

**Vivien Foster** World Bank Group

**Ryan Hobert** United Nations Foundation

Male Speaker Welcome to today's webinar hosted by the Clean Energy Solutions Center. We're fortunate to have Ryan Hobert from the UN Foundation and Vivien Foster from the World Bank, informing us on the Sustainable Energy for all Global Tracking Framework report. One important note I've mentioned just before we begin our presentation is that the Clean Energy Solution Standard does not endorse or recommend specific products or services. Information provided in this webinar is featured in the Solution Center's resource library as one of many best practices resources reviewed and selected by technical experts.

Before we begin, I'll quickly go over some of the webinar features. For our audio you have two options, you may either listen to your computer or over your telephone. If you choose to listen to your computer please select the mike and speakers option in the audio pane. By doing so we will eliminate the possibility of feedback and any echo, and if you select the telephone options a box on the right side will display the telephone number and audio pin you should use to dial in. And panelist we ask that you please mute your audio device before the presentations began.

If you have technical difficulties with the webinar you may contact the GoToWebinar's help desk at 888-259-3826 for assistance. If you like to ask a question we ask that you use the questions pane where you may type in your question that's on the right in the pane. If you have difficulty viewing the materials through the webinar portal you will find PDF copies of the presentation at [cleanenergysolutions.org/training](http://cleanenergysolutions.org/training), and you may follow along as the speakers present. Also an audio recording in the presentations will be posted to the Solution Center training page within a few weeks.

Now, we have a terrific agenda prepared for you today that is focused on your recently released Sustainable Energy for all Global Tracking Framework report. We will be hearing from Ryan Hobert first followed by Vivien Foster who will cover the report that provides a comprehensive overview of a 188-country status with respect to action on energy access, energy efficiency and renewable energy as well as energy consumption.

Now, before our speakers begin their presentations I will provide a short informative overview of the Clean Energy Solution Center initiative. Following the presentations we will have a question and answer session

and then we will wrap up with a very brief survey in closing remarks from the panelist?

The slide provides a bit of background in terms of how the Solution Center came to be. The Solution Center is an initiative of the Clean Energy ministerial and is supported through a partnership with UN Energy. It was launched in April of 2011 and is primarily led by Australia, the United States and other CEM partners. Outcomes of this unit partnership include rapport of developing countries through enhancement of resources and policies relating to energy access. The no-cost expert policy assistance and peer-to-peer learning and training tools such as the webinar we're attending today.

The Solution Center has four primary goals. It serves as a clearing house of Clean Energy policy resources and it also serves to share policy best practices, data and analysis tool specific to Clean Energy policies and program. The Solution Center delivers dynamic services that enable expert assistance, learning and peer-to-peer sharing of experiences. Lastly the center also shares dialogue on emerging policy issues in innovation around the globe. Our primary audience is energy policymakers and analyst from government and technical organizations in all countries but then we also strive to engage with the private sector, NGOs, and civil society.

And the mark key feature that the Solution Center provides is our expert policy assistance. Ask an Expert is a valuable service offered to the Solution Center. We have established a broad team of over 30 experts from around the globe who are available to provide remote policy advice and analysis to all countries and at no cost. In the area of energy access, we are very pleased to have Ellen Morris serving as our expert. Ellen brings in an incredible amount of expertise to the table. So if you have a need for a policy assistance relevant to energy access including enterprise development and microfinance as well as any other Clean Energy sector, we encourage you to use this beautiful service.

Again, this assistance is provided free of charge and to request assistance you simply submit your request by registering through our Ask an Expert feature and that is that [cleanenergysolution.org/expert](http://cleanenergysolution.org/expert). We also invite you spread the word about this service to those in your network and organization. We encourage you to explore and take advantage of the Solution Center resources and services including the expert policy assistance described to our newsletter and participate in this webinar.

Now, I'd like to provide brief introductions of our distinguished panelist. Speaking first today we have Ryan Hobert, Director for Energy and Climate Change at the United Nation's Foundation. Following Ryan, we will hear from Vivien Foster, Sector Manager at the Energy Unit in the Sustainable Energy Department of the World Bank. Vivien will tell us about the global tracking framework report and how it provides answers to the challenge of measuring and report it in progress towards achieving the

Sustainable Energy for All objectives. With those brief introductions, I'd like to turn the webinar over to Ryan who speaks to us about UNF engagement and Sustainable Energy for All in the global tracking framework. Ryan welcome.

Ryan Hobert

Thanks very much. We're excited to talk to you today about the global tracking framework. Before Vivien does that I'd like to provide a little bit more information about Sustainable Energy for All, I think a number of you are fairly familiar with this. It was launched in 2011 by the Secretary General of United Nations. As you can see from this slide, the initiative has three key objectives that it seeks to meet by 2030 ensuring universal access to modern energy services doubling the global rate of improvement and energy efficiency and doubling the share of renewal energy in the global energy mix. This is something that we and a number of UN partners including the Secretary General's office have been working on for a number of years based on our noticing that energy was not high on the UN's list of priority issues.

It does not appear in the millennium development goals and so we've had a concerted effort over the last few years to raise the profile of energy issues globally and through the UN system. That work has resulted last year at the Rio+20 summit and over a \$100 billion in commitment in public, private commitments to the initiative and these three objectives with over 70 countries participating and agreeing to explore opportunities to develop action plan on energy within their country. In addition, the general assembly of the UN declared a year of Sustainable Energy for All in 2012 and just late last year agreed to a decade of Sustainable Energy for All to begin in 2014 which shows that we have momentum and buy-in not only from the Secretary General but also from the member states of the UN which is critical.

Late last year, the World Bank president also joined as co-chair of the initiative along with Ban Ki-moon, and this is really the first for the UN and the World Bank to be partnering in this way. As we enter a second phase that's going to focus on scaling up country actions and public/private partnerships as well as accelerating knowledge sharing and innovation, one of the critical issues is data on where we stand on these three objectives and how we improve overtime to 2030, and that's the focus of our time this morning. Next slide please.

I wanted to quickly to mention that the United Nations Foundation has three key initiatives that we're running in support of the Sustainable Energy for All Initiative and most of you on this webinar today are members of one of these three initiatives, the global lines for clean cookstoves which seeks to improve cooking solutions globally to make them more efficient and cleaner, the energy access practitioner network which seeks to mobilize and galvanize practitioners on electrification globally, now has over 1,300 members, and the global partnership for

energy efficient building which looks as its title says energy efficiency in buildings on a global scale.

Most of you today are members of those three initiatives and if you're not we welcome you to join. These are open-ended partnerships and we welcome more participation. That's all for me, thanks very much.

Female Speaker Thanks for that presentation Ryan. We are holding for a moment for Vivien Foster. Vivien can you hear us?

Vivien Foster I certainly can, yes. Thank you.

Female Speaker Wonderful, welcome. The floor is to you, thank you.

Vivien Foster Thank you very much and we very much appreciate the UN Foundations Initiative in conveying this webinar for algorithm discussion on the global tracking framework. It's very exciting to be able to interact with your network of practitioners across the world and we look forward to an interesting dialogue on this subject. So it's my role not to present to you the global tracking framework. If we could go back one slide, I just wanted to highlight the extent to which this has been a highly collaborative initiative. It was commissioned by the high level panel of the Sustainable Energy for All Initiative recognizing that having three objectives is all very well but you need to be able to monitor them overtime in order to report back to the global community about how well we're doing.

The energy sector didn't have such a framework in place. I think one of the reasons for that is that energy did not form part of the millennium development goals that we've been pursuing since the year 2000. If you think of many of the millennium development goals whether its poverty, whether it's order and sanitation, maternal mortality, primary school enrollment, we have a very good systems for being able to report globally on how different countries are doing but that was not the case for energy. So, really the objective of this effort was to produce such a framework and in order to do that we put together a partnership that was coordinated by World Bank, ESMAP and the International Energy Agency in which 13 other agencies participated including the UN Foundation and the Global Alliance for Clean Cookstoves that we just heard about but also many other UN agencies and other entities that are recognized there on the local government fund slides, so I wanted to recognize just the broad nature of this collaboration. Next slide please.

As a result of this efforts we do now have a global tracking framework to Sustainable Energy for All and there's this increasing debate about the inclusion of energy in the post 2015 framework on sustainable development goals and we have recently seen the publication of the report of the panel of eminent persons and they have actually recommended that a stable energy be included in the post 2015 framework. So, this global tracking framework becomes even more relevant in that context. We did

do two rounds of public consultation and I know that the UN Foundation made use of its practitioner network for that purpose, so, so the work benefit is from two rounds of interaction which they called disposal, the methodology and on the preliminary results.

We constructed a data platform that covers more than a 180 countries, accounting firms, about 98% of the global population, so it's about as comprehensive as you could hope for. And importantly, we build a 20-year history of [danger] [00:14:04] because it's very important to understand where we're coming from that helps us to understand the scale of the challenge going forward.

We didn't collect any primary dates for this exercise, rather we harvested data that was available from a number of dispersal hits and we boil it together into a methodological framework that met the needs of Sustainable Energy for All. The main sources that we use were household surveys for access and national energy balances for renewable to deficiency, and the main agencies that were holding this data were the IA, the UN, the World Bank and the WHO.

In order to construct the tracking framework a big part of our conversation internally and with the broad stakeholders, the community was around methodology which was very challenging because we have to find indicators that were close enough to the Secretary General's objectives to be useful but at the same time have the global data available and that restricted our choice. So, we had to go back and forth between what we wanted to measure and what we could feasibly measure today. The results of that balancing process is listed here with this full central indicators. All of these indicators have limitations but for the moment we're going to need these limitations aside, we'll come back to them at the end of the presentation.

For the moment, we just want to understand what these central indicators are. So, we're going to be measuring electrification in terms of the percentage of population with another activity connection and that's self-reported through household survey. We're going to be looking at modern cooking solutions through the lens of the percentage of population making primary use of nonsolid fuel. By nonsolid fuels we're referring to things like LPG, we're referring to moving away from solid fuels such as biomass, woods, charcoal et cetera.

In order to measure the renewable energy objective we're looking at the percentage of total spinal energy consumption that comes from renewable sources. Renewable sources are defined to be all those that are replenished at a rate faster than they're being consumed and it's broadly defined to include all forms of hydropower, winds, solar, geothermal, ocean energy, et cetera. It's that comprehensive definition.

Finally, perhaps the most challenging issue with how to capture energy efficiency because that is something that is quite difficult to measure. As

we know, energy efficiency is really defined to be the relationship between energy inputs and productive outputs. But that you can only measure at the process level. There is not very much data available except for a few countries. And so we'll be using a proxy which is energy intensity. Energy intensity is the ratio of energy consumption to GDP. And that is an imperfect proxy but we've done our best to make it as sound as it can be and we've done that in two ways.

First of all we focus on primary energy intensity. We think that's important because in developing countries a lot of energy is wasted in the production process through inefficient combustion, transmission distribution. So, it's important to measure primary rather than final energy when we're talking about energy efficiency.

Secondly, we thought it was important to measure the output of the economy in purchasing power terms. Now that sound a bit esoteric but what we're talking about here is that we should value the output of the economy correctly. If we use standard exchange rate to convert the value of GDP, we will tend to undervalue the output of developing countries that have lower domestic price levels. By using PPP measures we offset these buyers and are able to take a more accurate picture of what's going on particularly in the developing Asian economy. Next slide please.

What we're going to do now is we'll briefly review the three main pillars of Sustainable Energy for All and report on the findings of the global tracking framework and then at the end we'll come back and look at the scale of the challenge, so first, energy access, next slide. So our headline results for energy access reported in this slide. On the left hand side you'll see the charts for electrification and you'll see that overall worldwide we've gone from a position of being at 76% access in 1990 to 83% access in 2010. And you might describe that as a modest study but rather modest improvement which amount to less than 1% point per year.

Although most of the new connections made in the last 20 years have been in the urban areas, urban electrification rate have been almost flat. The reason for that is that urban population has been growing so fast that even though most of the electrification effort has been in urban areas, it's only just been enough to keep pace with urban population growth. Despite a smaller level of effort in the rural areas we actually see a steep increase in electrification in rural population in the last 20 years.

Turning to nonsolid fuels, the headline numbers are that access is increased from 47% in 1990 to 59% in 2010. Again, you might describe it as modest but steady improvement again barely 1% point per year and a huge gap between urban and rural areas. Next slide please.

How does this picture look from a regional standpoint? Well, in terms of electrification this chart show you, the arrows show you the movement from where its region was in 1990 to where its region was in 2010. If you look at the last 10 shot you'll see that some of the biggest arrows are in

South Asia and Southeast Asia meaning that these are the regions that have made by far, the largest progress in electrification over the last 20 years and to the extent that we see any improvement until globally it's largely being driven by what's happening in Asia.

We also note that as of today there's a very wide dispersion in electrification rights from around 20% to 30% in Oceania and Sub-Saharan Africa on the [indiscernible] [00:20:19] to many regions such as Latin America, North Africa, caucus is in Central Asia, East Asia, developed world where we are already over 90% electrification.

On the right hand side we see the same story for the modern cooking city access to nonsolid fuels and there you'll see actually there's a more long arrows meaning that more regions have made relatively good progress in this area. And in particular South Asia, Southeast Asia, Western Asia and Latin America have all increased access by more than 20% points over the period which is a good performance. Next slide please.

If we look at today's energy deficit, energy access deficit we'd basically see that in the case of electrification almost all of those people without access are concentrated in two regions, Sub-Saharan Africa and South Asia. Whereas in the case of clean cooking on the lower set of charts the deficit is more broadly spread. We have significant unserved populations in Sub-Saharan Africa and South Asia but also Southeast Asia and East Asia. In terms of the rural split you'll see that almost all of the unserved population today is in rural areas. Did that mean that in the future we only need to worry about rural electrification? We would say no, because while today's energy deficit -- actual deficit is almost entirely rural, a 100% of the anticipated population growth over the next 20 years is in urban areas. And therefore the urban challenge will continue to be a part and parcel of this problem going forward, so overall, 1.2 billion without access to electricity and 2.8 billion cooking with solid fuels. Next slide please.

Now, how rapidly can countries progress on electrification? We put a lot of emphasis in the report on fast moving countries and in this slide you see the green bus tell you the average annual number of millions of people that we're electrified. So, for example India electrified 23.7 million people every year on average for the last two decades. China electrified 12.9 million and so forth. As you would expect the largest absolute progresses in the largest countries, so India and China stand head and shoulders above the others in terms of the absolute progress made both on electricity and on cooking in the lower panel. However, what perhaps more interesting is to look at the progress that countries make relative to the size of their population, what percentage of their populations are countries exceeded and electrifying every year. And what this chart shows us is that in the best cases countries are managing between 2%, 3% sometimes 4% of their population each year but we didn't find any countries that was able to electrify more than 4% of each population a year. So, that seems to present a kind of upper bound on what has been possibly feasible in the

past, and something to bear in mind if we make plans for what might be feasible in the future. Next slide please.

Finally, as you may well be thinking, there's a lot more to energy access than having a connection. In fact in many parts of the world a connection maybe meaningless because there's no electricity coming down the wires. Now, while we weren't able to get very deeply into this then we'll come back later about how we'd like to get more into this in the future. We thought that one initial way of approximating this was to look at average residential electricity consumption from the national energy balances. This gives us a first-order picture of how much energy is flowing in to connected households in different parts of the world.

If you'll see from this chart the story is quite stark in terms of great inequities in the amount of energy that's being consumed. So, whereas in the developed countries at the top of the chart and Western Asia which is actually the Middle East an average household would have 600,000 kilowatt-hours per year of energy consumption. In most of the rest of the developing world particularly in South Asia, East Asia, Sub-Saharan Africa, Southeast Asia, connected household is only receiving between 1,000 and 1,500 kilowatt-hours per year which is a small fraction. Although we do see in some regions that there has been quite a lot of growth, so, if you look at the bar for East Asia towards the bottom of the chart EA, you'll see a big growth between about 500 kilowatt-hours per year in 1200 and 2010, so some regions the world are managing to stay about the amount of energy they're providing to their connected households, and that would be very important. Next slide.

So we've come through the energy access headline results, we now turn into energy efficiency which is the second pillar of SE for All. Next slide.

As we mentioned earlier our headline indicator is the compound annual growth rate of primary energy intensity to GDP measured in PPP terms. And this is well, how the numbers come out. If we look at the last two decades, well, this has been improving at a rate of -1.3% annually, so we've been getting better just over 1% per year. But actually our progress was much faster in the 1990s when we improved that -1.6 than it was in the 2000 when we exploded to -1% per year. So, it's a modest progress and it's been slowing down, and now the UN in general assembly is saying we need to double it, so clearly there's a big challenge going forward. Next slide please.

How does that picture look different across different geographical regions of the world, and as the next slide illustrates, it's a very widely varying story. In one extreme we have Western Asia which is better known as the Middle East. You can see there that their energy intensity is actually been increasing at a rate of 0.8% per annum for the last 20 years. In other words the situation has been getting worse. Every other region has registered an



improvement although the magnitude of the improvement varies considerably.

In this chart the blue bus gives us the compound annual growth rate which are our headline indicator but the green line show us they're red from the right hand access. They show us how the actual underlying energy intensities had shifted. So for example, the caucus is the Central Asia, CCA started with the highest energy intensity around 30 megajoules per dollar of GDP and they had the biggest absolute reduction in energy intensity improving over -3% per annum. But even at the end of the period the green arrow is still just close to 20 megajoules per dollar of GDP which is much higher than any of the other regions if you look. So they were the fastest improvements but they're still the most energy intensive economies in the world.

Similarly, you'll see regions that started out with relatively low energy intensities. If we look at the European Union for example the improvement has been -1% per annum, steady but not dramatic but the energy intensity remains among the lowest in the world if you look across the green arrow is very far down around 10 megajoules per dollar of GDP. Here, we see a varied performance across different regions of the world.

One of the things that surprised us particularly was how energy intensive Sub-Saharan African economies are. On the far right hand side you'll see that the green line, the Sub-Saharan Africa is relatively high up. It's relatively close to 20 megajoules per dollar. This is very ironic because as we know Africa has a very limited energy supplies. There's a lot of undersupply of energy and yet despite that energy is not being used very efficiently. So that's a very stock story depth. Next slide please.

The global tracking framework also allows us to drill down to the country-level, so while we are presenting global results and regional results in the reported self and in the accompanying online database you can look how all of these indicators for individual countries and that's maybe very useful depending on where you're sitting and what you're interest are? This slide floats the compound annual growth rate over the last 20 years of the improvement in energy intensity against the starting point for energy intensity in 1990. It shows as sort of if you like the lines slopes on downwards from left to right which is exactly what you'd expect, what it's telling us is that countries had started out with relatively low energy intensities in 1990, countries like Japan that are close to the origin there couldn't make very rapid progress because they were already very energy efficient and so their options for improvement were more limited.

Countries like China on the other hand, that appears on the bottom right hand corner started out with very high levels of energy intensity over 30 megajoules per dollar. As result because they made very serious policy commitments we're able to move very rapidly because there were many opportunities to improve on that energy efficiency. So China really stands

out among the larger countries that's having made particularly rapid progress of around 5% per year. Next slide.

In this slide, we compare the energy that countries consumes on the left hand side that's accumulative energy consumption over the last 20 years with the energy that they saved as a result of their energy efficiency effort for the reductions in energy intensity. So what's very interesting here is on the left hand side you can see how heavily skewed global energy consumption is, really it's the larger economies that have a dramatically higher levels of energy consumption, and in particular the US and the China.

On the right hand side what's very striking is that China through its very major efforts on energy efficiency was able to save 1,300 extra joules and that is almost the same as the amount of energy that China consumed over the last 20 years. So in other words without these efforts, China would have made it twice as much energy to support its current economy. So this is a very dramatic improvement that has been registered in China over this period. It's also striking that the US has made important improvements in energy intensity. The US' energy intensity savings amount to about 20% of what it consumes over the period which is also an important achievement, followed by India, Germany, were the next largest in terms of the impact of their energy savings efforts. Next slide please.

Finally, we turn to renewable energy as being the third pillar of Sustainable Energy for All. Next slide please.

Renewable energy tells a very interesting story because there are two sides to this coin and depending on which way you look at it the glass may seem half-full or half-empty. So if we look first at the right hand side this chart tells us the story that we're all very familiar with of the renewable energy revolution, the fact that wind and solar power has been growing a year on year a double digit growth rate, 25% per annum for 20 years, that's an extraordinary rate of approach for wind power, 11% per annum for 20 years in the case of solar. This is a very dramatic achievement. However, the renewable energy growth has to be seen in the context of the various small base from which it began, the various small level from which it began.

And it also has to be seen in the context of the fact that global energy demand has continued to grow year on year for the last 20 years from a very high base and therefore, if you express renewable energy as a share total funnel energy consumption which if you remember is our headline indicator. You see that the movement is not very great. In particular, it moved from about 16.6% in 1990 to just 18% in 2010. A movement of less than 2% points over a 20-year period.

So, this is quite a sobering in the sense because it tells us despite the renewable energy revolution we're still having a relatively small impact

on the overall level of the overall share renewables in the global energy mix. Next slide please.

So, as we said 18% of our final energy consumption was renewable in 2010 so what is behind the 18%, what is that actually made up of? Well, the donut here on the right hand side of the chart sort of impacts the 18% and what we noticed first of all is that about half of the 18% is traditional biomass. These are the traditional cooking methods that are being used across Africa and Asia, wood or charcoal being burned on an open fire. And so about half of what we called renewable energy traditional biomass, many people would question whether that traditional biomass is even sustainable because in some parts of the world it's associated with deforestation and so there's a bit of a question mark about how renewable this traditional biomass really is when it takes sustainability into account.

If we turn to the right hand side of the donut these are if you like the more modern forms of renewable energy and you'll see that the purple and yellow wedges essentially relate to modern forms of bioenergy whether it's biomass in the forms of wood pellets, whether it's bioethanol and other forms of biofuel. So, we had half of renewable energies traditional biomass and the other half is modern bioenergy. So, everything else represents only a fraction of it if you like. So, if we look at the final quarter that's at the bottom right hand corner of the donut you'll see that most of it is orange, meaning that hydropower counts for the largest share of that remaining part of renewable energy.

And the more modern forms, the wind, the solar, the biogas, the geothermal, if you add them all up, those are the red, tiny, purples and green slivers, they in totality amount to only 1% of total final energy consumption. So, that is a very sobering finding because I think we're all focusing on this dramatic growth in these forms and yet when you look at them against total energy demand they still remain quite modest even up to 20 years of rapid growth. Next slide please.

So, just as we've done with the other pellets we now look at the -- we look at the global picture, we're now going to look at the regional picture. So, we ask ourselves the question what is the share -- the share of renewable energy in 18% globally but how does it vary across regions? And what we find is that because traditional biomass is such a big part of what we called renewable energy it's actually the less developed regions that have the highest share of renewable energy and then energy mixes. So for example, Sub-Saharan Africa has more than 70% of its energy needs being met from renewable sources. And South Asia and Southeast Asia had about 50% in 1990 but their shares of renewable have been declining consistently as has the share of East Asia here in yellow. The reason for that is that these economies have been industrializing, have been modernizing and during that process they've shifted away from traditional biomass and into conventional forms of energy, and as a result the share of renewable has been going down overtime.

At the other end of the spectrum we have down here this blue lines, the EU and North America started off in 1990 with less than 10% of the energy coming from renewable sources and both of these regions made very firm efforts to scale up renewable energy. As a result the EU is gone I think from around 8% to around 16% and North America has gone from about 69%. It's a very dramatic scale up but still it's still a small share even at the end of this period in 2010. Now, when you put all this together over here and look at where today's renewable energy is geographically you'll find that about two-thirds of it is in Africa and Asia in this blue purple, orange and blue segments down here. Next slide please.

Again, we can drill down further from global to regional now to country level and here we look -- we live aside the traditional biomass and we focus only on the modern forms of renewable energy and we look to see what is the -- what are the countries that have the high share of modern renewable energy in their energy mix and we find that those countries are Tajikistan, Norway, Sweden, Brazil, all of whom are close to 50% coming from renewable energy and that's driven by a mixture of hydropower which is very important for Norway and Brazil and biomass which is very important biofields for Brazil and biomass for Sweden.

So those are the, if you like the highest shares that we see. On the horizontal axis we plot the gross rate of renewable energy over the last 20 years and what we see is that countries like China that started out with a very low share of renewable energy has been growing at over 10% per annum and so they're scaling up very, very aggressively, whereas countries with very high shares overseas did not have such a possibility to grow more rapidly because they may already have used up if you like their renewable energy potential to some degree. Next slide please.

If we look at this in absolute terms these are the countries that have seen the largest cumulative increases in renewable energy consumption over the last 20 years. China is actually number one and United States in second place followed by Brazil, Germany, India, Italy, Spain et cetera. You'll see here that it's basically a mixture of the larger emerging economies and the OECD countries that are sort of top of the league on renewable energy consumption but you'll see that each country has very different colors in its bars indicating that it's a different approach. In the case of China it's been high draw that has largely been responsible for the scale up. In the case of the United States it's been liquid biofields that has made the largest contribution and so forth. Every country has a slightly different story to tell. Next slide please.

Finally, we want to wrap up by reflecting on what all of these means about the scale of the challenge that we are presented with in the Sustainable Energy for All objectives, how feasible are they, what will it take to get there. Next slide please.

If we look back over the last 20 years our message is that a lot has been accomplished in absolute terms but when you compare it to the speed of growth in global population and global economy, a lot of that progress has been diluted by the growth that we've experienced. So take the example of electrification, we've electrified 1.7 billion people in the last 20 years, I think that's pretty staggering achievements, it's a huge achievement. But over the same period global population grew by 1.6% and so in the end our very big achievement has only been slightly ahead of global population growth. I mean cooking it's an even more stock story.

If we turn to the clean energy part of the agenda our efforts in energy efficiency have saved 2,300 extra joules, that's a huge amount. But over the same period global primary energy demand is growing by 1,200 extra joules, so half of the progress if you like has been wiped out by demand growth. And on renewable energy which added a thousand extra joules to our final energy consumption but then with the same period final energy consumption grew by 700 again diluting the impact of that major achievement.

So, this is the story we sort of have been running to stand still because our treadmill is set at a very fast pace, and that's the challenge that we face going forward. Next slide please.

What do all of these statistics we've been revealing, what do they mean for Sustainable Energy for All, so we wanted to put it in -- just put all the numbers together in one sort of dashboard here. In terms of universal access we started out in 1990 with 76% access to electricity, we grew to 83% in 2010 and we're shooting for a 100% by 2030. Similarly for none [indiscernible] [00:40:13] fields we started out at 47% in 1990, we made it to 59% in 2010 and we're shooting for a 100% in 2030.

Now, this calls, look quite challenging but perhaps not completely out of the question if I can put it that way. If we look at energy efficiency we've been improving our energy intensity at -1.3% per annum, we're proposing to double that to -2.6. Again, this looks challenging but perhaps not completely out of the question. On the renewable energy side, we started out at 16.6% in 1990, we grew to 18% in 2010, we're now proposing to double that to 36%. In many ways this looks like the biggest jump although the most challenging increase that we are setting down for ourselves through this Sustainable Energy for All Initiative. Next slide please.

In the global tracking framework we emphasized a lot the relative high impact country. Now, with progress everybody is important. There are certain countries that are making -- that are so large relative to the global scale of the problem that their actions will be the ones that will ultimately determine whether we're able to meet the challenges. So in the case of access, the access deficit, it turns out that approximately three-quarters of the access deficit is concentrated in just 20 countries. The chart here in

blue shows you the 20 countries for electrification and that you'd expect India is by far number one and the rest of the countries are large African and Asian countries. In the case of cooking India again is number one but China is actually a close second in the case of the nonsolid fuel for cooking, and once again, a lot of large African and Asian countries. So these 20 countries for these two agendas are the critical ones. We don't make very rapid progress. In these countries we won't be able to move the global needle towards a 100%.

In the purple chart we see those countries which have the largest primary energy demand today. It helped 20 largest energy demanding countries. Now, if we're going to meet global objectives for renewable energy and energy intensity, the actions of these countries will be the ones that will have a large impact on how the global performance look. As we know China and the US together accounts for 40% of global primal energy demands, so there actions of both of those countries will be absolutely critical and for the 18 countries listed here if you add those in and you could take the top 20, that accounts for 80% of global energy demands. So, these are high impact countries for the Clean Energy agenda. Next slide please.

To what extent are these countries engaged in Sustainable Energy for All? Well, as you know I think Ryan mentioned at the beginning more than 70 countries have opted in to Sustainable Energy for All. In this chart we overlapped the opt-in countries with these deficit measures and we find that around half of the electrification deficit exists in the opt-in countries and about 40% of the cooking deficit. So if these countries are strongly engaged in Sustainable Energy for All this will make a very important contribution to the global objectives but we still have [indiscernible] [00:43:20] are not engaged. In terms of energy consumption the opt-in countries many of them are relatively small energy consumers. They only represent about 11% of global energy consumption. So whatever asset these countries make will not have a big enough impact on the global performance.

In Greenhill we have the remaining Clean Energy ministerial countries. These countries together accounts for about 80% of both the access deficit and the primary energy demand of the world. And therefore the political support of these countries and they have been engaged in the SE for All dialogues we think it's absolutely critical to delivering on the Secretary General's objective. Next slide please.

Is here hope? We've painted a picture at the beginning of relatively a lot less the movement globally. We think there's hope because certain countries are pointing the way and showing us that it is possible to move much faster than what the global averages have shown. So, in the case of access while the population with access has been growing at a rate of any about 1% of global population, certain countries as we've observed have

been growing at a rate between 2% and 4% of population, so it's clearly possible to move faster.

In the case of energy intensity while the world has been improving at just over 1%, the fastest moving countries have been delivering improvements between 4% and 12% per annum, so again we can make more rapid progress. And in the case of the modern forms of renewable energy these have been growing at 3% per annum but the top performers have grown between 7% and 18% per annum showing that more rapid progress is possible. Next slide please.

As I mentioned some of the partners in this initiative included the International Energy Agency and the IIASA, the International Institute for Applied Systems Analysis. These are outfits with tremendous expertise in global energy modeling. Part of what they contributed to this effort was to say given what we know about global energy models thus will it be feasible to meet the Sustainable Energy for All objectives on the business as usual, and if not what will it take to get that?

So, in this slide the purple columns tell us what the Sustainable Energy for All objectives are and the yellow and green columns tell us what are the businesses usual predictions of the global energy assessment in yellow and the International Energy Agency well [indiscernible] [00:45:41] in green. And what they tell us is that for energy access business as usual will not deliver a universal access by 2030. It will take us -- it will increase it just by 2% point essentially.

In the case of energy efficiency the international agency is somewhat optimistic. They think that if all current policies that implement it will actually get quite close to where we need to be but still not quite close to not. Under renewable energy though it's particular a stark that under even if all new policy that currently implement it, the international agency is only predicting 20% renewables by 2030 which falls well short of the objective. Next slide please.

This global energy models are also helpful in allowing us to understand better the relationship between the Sustainable Energy for All objectives and the climate change agenda. And they give us two particular important insights. One insight is that if we're trying to limit the extended climate change we do much better by working at the same time on energy efficiency and renewable energy as a simultaneous packaged agenda than we would if we work on either these things individually. Neither some individually could deliver 2 degrees Celsius but if we focus on both of them together the probability of limiting global warming to 2 degrees Celsius increases significantly.

The other insight that we gain from this global energy models is that there is really no major tension between universal access and global warming and climate change concern because the amount of energy needed to deliver universal electrification is actually quite small. We're talking about

meetings. The basic needs of households, this is not going to add a huge amount to global energy demand. And the estimate is that even with the current mix of conventional renewable energy we would add less than 1% to carbon dioxide emissions by achieving universal access. And this is important because sometimes this is set up as a tension that we can have both of these things so it's important to recognize that there isn't a major trade off here.

Similarly, while there is some tension between the cooking objective and the renewable objective this tension is not very huge. Now, obviously if we're talking about moving people out of nonsolid fuels that means usually we're moving them into fossil fuels like LPG out of traditional biomass which counts as renewable energy into LPG which doesn't count as renewable energy. So, at some level there is a little bit of a tension between the cooking objectives and the renewable's objective. But what the model tells us is that the tension is small even if we met the cooking objective we would be reducing renewable energy share by just 2% each point. Next slide please.

Given the business as usual isn't going to get us to the Sustainable Energy for All objectives, what will it actually take? Well, the global energy models tell us that a substantial scale of investment for these areas of energy will be needed. As of 2010 the world was investing about \$400 billion a year in these three areas. And as you can see energy access which is in red and purple is a tiny, tiny amount. Well, it's only investing about \$9 billion a year in energy access, the other 400 billion is going to renewables in efficiency.

If we look at the additional amount we have to add between \$600 and \$800 billion on top of the 400 that we have to double or triple our investment. And as you'll see that includes a huge scale of access from 9 billion to around about 50 or 70 billion depending on which model you take, so it's a very big scale up but even then it's a very small part of the total investments that is needed. Most of the investments needed are on the renewable and efficiency side.

How will we actually get these investments to flow into the energy sector when there are certain policies that will be important in creating the environment for these investments? First, of all we need to phase out untargeted fossil fuel subsidies so that we can create more of a level playing field between conventional renewable energy and we'll also increase the price signal, the returns for energy efficiency investment. When we do this we need to do it in a way that's carefully target subsidies for access which is where subsidies are really needed to ensure that access is achieved.

We also need to think about introducing price signals for local and global environmental impacts including carbon but also the local health impacts of fossil fuels which can be very serious in some parts of the world. And



finally, we need to adopt stringent technologies done to drive through efficiency gain because as the IIASA repeatedly underscored a lot of the pretty much all of the technology we need to meet the Secretary General's objective already this and the problem is getting people to adapt it. Next slide please.

So, we've now concluded the roundup of the global tracking framework but as I promised at the beginning I want to come back and make some admissions about some of the limitations in this data which I'm sure has been going through people's minds as they've been listening to this. What I think the team would clearly admit is that all of these indicators while they do the job and they're a good starting points for global tracking they will have their limitations and in the sense they don't purposely capture what we were trying to measure. And so an important aspect of the global tracking framework is that it includes a medium term agenda for improving global data on energy and we can come back to that in the discussion but I just want to briefly highlight what the limitations are.

In the case of electrification we feel that our indicator which is the percentage of the population with access to a connection is essentially over estimating access to electricity because it doesn't take into account the fact that many of the people who have electricity have highly inadequate supply. They may not get electricity, they may get it at the wrong time to say, they may get it in a very unreliable form. They may have variability of voltage, so they may not be able to use the energy very much. So we are essentially, the 83% number is an overestimate of electrification if you like. In the case of cooking, we think we're underestimating this sense of cooking, clean cooking, and the reason for that is that we're only able to measure the fuel that people are using, we're not able to measure whether or not they have a decent cookstove. And as the Global Alliance would be the first to tell you, you can actually have safe and efficient cooking if you combine traditional biomass with sustainable harvesting practices and an improved advanced cookstove that can take care of emissions both in terms of human health and in terms of rich improving efficiency.

We have right now have no way of capturing whether are the cookstove that people is a decent cookstove or it's just you know a very inadequate one. And so we need to work on being able to capture the technology. As a result we're underestimating clean cooking processes. In the case of energy efficiency as I admitted at the beginning what we have is a first order approximation. I showed you our headline indicator. In the report we actually go further, we do some statistical decomposition to try and strip out these effect of the structural changes in the economy, we provide a complimentary indicators on energy intensity for industry, agriculture and other services as well as the energy efficiency performance of the energy supply industry itself.

So all of these helps to overcome the limitation but it doesn't get around them entirely and this is where we think a huge effort is needed to improve data on energy efficiency globally. And finally, for a renewable energy we actually think that the 18% number is perhaps quite a serious overestimate of renewable energy because we cannot capture whether it's sustainable or not and given the traditional biomass as half of it and given that there are huge concerns about deforestation in many parts of the developing world. It's questionable whether all of that 18% is really renewable and sustainable. Not only biomass but other aspects of renewable energy ulcerates sustainability concerns and so we're arguing there's a need for protocols to define what kind of renewable energy is also sustainable and the need to improve our ability to measure when that sustainability is taking place.

So that concludes the main presentation. I would like to introduce two colleagues of mine who has joined me here, we have Sudeshna Ghosh Banerjee who works a lot on the energy access part and particularity the data issue and Mikul Bhatia who also worked in the access part particularly on the issue of how to improve our -- measurement going forward so we have a less bindery a more of multitier, or more new ones measure. And we've also been enjoying by Ivan Jaques who is the main author of the Energy Efficiency Chapter which is another, a very challenging piece of the work. So I'm hoping that in the discussions my colleagues will be able to shed for the light on some of these issues. Thank you very much.

- Male Speaker Thank you Vivien and Ryan for the outstanding presentations. Would you have some questions from the audience so we move on to those and we'll use the remaining time to answer and discuss those? Again, you can send in your questions through the question pane on the right and the first question is, "In the indicator and percentage of population with electricity connection are household with solar their home systems or solar lens considered or is it only grid connection?"
- Vivien Foster Would you like us to take a series of questions and then respond or would you prefer to do it one by one?
- Male Speaker That is entirely up to you, which would you prefer? We usually go one by one but ...
- Vivien Foster Maybe if we could take a series of questions and then we can sort of give everyone an option to respond from their own advantage point.
- Male Speaker Okay, do you need me to repeat that one or move on to the next one?
- Vivien Foster That's fine. I think we got that one. Thank you.
- Male Speaker Okay, so next question is many of the members of the practitioner network are focusing on off-grid solutions can Vivien speak more about how in the future off-grid solution grows will be measured going forward? How old

is he reflected in the future household surveys for the next report? Next question is in case of lower nonsolid fuel access is the problem related to inability of the countries to provide nonsolid fuel such as LPG connections in adequate numbers to consumers. And then what kind of activities specific organizations, funding resources, et cetera do you hope to inform with your findings?

Vivien Foster We're pretty good.

Male Speaker Next question is given the 4% upper bound you noted for progress on electrification is it technically and mathematically feasible to get to universal access by 2030?

Vivien Foster Thanks, very good.

Male Speaker And why UN and WB is not supporting renewable base off-grid and micro-grid for rural South Africa and SSA instead of the unreliable grid which encourages people migrating out to cities and increase emissions.

Vivien Foster Okay, so was that in South Africa or in Sub-Saharan Africa?

Male Speaker Both for rural South Africa and Sub-Saharan Africa.

Sudeshna Ghosh Banerjee You're talking with the organization pattern in Sub-Saharan Africa that why should people move to urban areas and should focus more on the rural areas, is that the question?

Male Speaker Let me reread it.

Sudeshna Ghosh Banerjee Repeat that please.

Male Speaker Why are the UN and WB not supporting renewable based off-grid and micro-grid for rural South Africa and Sub-Saharan Africa instead of the unreliable grid which encourages people migrating out in the cities and increases emission?

Vivien Foster: Very good, if you think that's a good place maybe to pause we've got I think six very interesting questions there. Perhaps we could take a round of answers and then come back to the participants.

Male Speaker: Definitely.

Vivien Foster Okay, thank you. I'd like to invite my colleagues to start on these two questions so Sudeshna do you want to start then perhaps Mikul and I'll

maybe pick up the questions about the LPG and maybe some of the broader ones.

Sudeshna Ghosh Banerjee Thank you. Regarding the first question that you ask whether you can actually distinguish between the good collections and the solar home systems or even the modern lighting products in the household service. So this is sort of no. Because typically the question of -- since they do have electricity connection, and it's a yes or no question. And even though we have more detailed question for example is what is your primary source of lighting? In some countries for example Bangladesh where the solar home system is the immediate source of electricity, you may have this information but it is not a standardized choice. Typically, it's just a source electricity which is whether you have a specific connection or not which is much more available.

Vivien Foster So just to clarify on that Sudesha, if a household has a solar panel for example on its roof and someone walks in with a household survey instrument and they have electricity ...

Sudeshna Ghosh Banerjee They would say yes.

Vivien Foster They would say yes, so they definitely included, it's simply that we can ...

Sudeshna Ghosh Banerjee We can distinguish it, yes, exactly. The only place we can distinguish it is in Bangladesh. Where because in the solar home system that they raise -- it's a [indiscernible] [00:59:50] upgraded and distinguished products and it's the way big program there but other than that in most countries they cannot actually say that it's different but given that in most countries solar home systems are more than lighting but it's a very, very small, we can almost assume that in electricity connections that we are talking about is really a great connection.

Vivien Foster But going forward we do have the capability to pick these things up and I think that was the reason that we went to household surveys is because household surveys give us that capability. We knew that in the future there's going to be a lot more action in this awkward space and in this freestanding customs space and through the household surveys we give people the opportunity to report that they have this. If we went to sector data, from the ministry, from the utility it would be a lot harder and we would be much more at risk of missing this very important segment. So, by choosing household services our primary entry point, we hope to make sure we can do justice that someone to work that a lot of these participatory engaged in on the awkward space.

Mikul Bhatia In fact in some ways that brings us to the second question as to how the numerous initiatives by several agencies on the off-grid solution side, however all of those get captured going forward. So, the global tracking team would bring out a medium sum approach where multitier

frameworks could be applied to capture on one hand off-grid solutions and on the other hand look at the quality of supply on grid-based electricity access.

The idea being that rather than looking at specific technologies involved we look at the attributes of electricity supply that can be provided or that are being availed in any given household such that at the lowest fields the amount of electricity and their duration for which it is available and other parameters are just about adequate for lighting purposes. But at the other end at tier 5 there is enough electricity available for almost all of the day, it is reliable, it is affordable, it's a legal connection and so on so it's making all the different attributes of electricity access and therefore can be used for any desired electrical application.

Using this same book it would be possible for all the initiatives which could be solar landing initiatives, solar home systems or other such solutions to be captured as a positive contributions allowing scores of people, scores of households to move from absolutely zero access electricity to at least the loyalty of those access based on the framework and data of these would need to be captured through household service which is what Vivien just mentioned and that's why we have adapted. The household service, the auto data collection and our reports would be to deepen these surveys now as we go forward over the next few years.

Vivien Foster

Very good. I think there was also a question about the nonsolid fuel access, what sort of problems are there. I think there's a range of different problems. In some situation supply that can be a problem and if that's in the rural areas it's very difficult to get distribution systems for these types of product. And even in urban areas, it depends whether the country has the ability to import these kinds of fuels and the distribution infrastructure needed to set up the retail market. But even beyond that there are a lot of retail and problem, so even in countries that -- in the urban areas where the infrastructure exist it's still very difficult for low-income households to switch into nonsolid fuels and the reason has to do with the cylinder sizes often that because LPG is sold in cylinders and the smallest cylinders are actually quite expensive from the perspective of a four-household that can be a real barrier to helping households to adapt this kind of field, so there's a whole host of issues around that. And typically we see that the adoption of this field goes with the organization and it goes as household moving into the middle class, they thought to switch to fuel ladder.

In terms of what do we hope to inform with this work, well first of all you know we're providing here a public good. I think we think that there's a wealth of data in this global tracking framework much beyond what we have been able to showcase in the report and we really hope that people will think about this not just as a report actually but as the database that they can go into, they can pull up the data for the countries that they're interested in. They can do their own analysis. They can inform their own kind of policy dialogues that we're very much encouraged people to do

that. We do have the website, it was [WorldBank.Org/SE4ALL](http://WorldBank.Org/SE4ALL) and there is the -- if you scroll down there you'll find a button that will take you straight into the online database, so we encourage you to do that.

We think that this kind of information is very important for policymakers that could have helped to identify where action is most urgently needed. And that's why we think that the whole story around the high-impact countries is very useful because it says these are the countries where the global community needs to really concentrate its support to ensure that we make the progress as needed. We also think that the -- we hope that we can direct people's attention to what we called the fast moving countries.

In this report we weren't able to dig in to what was behind this very high performance how do they do it, how do they managed to electrify 4% per year. But we think that there are many important stories to be told there and we hope that through the Sustainable Energy for All initiative, through this practitioner and that works and through the many partnerships that we have that we should be having more dialogue and exchange that this whole countries can learn from what the fast moving countries have achieved.

There was a very interesting question about whether it's 4% upper bound and that I think this is something that we need to dig into a little more deeply. Clearly, one of the difficulties here is that while a country made performance 4% year it maybe because they're starting from 10% of electrification and when your electrification is very small there are many low hanging fruit, there's many quick winds that you can do. If you're an 80% electrification that would be a lot harder to move at 4% per year, so it really is relative to the country starting point and so that's something that needs to be qualified.

Finally, on the issue of off grid renewable energy, I'm not familiar with the specific case of South Africa but I am certainly familiar that across Sub-Saharan Africa we do have a lot of programs that focus on off grid renewable electrification. We tend to walk both on the urban and in the real space. We see it important role for both of them.

Ryan Hobert

And Vivien this is Ryan Hobert again, if I can just say a word on that. The energy access practitioner network was specifically set up to address this issue of off-grid electrification and it's an integral part of the Sustainable Energy for All initiative. I think a lot of people know that IEA came out with some research a couple of years ago that showed that two-thirds of the work to get to universal energy access would come off grid and so both whether it's many grids of home systems, we strongly believe that off grid is something that needs to be democratized and that we need to work a lot more on and as Vivien mentioned the World Bank has the number of initiatives but we would encourage whoever was asking the question to join the practitioner networks and get involve.

Male Speaker Very good, I'll read off -- we have about six more questions so I'll read the rest of them then you can handle this. First question is who is funding the development of clean solid fuel cookstove? Any solicitations coming up? And next question is what in particular is done as it relates to energy efficiency in building? And then are the bottom of solutions being considered prominent access solutions or are they considered pre-electrification options within the sustainability for all framework? The next question is many of the improvements and innovations being made in the energy sector or by the private sector? How important do you think it is to include private groups in the tracking framework and how possible do you think this might be? Next question is what is the potential for future data collection around households that are technically electrified but experience highly irregular unreliable or effectively no electricity, so that we are no longer underestimating the number of households without energy access.

And then the last question is you mentioned there was 100 billion in funds for public and private initiatives to support access to energy, how can these funds be accessed?

Vivien Foster Very good, is that the full set of questions?

Male Speaker We just had one more come in, so I'll read that one for you. I am a junior energy adviser on a GIZ energy project in Nigeria and we are focusing on renewable energy, energy efficiency in rural electrification with very little capacity in Nigeria as it relates to energy efficiency. How can we build capacity in this area within a short time?

Vivien Foster Very good. I'd like to hand it over to my colleague Ivan Jaques. There were a couple of questions there on energy efficiency. I think one was on what needs to be done in the building, energy efficiency building's agenda and the other one is how might one go about building capacity for energy efficiency in a country like Nigeria. So maybe we could stop with those two questions.

Ivan Jaques For the first one there's actually a lot going on in the energy efficiency in buildings. In here you have to distinguish basically two, actions geared towards the existing stock and actions towards new buildings. So basically countries have if they want to do this in a sustainable way they go with good building codes that not only take care of stay safety issues in the construction but also on the energy consumption of those buildings. So I hear you have all the work on the thermal conductivity of the materials that use the windows that you use and also the equipment that it's inside the buildings, all the air-conditioning equipment.

And of course there's a whole movement in green buildings so I would look at with countries like for example Denmark has been doing that have

continuously improved their building codes and made more stringent requirements on their energy consumptions. In terms of capacity building in countries like Nigeria and in fact in many developing countries, well, here I think that they first have to start by knowing what's out there, what good experiences are, what are the basic key sectors in your country because there is a -- the engines are very different and you have formal education, you have informal ones through conferences and exchange of good practices, so I don't know. There's so much going on there in energy efficiency in all grants.

Vivien Foster

Right. And we should mentioned that there's some actually move underway on the Sustainable Energy for All that set up a hub for energy efficiency and if Dennis Gartman is currently exploring that and part of what they want to do is to provide some technical assistance facility for countries like Nigeria who may want to make progress on this agenda so I think it's very much being considered as part of the initiatives.

Thanks very much Ivan. Mikul I wanted to ask if you could talk a little bit about this issue of -- the solar lanterns and the solar home systems of age we consider them pre-electrification, how do they count in terms of meeting the universal access goal.

Mikul Bhatia

Sure.

Vivien Foster

And perhaps those are the issue about unreliable supply and how we might deal with that in the future.

Male Speaker

Sure. So different countries, different provinces, different communities and different households are at different levels of energy access, that's the perspective that we are trying to build to the whole energy access discussion. The first tier is that for the household which is unlikely to be connected by grid for several years that the immediate requirement is at least to have a lighting access which under the new framework is considered as a tier one access if you at least have a solar lantern or something equivalent for lighting purposes.

A second tier is where you have you know a lighting solution plus a communication solution like television or phone and plus a panel that this basic set is considered to be your tier two and the supply needed for this should be available for at least a few hours in the day and that it all none is being specified for that. The idea is that on one hand this could be called as pre-electrification because eventually these households would aspire to move to deeper levels of electricity access. But is that the goal that we set for ourselves that everybody should really move to full electrification that may not be realistic to expect.

So a more realistic goal is that different countries and different countries different provinces may choose to go for a certain minimum tiers of access. They can just elaborate what we're doing here, for example a country where the greatest hardly present at all. There could be



simultaneous efforts on improving the grid but at the same time providing off-grid solutions and these off-grid solutions would enable people to move from tier zero to tier one or tier two or tier three. On the other hand those who are getting connected to the grid might be moving from tier zero to tier three, tier four or higher depending on the quality of supply from the grid.

So we are not really getting into the discussion on pre-electrification and real electrification. Everything is considered as electrification depending on the goals of the countries sets for itself. A country which is logging far behind and can only aspire to target a minimum of tier one or a minimum or tier two by 2030 is an acceptable position. In another country for example in East Asia or in South Asia which is that by 2030 we aspire to have everybody to have at least a tier three supply or a tier four supply and that's also in fully valid goal. So, this allows flexibilities across countries and it also allows opportunities for all the sector stakeholders to pitch in with their respective initiatives and take the agenda forward, which also bring me to the other issue of all the quality of supply aspects from the grid would be factored in.

We realized that the current detail available from household service only acts about primary source for lighting or whether the household have electricity connection. These are the two questions which are asked to cause different service and in each case we do not obtain enough information to be able to see anything about quality of supply. Which means that the household service need to be deepened to be able to obtain information about the hours supply that the reliability of supply whether it's a legal connection or not and whether the household finds this supply of affordable or not and these are all the different attributes that now one need to be captured over the medium term.

And that said this would allow different households to be mapped through different tiers based on the attributes of supply. That said we realized that it's a [indiscernible] [01:17:29] challenge ahead of all of us to be able to collect all these data some early initiatives have started in that direction and hopefully over the next few years we would have more and more such data coming in, so that's the approach on this. Thank you.

Sudeshna Gosh Banerjee      Actually, the question about private sector is extremely relevant tier and as we showed in one of the slides of business that usually will not get us there and everybody has to chip in. So far most of these initiatives have been led by public sector where private sector has to play a much more critical role. So, to capture that you know going forward, we were looking at the results in terms of the global tracking symbol that what the country does are achieving but how are the countries achieving that? So we are going to look at the policy and the regular framework as well to see that what kind of operating environment that goes with the public and the private sectors so to that goal we are now working on an initiative called the business environment for energy which is really going to look at all these

three pillars and map the policy and institutional initiatives required to get ahead. I mean we are going to sort of look at which are the countries which are doing well in terms of their policy measures institution measures and are they really mapping with [indiscernible] [01:18:52] and if they are not then what's going on

So, it will give us a very good sense of input in terms of these policies and institutional and legal measures as well as looking at what these what the results are in terms of these cheap boards.

Vivien Foster

And as part of that we're going to have private sector partners involved in the design of the indicators because we can see that perspective is critical. I think there were a couple of points plus which I can partly tackle but I would like to call on Ryan in a moment to bring in his perspective. There was a question about the funding of clean solid fuel cook stoves and I think the global alliance hoping Ryan to tell us a little bit more about what the global alliance is doing in that area. I just wanted to flag that at the World Bank we do have projects that finance clean cooking solutions and it was with the cook stove sector particularly in the East Asia region we've done some interesting work in this area.

Often this is an area where it's not so much about big funding in a way that when we roll out you know electricity grids or anything like that but it's really about working with governments and with the private sector to start up this market and to develop cook stoves that are actually well astute to the needs of the cultural needs and the pure availability and the practices of the local country so it's a lot more about technical assistance about quality assurance and market making than it is about major investments.

In terms of the funds and SE for all, I just wanted to mention that we do have a technical assistance program for some of the opt-in countries, you know banks is working with this tier with five opt-in countries from Sub-Saharan Africa and we are putting then fund to help this county develop the plans that are needed to actually achieve the SE for All objectives but Ryan I think you have more to say on that matter.

Ryan Hobert

Yes, just briefly to come back quickly on the importance of the private sector. The Sustainable Energy for All initiative is really premised on the idea that none of this work is going to amount so much without serious private sector engagement and so the idea is that we need very strong public private partnerships and that's something that in the international conversations on this public private partnerships come up a lot and they're actually very hard to set up but part of the challenge that Sustainable Energy for All has given itself is to really engage the private sector in a serious manner and bring it in a real way post globally but also country by country working with the opt-in countries that have volunteered to change policies and regulations in order to attract more investments.

I'll leave it at that on the private sector. In terms of cook stoves I don't work directly on the global alliance for clean cook stoves but I do know that they do have funding opportunities they're funding in large part comes from a number of bilateral governments they have a new fund I know that they're just kicking off. If you go to [www.cleancookstoves.org/funding-opportunities](http://www.cleancookstoves.org/funding-opportunities), there's actually a listing of things that are being funded by the alliance and that can provide you more information. If you still need more information feel free to email the global alliance for clean cook stoves. Their email is on their website. And just to quickly end with the last or the next to the last question that was about the \$100 billion in funds that's actually an estimate of the amount that was committed by public and private actors at real plus 20 last year in support of these three objectives so that's not actually a big fund or anything like that. That's actually projects and programs that have been committed to the initiative and that's the estimate of their total value.

Male Speaker

Okay we do have two more questions that came in and we have just a couple of minutes left to address those. The first question is, is there a data gathered on the productive uses of electricity as part of the progress of energy use or access. And the second question is I am pretty sure the GACC does not fund stove development, it sounds like more of a statement, sorry.

Mikul Bhatia

Let me recall the first one which is on data on productive uses as a part of the global tracking framework data collection effort we pray to look at on for data on productive and community uses and we realized that there is very, very thin data on this not substantive enough to be called later together and presented as a part of the report although on access to energy and health facilities which is something which we did capture in the report. But again that was very thin only for a few countries. Now we realized that this is one of the data that need to be addressed because many of the initiatives are going to look at productive uses as a means of providing an anchor [indiscernible] [01:24:49] and improving the financial sustainability of investments in this area and at the same time you know giving the greater economic push towards poverty deduction and other benefit that arise all the facts as to electricity and other energy solutions.

So going forward we are trying to create a framework for measuring access to energy for productive purposes and one of the challenges there is that it's very difficult to define how many people do not have access from a supply say that it's as much either to define that they've done a particular project how many people benefited from improved access unity for productive purposes but it's very difficult to define how many people feel that they have an adequate access to energy for productive purposes. But we are trying to come up with something works to address those and perhaps in the months to come there may be a some documents circulated suggesting how can this can be measured and how data can be collected for this -- I think at this point we're only in a position to share what is

likely to happen prospectively that isn't much to be shared based on available data from the past.

Vivien Foster

Thanks Mikul.

Male Speaker

All right, and that was all the questions so I just like to thank everyone Vivien and Ryan and everyone that helped answer some of those questions. We do have a quick survey, take the minute for the attendees but before that I just like to provide our panelist a quick opportunity to provide any additional or closing remarks you would like to make.

Vivien Foster

I think it has been a great pleasure to interact with you be it in a very remote way but we're delighted to have this opportunity to engage, as I mentioned this report is really we have a resource for energy practitioners around the world, we encourage you to draw upon it, to use it for your own purposes and I perhaps should have mentioned that the consortium that produced the report is committed to biannually updating the report so in 2015 we'll be coming out with a set of new edition that will spotlight the programs in the next few years and also you're also committed at improving these various measures overtime.

So as Mikul has already outlined particular here at the World Bank we're focusing on how we can improve the measures of energy access so we're hopeful that by the time the new report comes out in 2015 we'll also have some richer information's to provide on that aspect which I think is it's quite interested as particular group. So thank you very much for the opportunity, it's been a pleasure.

Ryan Hobert

This is Ryan, I want to congratulate Vivien and her team actually for the wonderful work that they've done and put a huge amount of effort into it and it's really impressive body of work and something that can be built on in the future, just quickly to go back on the cook stove finding issue that it sound that like the last comment was on that as well.

As you know I'm not directly working on this but colleagues have said that there are actually a couple of funding opportunities from the global alliance for clean cookstoves, they have a spark fund and a piloted relation fund but no particular stove technology or fuel is endorsed but it's trying to build markets and develop new approaches and that information is on their website. So thank you and thanks for enrolling to the Clean Energy Solution Center for hosting this today, it's been great.

Male Speaker

Very good and thank you guys again and now we'd like to ask our audience you just take a minute to answer a quick survey on the webinar review today we just have three short questions, we had answer and your feedback is very important it allows us to know what we're doing well and where we can improve and Heather, the first question?

Did the webinar content provide me with useful information and insight? Very good. And Heather could you just play the next question please? The webinar presenters were effective? And next question, and the last question, overall the webinar met my expectations. Very good. Thank you for answering those surveys and on behalf of the Clean Energy Solution Center. I just like to extend a hearty thank you to all of our expert panelist and to our attendees for participating I today's webinar. Terrific audience today and we very much appreciate your time and the nice discussion that you generated and I invite out attendees to check the Solution Center website over the next few weeks if you would like to view this slides and also listen to the recording of today's presentation as well as any previously held webinars. Additionally, you will find information on upcoming webinars and other training event and we also invite you to inform your colleagues and those in your network about Solution Center resources and services including the no-cost policy support. I hope you have a great rest of your day and we hope to see you again at future Clean Energy Solution Center events.

This concludes our webinar.