



RESULTS REPORT 2014

Sharing Progress on the Path to Adoption of Clean
and Efficient Cooking Solutions





GLOBAL ALLIANCE FOR
CLEAN COOKSTOVES

2014 RESULTS REPORT

Sharing Progress on the Path to Adoption of Clean
and Efficient Cooking Solutions

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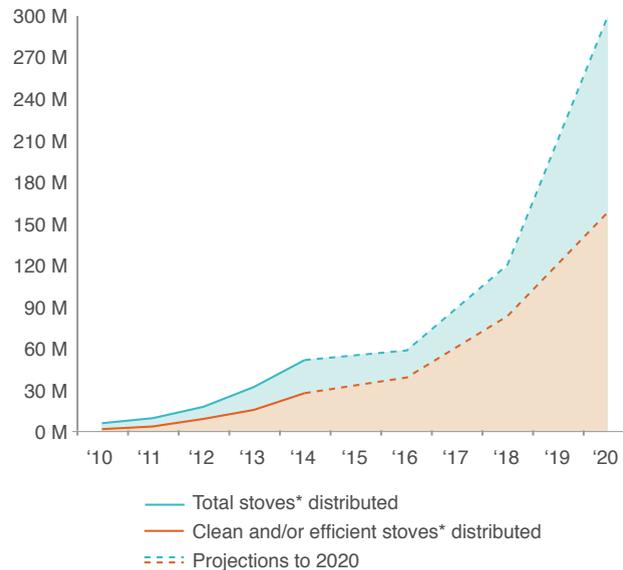
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We are on track to surpass our ambitious goal of 100 M households adopting clean and/or efficient stoves and fuels by 2020

Five years after the inception of the Global Alliance for Clean Cookstoves (Alliance), a movement is clearly building across the cookstoves and fuels sector. The Alliance has helped raise the issue of household air pollution and the benefits of clean and efficient technologies and fuels to the highest levels of international development. As a result, donors, investors and implementers are integrating clean and efficient cookstoves and fuels into their work. Funders have expressed continued confidence in the sector and the Alliance's model. The Alliance and its partners have made significant strides toward developing a clean and efficient cookstoves and fuels sector that is poised to scale and built for sustained growth. Annual reported results continue to demonstrate momentum in the sector, with 50 million (M) stoves and fuels* distributed since 2010, the Alliance and its partners are on target to exceed their goal of 100 M by 2020.

Figure 1: Cumulative stoves and fuels distributed, 2010–2014, and future projections



Source: 2014 Results Report. Global Alliance for Clean Cookstoves

*Fuel volumes converted into household stove equivalents

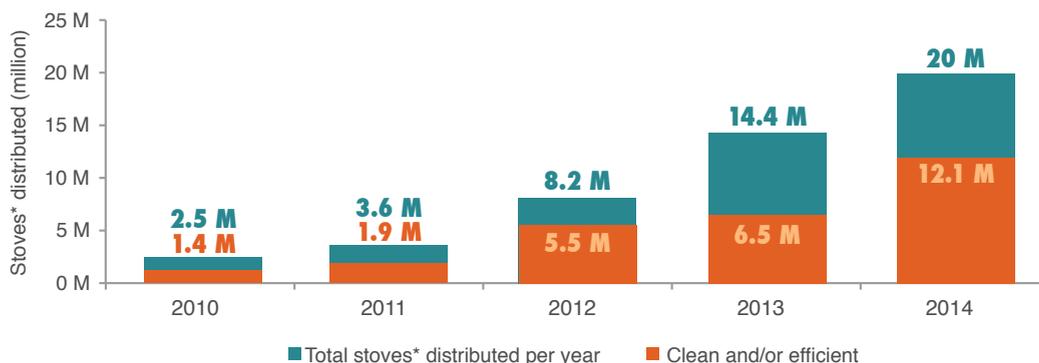
Alliance partners reported distributing 28.5 M clean and/or efficient stoves and fuels from 2010–2014

The Alliance developed definitions for “clean” and “efficient” to track progress toward our key milestone (100 million households adopting clean and/or efficient stoves and fuels by 2020). These definitions align with the [ISO International Workshop Agreement \(IWA\) Guidelines](#) for evaluating cookstove performance. The Alliance considers stoves and fuels that are tier 3 or higher for indoor emissions to be clean and those that are tier 2 or higher for efficiency/fuel use to be efficient. Stoves and fuels of higher tiers offer greater public health benefits.

More clean and/or efficient stoves and fuels are being distributed each year, both as an absolute number and as a proportion of all distributed stoves and fuels. 6.5 M clean and/or efficient stoves* were reported distributed in 2013, and 12.2 M in 2014. This increase can be partially attributed to the fact that the Alliance is having greater success in tracking the distribution of clean and/or efficient stoves and fuels, including processed biomass, biogas, LPG, solar, and induction stoves.

Results continue to illuminate promising trends in the clean and efficient cookstoves and fuels sector; progress is being made on strengthening supply (including the quantity and quality of stoves and fuels), enhancing demand, and supporting the enabling environment needed to scale clean cooking.

Figure 2: Annual trends in household distribution, 2010–2014



*Totals include fuel volumes used to estimate number of households reached, assuming exclusive use, starting in 2014
 Source: 2014 Results Report. Global Alliance for Clean Cookstoves

*Fuel volumes converted into household stove equivalents

In addition, there is increased private sector engagement in the manufacture and delivery of clean and/or efficient stoves and fuels, including new entrants to the cooking sector and established energy enterprises who are new to the Alliance's base of the pyramid demographic. Over half of stoves and fuels reported in 2014 were distributed by the private sector.

Enterprises of all sizes are working to scale up their operations, demonstrating continued commitment across the sector. The greatest increase was reported by those with the largest distribution capacities: 10 enterprises distributed 60% of the total stove and fuel volumes reported in 2014. These large players drove the bulk of the progress reflected in the 2014 results.



The Alliance monitors the growth of clean and efficient cooking solutions

The Global Alliance for Clean Cookstoves was founded on a simple belief: cooking shouldn't kill. In 2010, the Alliance laid out a powerful vision to save and improve lives by creating a thriving global market to enable 100 million households to adopt clean and efficient cookstoves and fuels by 2020. Serving as a connector, catalyst, and facilitator, the Alliance has helped build a solid foundation for transformative change by working with our partners to spur innovation, develop standards, drive investment, advocate for enabling policies, and expand the base of evidence on the benefits of clean cookstoves and fuels. For more details on the Alliance's progress to date, please see the [five year report](#).

Careful monitoring and evaluation of clean cookstove and fuels adoption programs is critical for observing progress and measuring the impact of the sector's work. The Alliance's objective is to measure progress and success toward our goals while simultaneously addressing evidence gaps and facilitating improvements in the sector over time. The Alliance's monitoring and evaluation system utilizes a mix of voluntary partner results reporting, population based surveys, routine reporting from grantees, evaluation studies and impact assessment to track progress on market development, clean cooking distribution, clean cooking adoption and use, mission goals (health, environment, gender, and livelihood impacts), the impact of public awareness campaigns, and achievement of the Alliance's value propositions.

We have depended more heavily on supply side information from manufacturers and distributors in our first few years while making the case and identifying appropriate indicators to be mainstreamed into global surveys and priming the market to measure adoption and impact. As we move forward the Alliance will adapt its approach to M&E to be more inclusive of all three methods to better describe the "state of the sector" in conjunction with the increased availability of routinely collected relevant household energy data from national surveys, Sustainable Energy for All, the World Bank, and others.

Annual Partner Results Report

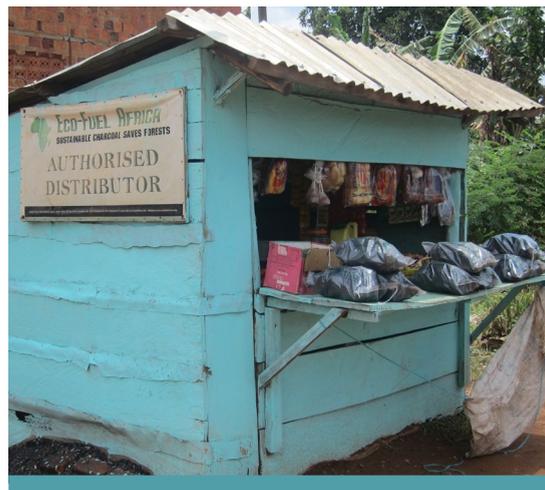
As part of its commitment to monitor and report on the state of the clean cooking sector, the Alliance invites its partners to share their annual progress towards our 100 M household adoption goal. The annual results report serves as an important tool to track and measure the impact of the Alliance and its partners in promoting market-based solutions for clean and efficient cooking. Partners voluntarily submit their data online, with technical and outreach support from the Alliance. Findings are not comprehensive of the sector as a whole, but rather serve to illustrate the momentum within the Alliance's partner base.



2014 Results Report

Building on results reporting conducted by the Alliance in 2012 and 2013, this report tracks partners' self-reported progress in 2014 toward our shared adoption goal. The scope of this report is limited to distribution within the base of the pyramid demographic, which is the Alliance's target population. As such, conservative assumptions were made to ensure that reported distribution numbers were not reflecting distribution within higher income groups.

Where possible, the report offers year-over-year analysis of Alliance partner activities, including analyses comparing new and repeat respondents to ensure that results are accurately stated and interpreted. New respondents include new entrants to the clean cooking sector, as well as established energy enterprises who are either 1) new to the Alliance's partner base; or 2) newly focused on the Alliance's target demographic population.

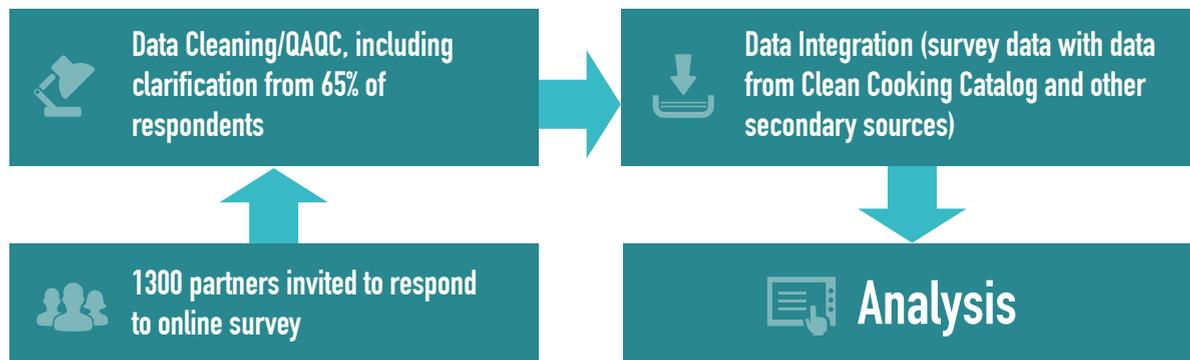


It is important to highlight two important additions to the 2014 reporting methodology:

First, this year's report integrates information from the Alliance's [Clean Cooking Catalog](#), a global database of cookstoves, fuels, and performance data. Test results and reported stove and fuel characteristics were used to estimate the degree to which clean and efficient cookstove and fuel volumes are scaling up by [IWA performance tier](#), interim guidelines for stove and fuel performance. As more technologies and testing data are added to the Catalog, the sector's ability to track trends in the availability of clean and efficient cooking solutions and their impacts over time will continue to improve.

Second, the Alliance continues to strengthen its efforts to track the status of fuel production, accessibility, distribution, and use, in order to better assess health and environmental benefits. While this year's estimates better capture the expanded reach of fuels, particularly in China and India, estimates are still a limited representation of the growth in the fuels sector. While we have captured more information on clean fuels distribution to the base of the pyramid demographic for LPG and biogas, we only received data from a subset of known clean fuels enterprises in our focus countries. As a result, readers should consider these findings to be conservative, and interpret them in the context of other indicators of market health within the clean cooking sector.

Information presented in this report is based on self-reported data from the Alliance's diverse partner base



Data collection and sources

The Alliance's partner base includes cookstove and fuel designers, manufacturers, distributors, testing organizations, researchers, local implementing partners, consultants, carbon asset and offset project developers, multilateral institutions, investors, donors, government and corporate partners, and other organizations. The majority of the data was collected via an [online survey](#) designed and administered on behalf of the Alliance by [Forest Trends'](#) Ecosystem Marketplace, with technical and outreach support from the Alliance secretariat and its regional market managers.

- The survey prompted partners who support the same program at different points in the value chain to coordinate their responses to improve accuracy and minimize double counting.
- Responses were reviewed for quality and accuracy, and confirmed by partners. 65% of respondents provided clarification and / or confirmation of their responses.
- Ecosystem Marketplace analyzed the survey results that are presented in this report.

A mixed methods approach was used to integrate self-reported data with other key sources of information, including

- Alliance grantee reports, the Clean Cooking Catalog, and EPA data used to estimate stove and fuel performance
- Data from the International Energy Agency, World LPG Association, Global LPG Partnership, and the Census of India and the India Ministry of Petroleum and Natural Gas study used to estimate and standardize data on clean fuels.

Definitions for “clean” and for “efficient” align with the ISO IWA tiers for efficiency/fuel use and indoor emissions

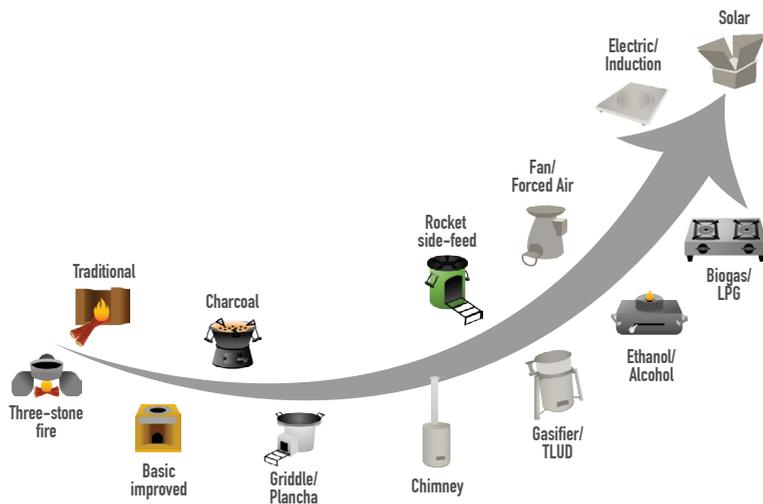
The Alliance developed definitions for “clean” and “efficient” to track progress toward our key milestone (100 million households adopting clean and/or efficient stoves and fuels by 2020). These definitions align with the ISO International Workshop Agreement (IWA) Guidelines for evaluating cookstove performance. The IWA is an interim framework to evaluate performance and safety of cookstoves using four indicators, each based on multiple metrics. Performance is rated from tier 0 (lowest) to tier 4 (highest) for each indicator.

The Results Report focuses on two ISO IWA indicators:

- Efficiency/fuel use
- Indoor emissions

The Alliance considers stoves and fuels that are tier 3 or higher for indoor emissions to be clean and those that are tier 2 or higher for efficiency/fuel use to be efficient. Stoves and fuels that meet either one or both criteria are considered clean and/or efficient in this report.

Figure 3: Driving toward cleaner and more efficient cooking technologies

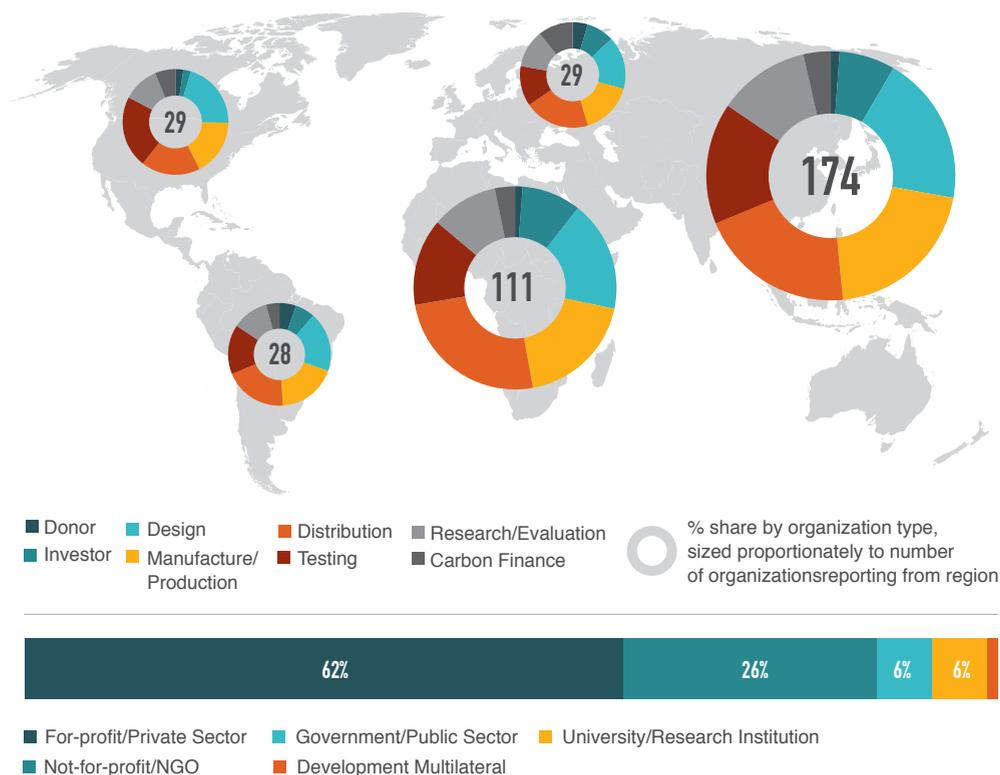


Source: 2014 Results Report. Global Alliance for Clean Cookstoves

Major enterprises are responding to the survey in greater numbers

- 42% of Alliance partner stove and fuel enterprises shared information on their activities in 2014. The Alliance worked to ensure reporting from all major enterprises that reported in previous years, all enterprises funded by the Alliance, and major new players identified in Alliance focus countries.
- The number of distributors responding increased by 7% from 2013–2014.
- More than half of 2014's responses came from private sector partners.

Figure 4: Distribution of survey response rates (region) by respondent role in value chain, 2014



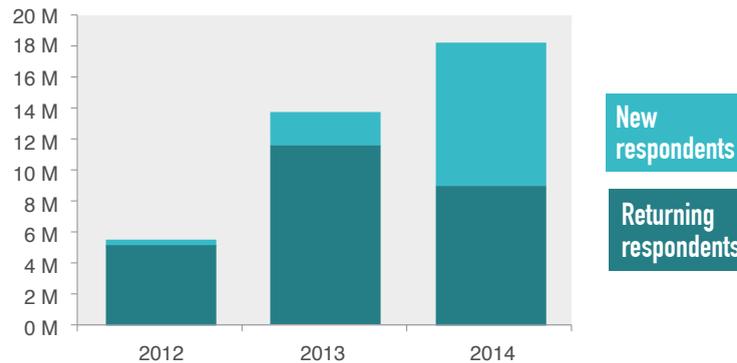
Source: 2014 Results Report. Global Alliance for Clean Cookstoves

Notes: Based on 369 organization responses

New respondents account for over 50% of stoves and fuels distributed in 2014

New respondents include enterprises as well as implementing organizations new to the clean cooking sector, as well as established energy enterprises who are either 1) new to the Alliance's partner base or 2) newly focused on the Alliance's target demographic—the base of the pyramid.

Figure 5: Stove volumes distributed by new and returning respondents, 2012–2014



Source: 2014 Results Report. Global Alliance for Clean Cookstoves

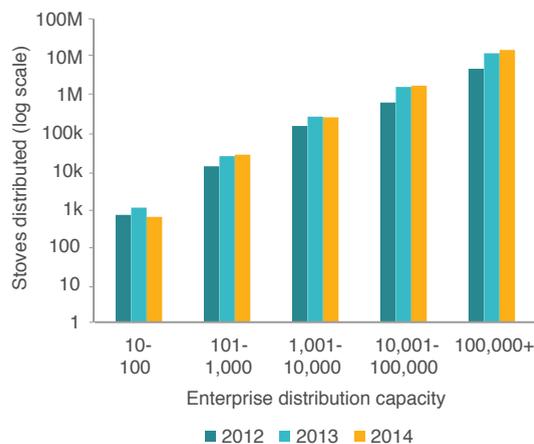
Notes: Based on 407 organizations responding in the 2012–2014 timeframe on distribution activities

Private sector partners not only made up the majority of 2014 respondents, they also reported 53% of distribution volumes. The growth demonstrates that the transition towards a market-based approach to scaling the clean cooking sector is well underway.

Enterprises of all sizes are working to scale their distribution

- The greatest increase was reported by enterprises with an annual distribution capacity of 100 K or more stoves. 3% of enterprises (n=10) reported 60% of stove and fuel volumes in 2014.
- Distribution volumes for medium-size enterprises remained relatively steady. 32% of enterprises reporting in 2014 distributed 1,000–10,000 stoves, and 28% of enterprises distributed 10,001–100,000 stoves.
- While the 15 partners with the capacity to distribute up to 100 stoves each year reported substantial drops in distribution, these smaller enterprises continue to maintain their limited share of the market each year.

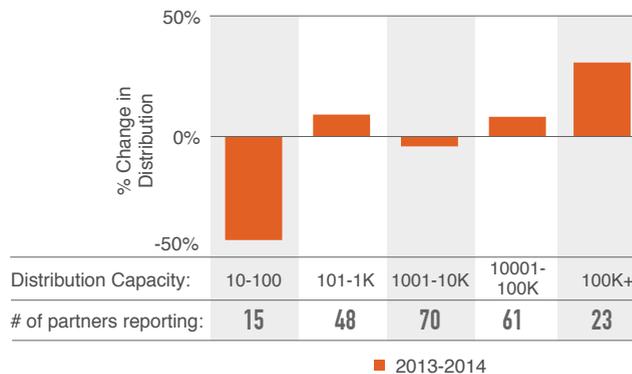
Figure 6: Reported distribution capacity of enterprises, 2012–2014



Source: 2014 Results Report. Global Alliance for Clean Cookstoves

Notes: Based on 539 distribution responses collected from 2012–2014

Figure 7: Percent change in distribution capacity, 2013–2014

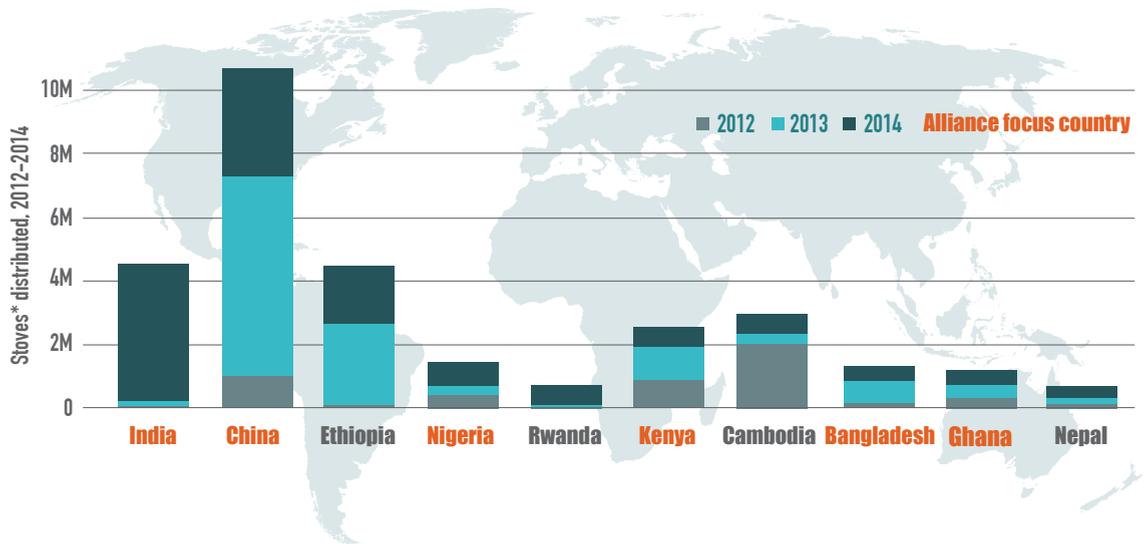


Source: 2014 Results Report. Global Alliance for Clean Cookstoves

Notes: Based on 417 distribution responses collected from 2013–2014

Six of the Alliance's eight focus countries are in the top ten for reported distribution in 2014

Figure 8: Top ten countries for reported distribution, 2014



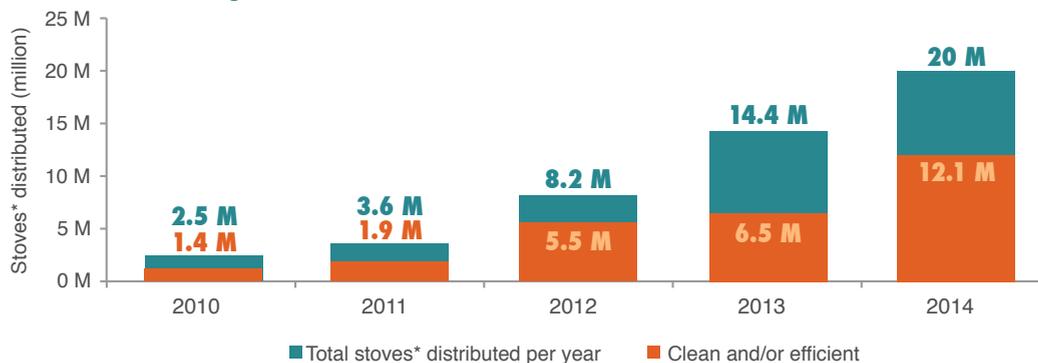
Source: 2014 Results Report. Global Alliance for Clean Cookstoves

It should be emphasized that country-specific data are particularly vulnerable to some of the inherent limitations of self-reported data. In some cases, what appear to be major shifts in reported distributions are likely influenced by changes in reporting, including previous underreporting, lack of response from enterprises who have a large share of the market in some countries, as well as the major influence of a few large enterprises who reported for the first time this year. In other cases, such as in Bangladesh, enterprises developed strategies for adopting a more market-based approach in 2014. Nigeria and Nepal more than doubled the distribution volumes reported in 2013. India and Rwanda experienced the most significant percentage of reported increase between this year and last year and from 2012 to 2014. For India, this was certainly influenced by previous underreporting and much better reporting within the clean fuels (LPG and induction stoves) sector.

*Household stove equivalents estimated from fuel volumes.

20 M stoves and fuels* were reported distributed in 2014

Figure 9: Annual trends in household distribution, 2010–2014



** Household stove equivalents estimated from fuel volumes, starting in 2014
 Source: 2014 Results Report. Global Alliance for Clean Cookstoves

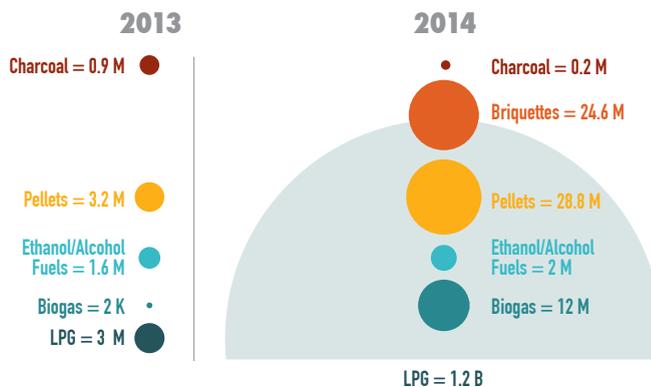
From 2013 to 2014, the number of stoves and fuels distributed increased by almost 50%.

Stove and fuel distribution volumes have more than doubled since 2012.

For 2013 and 2014 where data on clean fuels were available, fuel volumes were converted into household 'stove equivalents.' Stove equivalents represent the number of households the reported volume of fuels could supply, assuming each fuel would supply 100% of the households' cooking energy needs.

Fuel results are thus conservative, given 1) the tendency for households to 'stack' or use multiple types of stoves and fuels; and 2) the fact that we assumed a low combustion efficiency rate for all fuel types.

Figure 10: Reported fuel distribution, 2013–2014

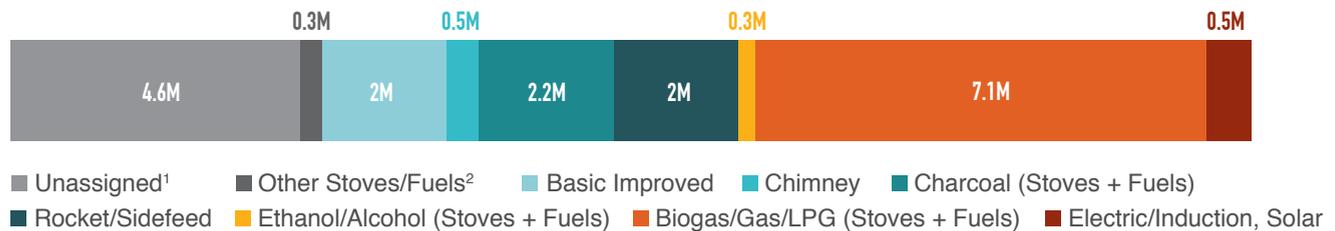


Source: 2014 Results Report, Global Alliance for Clean Cookstoves

A diverse range of stove and fuel products were distributed in 2014

- Stove and fuel type was known or assigned for 14.8 M stoves and fuels, based on either direct reporting or determination based on reported stove characteristics. 4.6 M stoves and fuels were unclassifiable due to limited descriptive data provided.
- Biogas/gas/LPG stoves and fuels were the largest single category distributed, with 5 M stoves and 2.1 M fuel household equivalents reported distributed; over 7 M combined, this represents more than one-third of all reported distribution. The next three most common types (charcoal, basic improved, and rocket/side-feed) each comprise about 10% of the total distribution volume.
- At tier 4 for indoor emissions, fuels and stoves like LPG, biogas, solar, ethanol, and induction are the most likely to meet WHO indoor air quality guidelines.

Figure 11: Distribution of stoves and fuels by type, 2014



¹ Stoves without sufficient information to classify

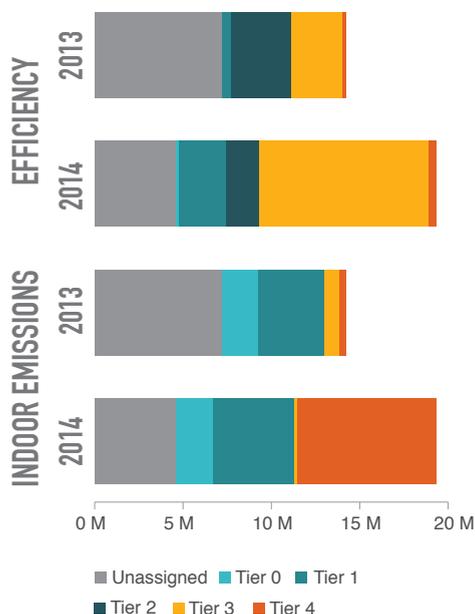
² Stoves/Fuels with distribution volumes less than 250,000 in one year

Source: 2014 Results Report. Global Alliance for Clean Cookstoves

Notes: Based on 14.8 M stoves and fuels (converted to household stove equivalents) reported with sufficient information

More clean and/or efficient stoves and fuels are being distributed each year

Figure 12: Distribution of stoves and fuels by efficiency and indoor emissions tiers, 2013–2014



Source: 2014 Results Report. Global Alliance for Clean Cookstoves
Notes: Based on 14.8 M stoves reported with sufficient information to estimate tiers in 2014, and 7.1 M reported in 2013

- Over 12 M clean and/or efficient stoves and fuels were distributed in 2014. Of those stoves and fuels, over half were estimated to be in the highest performing tier (tier 4) for indoor emissions, a ten-fold increase from 2013.
- The volume of LPG, biogas, solar, ethanol, and induction stoves increased from less than 500 K household stove equivalents in 2013 to nearly 8 M in 2014. As a result, 99% of fuels distributed by partners were clean and efficient: 99% were tier 3 for efficiency and tier 4 for indoor emissions.

More publicly available data on stove type and performance is needed, however. 4 million stoves, covering 325 different stove models, were reported as tested in 2014, but only 18 models had testing data shared in the Catalog. These data are essential for key stakeholders, including consumers, investors, donors, and policy makers who want to compare the attributes of available stove and fuel technologies. They are also essential to estimate the health and environmental impacts of specific cooking technologies.

800 K (4.2%) distributed stoves had performance data in the Catalog

Performance was estimated for 11.7 M (60.4%) distributed stoves based on reported model and stove type

Performance was estimated for distributed fuels and assigned to 2.2 M (11.1%) household equivalents accordingly

Performance data was not in the Catalog and could not be estimated for 4.7 M (24.3%) of distributed stoves

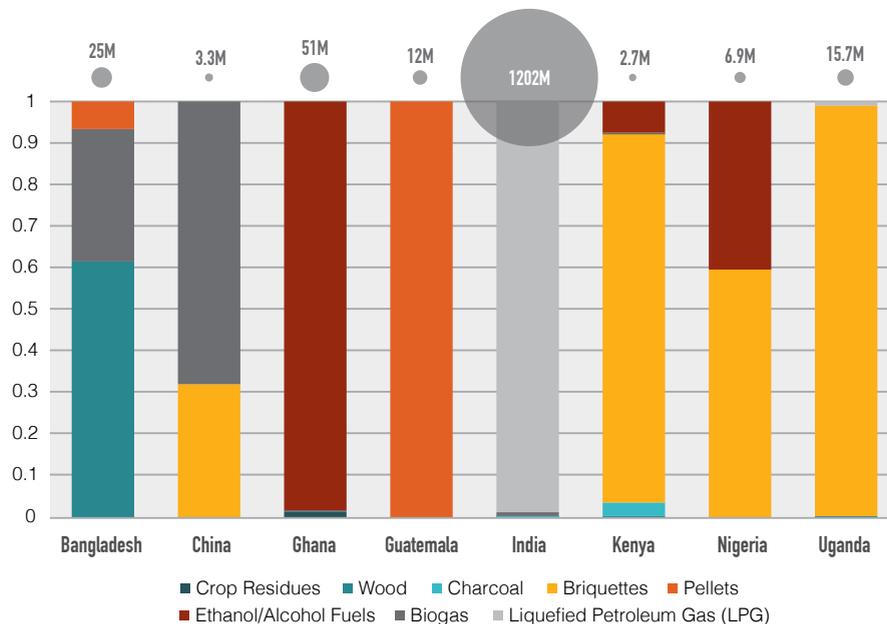
2014 estimates better capture momentum on scaling up fuels

The Alliance continues to better capture the status of fuel production, accessibility, and use, and to strengthen its partnerships with the broader fuels sector, including enterprises focused on processed biomass, biogas, ethanol / alcohol, and LPG. The Alliance is making targeted efforts to reach more fuel partners and increase its engagement in the fuel sector; as a result, around 50 new partners focused on fuels were invited to complete the Results Report survey in 2014.

While there have been exciting innovations and achievements made to scale supply and access to clean fuel around the world (see for example, a recent publication of [case studies on scaling up LPG](#)), at present not all of them are readily quantifiable for the Alliance's demographic, since fuel volumes are seldom reported at the household level, and are generally not disaggregated by customer segment and/ or target population.

- This year's report better captures momentum on scaling clean fuels, particularly in India and China.
- From 2013 to 2014, reported fuel production increased 100-fold and reported fuel distribution increased 200-fold.
- The vast majority of 2014 fuel volumes were contributed by new survey respondents.

Figure 13: Fuel distribution by focus country, in KG, 2014



Source: 2014 Results Report. Global Alliance for Clean Cookstoves

Beyond distribution, the Alliance is working to evaluate adoption of clean cooking

2014 results illuminate promising trends in the distribution of a wide range of clean and/or efficient cooking solutions:

- 20 M stoves and fuels were reported distributed in 2014, and over 12 M of these were clean and/or efficient. 50 M stoves and fuels have been distributed since 2010, including over 28 M clean and/or efficient cooking solutions.
- There is increased private sector engagement in the manufacture and delivery of clean and/or efficient stoves and fuels, including new entrants to the cooking sector and established energy enterprises who are new to the base of the pyramid demographic.
- While large players drove the bulk of the progress reflected in the 2014 results, enterprises of all sizes are working to scale up their operations.
- Publicly available data on stove type and performance is limited, but increasing.
- This year's estimates better capture the expanded reach of fuels, particularly in China and India, but estimates remain a limited representation of the growth in the fuels sector.
- More clean and/or efficient stoves and fuels are being distributed each year.



Beyond distribution, accurately tracking progress towards the adoption of clean and/or efficient cooking solutions involves an understanding of the extent to which households are using stoves and fuels.

- There is increasing recognition across the sector that mixed stove and fuel use, i.e. stove 'stacking,' is a reality. Beyond distribution, we need to better understand the mix of cooking technologies being used within a single household, as well as the 'intensity' of stove and fuel adoption. Maximizing environment, health, and livelihood benefits will involve continued efforts to eliminate use of the three stone fire, and to promote intensive use of cleaner, more efficient cooking technologies.
- The Alliance is also committed to better understanding the drivers and determinants of sustained adoption of clean cooking. As the clean cooking market matures, we need to better understand the extent to which users are replacing clean and efficient stoves (repeat customers), along with the extent to which they are acquiring additional stoves and/or fuels to supplement their existing cooking systems. Above and beyond technical performance, this necessarily involves a focus on the user perspective, including the role of behavior change communication and gender in fostering adoption. It also involves understanding barriers and enablers at the household, community, institutional, and policy levels.

The annual results report is only one component of the Alliance's monitoring and evaluation system. As we measure progress toward our goals, findings should be interpreted in the context of other indicators of market health within the clean cooking sector. We welcome input from our partners as we redesign our methodology and approach to better capture the activity in the sector.

Readers should consider these findings to be conservative, particularly as the Alliance continues to strengthen its efforts to track progress on fuels. Findings are not comprehensive of the sector as a whole, but illustrate the momentum within the Alliance's partner base.



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The Alliance is grateful to all partners who contributed precious time to provide data for this report. The results report provides only a partial reflection of their valuable contributions to the clean cooking sector.

A searchable online directory of the Alliance's partners is available at <http://cleancookstoves.org/partners/>.

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