials to build stoves, difficulty of distribution due to limited road access, alternative uses such as water heating or insect repelling, etc.)

### Rationale

- When regional preferences are not considered, stoves have been abandoned because they did not meet the local need
- A clear understanding of consumer needs by segment and region would help maximize adoption rates and ensure the right supply of stoves is available

### Intervention Options

	Involved Parties	Likelihood of Success	Budget	Estimated Time
8. Develop a knowledge base of stoves by geographic area to inform appropriate stove types	Academia, Implementing NGOs, Coordinating Body, Alliance	High	Medium	1 year
9. Design better stoves targeted to specific segments	Stove Designers, National Standards Organization	High	Low	2 years

**A comprehensive consumer needs analysis by region is a critical and unfulfilled need. Organizations have expressed interest in contributing, but the work requires large-scale collaboration.**

**- Intervention-**

**- Actions -**

**- Rationale -**

**8. Develop a knowledge base of stoves by geographic area to inform intervention strategies**

- Develop knowledge base of which stoves work well with which regions - include regional preferences and success/failure of any pilot programs
- Compile knowledge from various government and NGO organizations about stove preferences from the communities they have implemented stove programs
- Leverage government data on communities through other government programs (i.e. Oportunidades program)
- Publish knowledge base through the clean cookstove campaign coordinating body for designers and implementers to access

A customer demand study by region will help inform stove manufacturers on stove design, as well as ensuring current stove programs are effective in distributing the right type of stoves.

The government has extensive information from their various rural development, poverty reduction, health, etc. programs. This data will help populate initial information about the design preferences of cookstove recipients, which will then be validated by working with the community.

**9. Design better stoves targeted to specific segments**

- Use this database as reference when designing stoves and executing implementations
- Incorporate stove regional adaptations to national standards as guidelines but do not limit innovation

Products designed for specific target segments have more chances to be successful in the market.

This will also be a way to foster continuous improvement.

**Target users cannot afford stoves unless they are subsidized, but at the same time adoption is low due to these subsidies. Last mile distribution and reaching vulnerable communities with no access to roads is also a challenge.**

### Situation

Most stoves distributed are subsidized and adoption of these stoves is sometimes low. Target users cannot afford the stoves to buy them directly. Last mile distribution is also a challenge especially for vulnerable populations with no road access.

### Rationale

- Several micro financiers exist, but offer high interest rates so people don't use them
- Subsidized stove adoption could be related to the users not having put a stake in it as well as lack of training and follow-ups
- With such a large number of small disperse vulnerable communities last mile distribution in rural areas can only be achieved by leveraging existing networks

### Intervention Options

	Involved Parties	Likelihood of Success	Budget	Estimated Time
10. Create partnerships with low-interest micro financiers	Micro Credit Lenders, Alliance	Medium	Low	1 year
11. Encourage buy-in by leveraging community leaders	Local NGOs, Local Governments, Alliance	High	Low	1 year
12. Tap into existing rural distribution networks	Dicons, Alliance	High	Low	1 year

# Sales & Distribution

To create a successful cookstove market for the poorest segments, stove financing, sales agents and distribution need to be addressed.

**- Intervention-**

**- Actions -**

**- Rationale -**

**10. Create partnerships with low-interest micro financiers who could partner with cookstove programs**

- Model a program after the one that the NGO U'yo'olche did as a pilot with Fondo Canada through which they formed an extended payment plan for stoves with 0% interest over several weeks and refinancing options, and proved to be successful

Interviews with community members and NGOs indicate that micro financing is abundantly available, but that the rates are too high to be feasible for cookstove programs. Some communities use a collective savings system with rotating benefits but this requires management and is not prevalent in all communities.

**11. Encourage buy-in by leveraging community leaders and ensuring that distribution is followed by training and maintenance**

- Identify target communities and influential leaders, especially on indigenous communities
- Co-host community meeting with community leader
- Develop training guides, with simple pictures to explain concepts
- Provide incentives to leaders to act as promoters of improved stoves

Some stoves have low adoption because households were simply given stoves with little training or follow-up to help them understand how to use and maintain them. Successful programs are those where distribution is part of a comprehensive program that includes training and maintenance.

**12. Tap into existing rural distribution networks to bridge the gap of last mile distribution, especially to reach vulnerable populations with no road access**

- Form partnership with DICONSA to distribute stove materials or portable stoves through their PAR (Rural Supply Program) distribution network

The PAR program has been very successful in reaching the poorest most remote communities, even those without road access. They have a fleet of trucks, horses and warehouses across the country and continue to expand to new territories. They have a non-profit model which would suit cookstove distribution.

# Repair & Replacement

The initial cost of an improved cookstove may be a barrier for some, but lack of funding for replacement and maintenance costs is a larger gap.

## Situation

There are two barriers to funding: initial purchase and ongoing maintenance costs. Even if people can afford the stove, they might not have funding for long-term maintenance and repairs for cookstoves, so people stop using the stoves once they break.

## Rationale

- Some large-scale programs fully fund stove distribution, which disqualifies them for future funding through carbon credits because of the additionality rule
- Starting a carbon financing program takes several years and requires significant upfront investment
- There is uncertainty of ROI since both voluntary and CDM carbon markets are highly volatile. Mexico is not a Least Developed Country according to the CDM, so validation must be received prior to end of 2012 to qualify

## Intervention Options

	Involved Parties	Likelihood of Success	Budget	Estimated Time
13. Create awareness for government and NGOs around availability of open POAs and their requirements	Carbon Financing Company, Alliance	Medium	Low	1 year

# Repair & Replacement

Encourage cookstove programs to leverage open POA (Programme of Activities) carbon financing for repair & replacement plans.

## - Intervention -

**13. Create awareness for government and NGOs around availability of open POAs and their requirements**

## - Actions -

- Encourage participation in open POAs, to avoid long wait time and high costs
- Work with funders to create a sustainable financing scheme where only a portion of the stove is subsidised so the rest can be funded by carbon credits
- Educate that cookstove programmes have higher carbon value due to social benefits
- Plan for compliant monitoring of all cookstove initiatives, as it is a requirement when they want to participate in carbon financing
- Provide best practices on setting up monitoring to new cookstove initiatives, so they will be better prepared to enroll in carbon financing programs

## - Rationale -

Since open POAs can incorporate cookstoves from different implementers, it is advisable to leverage late-stage open POAs that are close to being validated instead of starting from scratch. There are no cookstove POAs in the Mexico market which are operational as of Feb 2012. The current large-scale programs subsidise 100% of the cookstoves, limiting the opportunity to apply carbon credits, so a different financing scheme needs to be adopted

Monitoring has been proven to provide dual benefits of encouraging sustained use of cookstoves, as well as fulfilling a requirement for carbon financing. All cookstove programmes should incorporate compliant monitoring from the initial set-up

# Content

**Executive Summary**

**Project Approach and Background**

**Intervention Options**

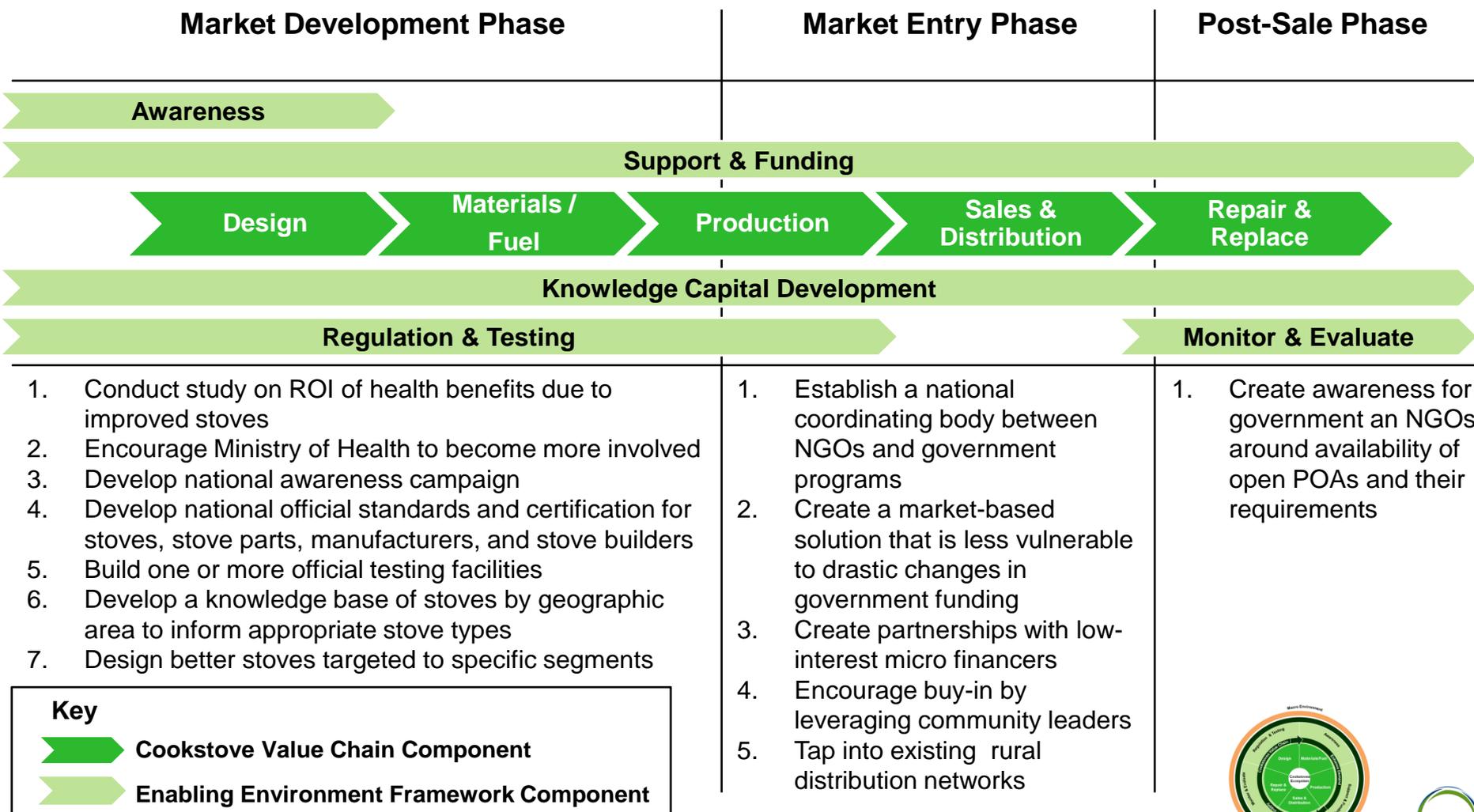
**Roadmap**

**Conclusion**

**Appendix**

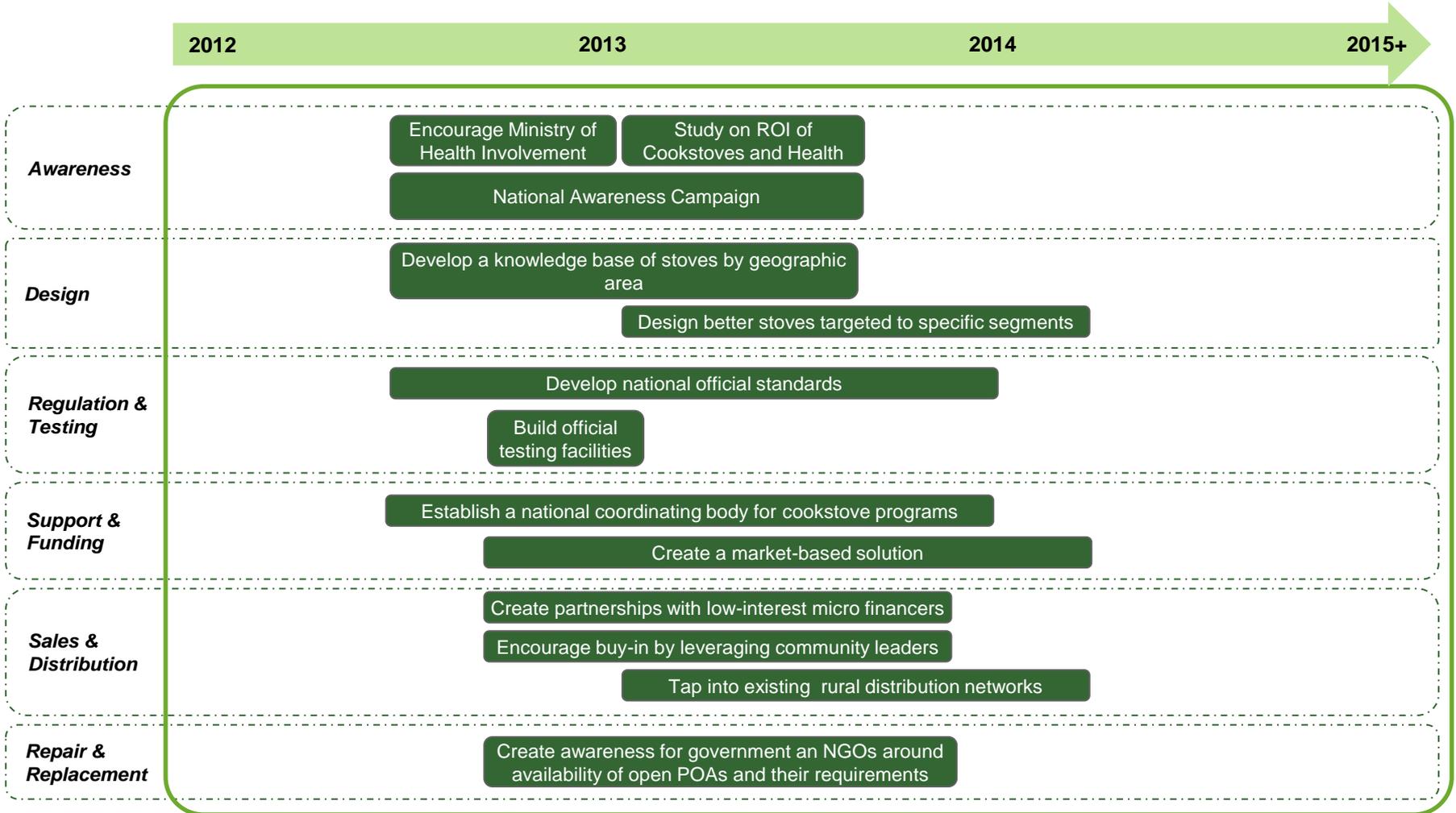
# Intervention Options Roadmap Overview

The Cookstove Value Chain is a sequential process, and contains interdependencies. Similarly, the Enabling Environment Framework components should be done in lock-step with the value chain.



# Intervention Options Roadmap

Intervention options will focus on cultivating a market-based environment for cookstoves, supporting manufacturers to get their cookstoves to end users, and on sustaining this market.



# Content

**Executive Summary**

**Situation**

**Intervention Options by Customer Segment**

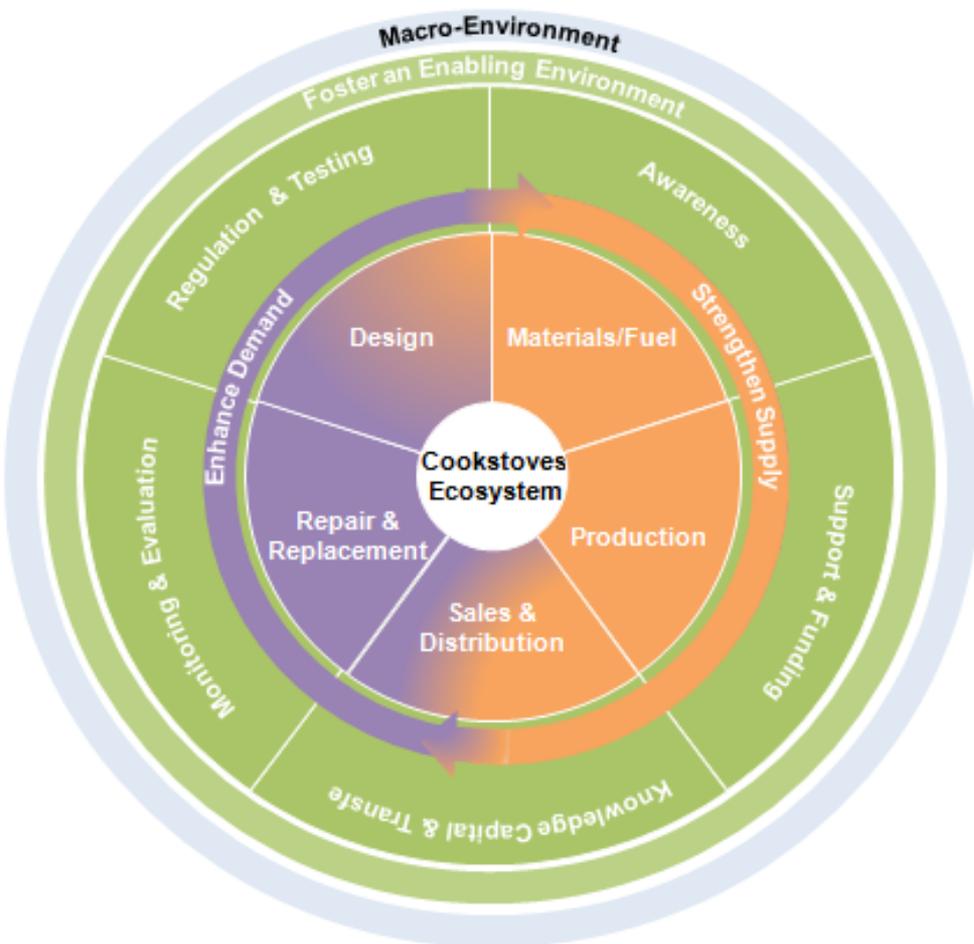
**Intervention Options Roadmap**

**Conclusion**

**Appendix**

# Conclusion

Whilst the Mexican market is large and many small cookstove initiatives exist, larger scale, longer term and better coordinated plans are required to fully overcome the IAP issue in the country.



## Macro Environment

- Government changes every six years limit the long-term planning required for cookstove programs to succeed
- Lack of coordination between the multiple government organizations limits large scale interventions

## Enabling Environment

- Involvement of the Health Ministry would help step up the interventions required to address the remaining 90% of households suffering from IAP
- Low consumer level awareness of the direct relationship between smoke and health problems
- National standards, certification and testing are a key gap to ensure the right stoves are being delivered and installed

## Supply and Demand: Value Chain

- To address current gaps in long-term use of improved stoves funding can be obtained from carbon financing from open POAs
- To encourage sales, it is critical to leverage local community leaders
- Distribution challenges to remote rural areas can be addressed using existing rural supply networks

# Content

**Executive Summary**

**Situation**

**Intervention Options by Customer Segment**

**Intervention Options Roadmap**

**Conclusion**

**Appendix**

# Case Study A: Túumben K'óoben Stove Program

- **Organisation:** U'yo'olche
- **Region:** Felipe Carrillo Puerto, Quintana Roo
- **Stove:** Túumben K'óoben
  - Adapted Patsari model with local materials
  - 40cm diameter for each of the two comales, chimney, sits on base
- **Price:** \$1500-\$2150 pesos (\$115-\$165 USD)
- **Funding:**
  - Subsidies- Federal government and international organisations: Fondo Canada, Conafor, Comisión Nacional de Areas Naturales Protegidas
  - Microcredit pilot with funds from Fondo Canada and 0% interest
- **Stoves Distributed:** ~1,000
- **Best Practices:**
  - Demonstrated stove by cooking stew for everyone "Matam" (Mayan word) - a tradition done in the Mayan communities
  - Recruited women to work as promoters, and gave them free stoves
  - Continually adapts stoves for preferences (height, shelves, decorations, water heater, etc.)
  - Family values stoves because they must contribute the foundation base



# Case Study B:

## Stove Team International Stove Program

- **Organisation:** Stove Team International, Rotary International, Apoyo a Gente Emprendedore A.C.
- **Region:** Clavellinas (outside San Miguel Allende, state of Guanajuato)
- **Stove:** Ecocina
- **Price:** \$500 pesos, \$38 USD
- **Funding:**
  - Rotary International
  - “Tanda” system - everyone pays once a month to a common fund and they raffle a stove each month
  - Each family pays for stove in 10 weekly installments of \$50 pesos
- **Stoves Distributed:** Factory has only been operational for 4 months. 1050 stoves have been sold.
- **Best Practices:**
  - Ecocinas have a metal “skirt” surrounding the pot to keep the heat
  - Works with local women promoters who help collect the payments
  - Comale spacer allows for interchangeable comales
  - Stove factory owner was identified from the community and takes active participation in community involvement



# Case Study C: SAGARPA Stove Program

- **Organisation:** The Ministry of Agriculture, Livestock, Rural Development, Fisheries and Food
- **Region:** Based in Mexico City, operates across the country. SAGARPA is present in 850 municipalities, serving 900,000 people (more than 180,000 families)
- **Stove:** 80% PATSARI and 20% LORENA
- **Price:** \$4000 pesos (including training), \$307 USD
- **Funding:**
  - Federal Government
- **Stoves Distributed:** SAGARPA has agreed to distribute 100,000 cookstoves by the end of 2012 as part of the Federal PECC program - 46,068 installed to date
- **Best Practices:**
  - Wide network of implementation agencies (government, NGOs, commercial, etc)
  - Focus on women-headed households since many men migrate to the big cities or US
  - Families pay 10% of value of the stove (in cash or time), which grants a sense of ownership
  - Employs technical team to train the families on stove usage



# Glossary of Terms

**Below is a list of commonly used acronyms used throughout the report and presentation:**

CDM – Kyoto Clean Development Mechanism

CO<sub>2</sub> - Carbon dioxide

CONAFOR – National Forestry Council

CONAPO – National Population Council

DNA – Designated National Authority

EU – European Union

GACC – Global Alliance for Clean Cookstoves

GDP – Gross Domestic Product

HH – Household(s)

IAP – Indoor Air Pollution

IBS – Improved Biomass Stove

ICS – Improved Cookstove

iNGO – International Non-Governmental Organization

INMUJERES – National Women's Institute

LDCs – Least Developed Countries

LPG – Liquid Petroleum Gas

NGO – Non-Governmental Organization

OPORTUNIDADES – Government program that provides subsidies to the poorest households

PAR – Rural Supply Program

PECC – Special Climate Change Program

PESA – Strategic Project for Food Security

PDZP - Program for the Development of Priority Zones

POA – Program of Activities

SAGARPA - Agriculture, Livestock, Rural Development, Fisheries and Food Secretariat

SEDESOL – Social Development Secretariat

SEMARNAT – Environment and Natural Resources Secretariat

UN – United Nations

ZAP – Priority Action Zones