Webinar Transcript: International Food Security Assessment 2021-2031

Greetings everyone, and welcome to our International Food Security Assessment Webinar. My name is Valerie Negron, and I will be your host today. As a reminder this webinar is being recorded and will be posted on the ERS website next week. If at any time during the webinar you have questions, please enter them into the chat feature at the bottom left-hand corner of your screen and our speaker will answer them at the end of today's presentations. Today our presenters are ERS Economists Felix Baquedano and Yacob Zereyesus both Economists in our Market and Trade Economics Division. Before joining ERS, Felix was the officer for Latin America and the Caribbean in the Global Information and Early Warning System group of the United Nations Food and Agriculture Organizations. While there, Felix led numerous reports that monitored production, food availability, and market conditions for main food commodities in Latin America and the Caribbean. Here at ERS, Felix coordinates the annual publication of the International Food Security Assessment report and is involved in trade and food security research with the regional focus in Latin America, the Caribbean, and Sub-Saharan Africa. Yacob's research interest covers a range of topics related to food security including farm production and income, the dynamics of labor allocations and employment conditions and formed households, the consumption of nutrients and safe food, and more. Prior to joining ERS, Yacob served as a research associate professor at Kansas State University where he led and coordinated the collection of population-based household survey data for tracking the progress, and for the achievement of food and nutrition security programs in northern Ghana. Thank you, gentlemen, for joining us today. Felix the floor is yours…

Thank you, Valerie. Today, I'll be discussing the main findings of the International Food Security Assessment 2021-2031. I'm out accompanied today by my colleague, Yacob Zereyesus.

The annual report aims to estimate and project food availability over a period of 10 years. We focus on 76 low and middle income countries, in four regions, that have had historical issues with food deficits or ongoing food deficits. Obviously, there are more countries that fit this definition that are not included in the report, but that ma- mainly reflects the lack of significant uh metrics to be able to consider them, such as lower consumption, prices, or macroeconomic trends.

The report covers a population of about 3.9 billion people across the 76 countries. In terms of population, Asia is the largest region in the assessment with the total population of 2.4 billion, covering 22 countries. We do cover India, but we do not cover China in our sample. This is followed by Sub-Saharan Africa which together has about 980 million people in terms of population, and we cover a total of 39 countries in Sub-Saharan Africa. North Africa covers a population of about 187 million people and four countries. And finally, Latin America, the Caribbean covers 13 countries or 169 million people. Moreover, the assessment covers 25 of the 27 low-income countries in the world, as defined by The World Bank. We also covered 39 with the 55 lower middle income countries and 12 of the 54 upper middle income countries.

I want to give you quickly a- a broad summary of the main findings of the report before going into more detail. In terms of the macroeconomic trends, we- which are the drivers of the results that we're presenting today, we find that, in general, incomes are recovering across the sample of our countries. However, incomes for all countries remain below their 2019 levels. So, in that sense we see because of that we do find a deteriorating uh food security trend for 2021 and this is mostly driven by central and southern Asia, particularly India which has, as I said in the previous slide, the highest population in in our sample, but also of our regions. Also was particularly affected by global trends and trade and- and- and their local economies. The other major trend that we find is uh, regardless of the region, low-income countries have seen a higher increase in the prevalence of food insecurity in 2021 relative to the middle income countries. And this also applies within country to income deciles. The lower income deciles are more affected than the higher income deciles. Both in 2021 and 2031 we are estimating that food demand will continue to outpace food production. And in the second half of the presentation, my colleague Yacob's already asked as well- we'll touch in detail on this trend. However, by 2031 supported by an anticipation of recovery and incomes and economic growth uh after 2022 we- we are projecting uh a sharp drop in food insecurity across all four regions, particularly Asia.

So, before we begin, I want to set the stage by defining what we mean by food security in this report and, for us, that means the ability of all people, at all times, to access sufficient, nutritious food for an active and healthy lifestyle. This definition is- is established by- during the World Food Summit in the late 90s which was coordinated by the United Nations.

In that regard, to evaluate progress within this definition there are four established pillars: the first one being food availability which just refers to total food available in country, whether from production, imports, or stocks. Second, access to food. This is where the income question becomes important. Do people have enough income to purchase the food that they need? And moreover, are there markets where they can access and buy this food? Then there's utilization which looks at the nutrition and quality of the food. A topic that is becoming more and more important these days and takes into account both consumer and uh preferences as well as cultural influence in food use and consumption. And finally, the last pillar is stability. And stability refers to just that how risky or fluctuations happen within the other three pillars. For example, with availability the main uh- issue these days, in terms of stability, is climate change. Are country's going to be able to produce enough food to feed themselves. In terms of access, we've seen the most recent uh- effect with the COVID-19 pandemic as people's incomes were affected and food prices were increasing and also markets shutting down in some countries. And utilization we're talking about the double-edged sword of food insecurity these days where there's still a large pocket of people who don't have enough calories to consume, but also large pockets of people who are suffering from obesity, and other chronic disease, caused by unhealthy diets.

But why does the USDA focus on food security? Well, first of all, the USDA and in general, the United States Government, is the leading country in terms when it comes to emergency humanitarian response. But for the USDA, it's also important for us to understand where global

food demand is changing- uh so that we can understand where there's potential emerging markets for our farmers, as well as potential drivers of changes in world prices. Moreover, we're also interested in learning more about where chronic food insecurity is happening, and also the development of potential new hot spots. In that regard, we're always asking or trying to evaluate how income and prices affect this metric.

ERS has a long tradition at looking at food insecurity globally. Since the 1970s, we've looked at, or focused on, food availability. Then in the 1990s, we started focusing more on evaluating food security directly in terms of how much people can consume. And today, with the methodology we're currently using, we focus a lot more on the access pillar, but also not forgetting about the availability pillar and pose a question as to how food security varies in response to prices and incomes.

Our method is based on a demand-oriented framework. So, for the 76 countries, we evaluate how each country responds to shocks, and prices, and incomes. And, based on income, we also evaluate on a particular level at- at each income that's how it in the country over 10 income deciles in a county given their level of income, how much food are they able to purchase, and as- and if this amount of food that they are able to purchase for their income enough for them to be food secure.

To do this, we rely on a target of 2,100 calories, per capita, per day for an average person in the country. What this means is we are not considering any differences in gender or age but, like I said previously, we do consider differences in income. We're looking at how much income the poorest of the poor have in the country and compare that and contrast it to the richest people in the country. With this metric based on the amount of food that each income decile was able to purchase, we then evaluate the share of the population that is food insecure or the prevalence of food insecurity. Using that measure, we then derive the absolute number, how many people are estimated or projected to be food insecure over the 10-year period. The last metric we do calculate is the food gap, and this is the difference between that estimated consumption within each income decile and this target of 2,100 calories. For the sake of brevity, we are not covering this in detail in the presentation, but the details in our results are available in the report. Our estimates for 2021, and the projections for 2031, are based on the trends throughout the period of 2018-2020.

So, before we dive into the results for 2021, I quickly want to walk you through the major trends or factors that, you know, are behind our results. The first one is income, and for income we use as a proxy the per capita gross domestic product mostly as a convenience, a data convenience, because it's consistently reported throughout years and across all countries, unlike household income which depends on surveys that may have a significant lag in reporting. The first thing is that we see in terms of per capita income, if we look at the last column in this graph, you see that yes incomes across all our regions, on average in 2021, are increasing relative to 2020, with some exceptions. In North Africa, we are estimating that in 2021 per capita GDP is going to go

down by 4.6 percent and then in Sub-Saharan Africa per capita GDP is going to remain stagnant relative to its 2020 level. However, if you look at the second to last column which compares per capita GDP in 2021 relative to 2019, we find that across all regions it's going to be much lower than the pre-pandemic level. And you can also see that in the absolute value- values in columns 1 and 2. Most affected in- in relative terms is Latin America and North Africa where GDP per capita remains about 8.5 percent lower than 2019. This is followed by Sub-Saharan Africa where GDP per capita uh- is about 5 percent lower than 2019, and Asia about 2.5 percent. A lot of the drivers behind us again with Asia, which is the region that is most integrated to the global economy, um along with Latin America and the Caribbean, is still some lag recoveries, they're lagging more advanced economies in terms of the economic output, in terms of opening up their economies, in terms of vaccinations, and all that. In Latin America and the Caribbean one sector that has been particularly affected is the tourism sector uh- in Central America and the Caribbean also well they depend a lot on remittances and they've been a good tool, um they have not grown sufficient to make up for the total loss in incomes that we see in that region and in Sub-Saharan Africa, in general um you know, they have the weakest economies and they were mostly affected and have not fully recovered either by- either opening up you know sectors like tourism sector, there's still some cross-border restrictions in place and things of that nature.

So, in terms of food prices at the international level what we find, in general, is that for main food commodities prices in 2021 are relatively lower than 2020, with some exceptions in these trends. The first major exception is, if you look at the great dotted line for sorghum, is that prices have been increasing and continue to increase since 2019. The other exception is rice. While rice prices are anticipated or estimated to be lower than 2020, they are significantly higher than 2019. Now how these trends- these trends translate to the domestic side um that largely depends on how integrated each particular country is to the world markets which is something we do take into account in our modeling exercise.

Now to the specific estimates for 2021. So, for 2021, reflecting not only the- the period trends of 2018-2020 but some of the lingering effects of COVID-19 which don't account for all the rise because there are other underlying trends supporting the increase in food insecurity. We're estimated that- estimating that for 2021 about 1.2 billion people are food insecure. This is almost 32 percent, or 291 million, higher than the 2020 estimate. And most of the popular- the population or the increasing population food insecure in this year's report is accounted by Asia, particularly countries like Bangladesh, India, Pakistan, and Indonesia. And in Sub-Saharan Africa- and in Sub-Saharan Africa it's mostly countries either in central Africa and a few countries in east Africa.

Now in terms of the distribution of the food insecure population. On the pie chart on the left is the total population, the 3.9 billion, that we cover on the assessment and on the right, the food insecure population for 2021 or the 1.2 billion people. As I've said before, most of the population in our sample is in Asia, representing 63 percent, followed by Sub-Saharan Africa at 28 percent, and the remaining nine percent is in North Africa and Latin America. Asia also represents or- or

captures the highest share of the food insecure population at 53 percent, followed by Sub-Saharan Africa with 41 percent, North Africa and Latin America and the Caribbean captured the remaining 6 percent. And again, as I said before, in Asia this trend is- is driven by countries with large populations in Asia, particularly in central- southern Asia. And in Sub-Saharan Africa that 41 percent of the majority of it again is in central Africa in countries like the D.R.C. and the Republic of Congo which continue to be impacted by protracted conflict, for example.

Now, even though as I've said before, when we Asia has the largest number of food insecure people the prevalence of food insecurity, or the share of the population is food insecure, is very comparable to that of Latin American the Caribbean, which has a lower number of food insecure people, as you can see from the green bars. By contrast, Sub-Saharan Africa, which in this year's report has less number of food insecure people, has the highest prevalence of food insecurity at almost 45 percent. In the assessment, North Africa is by far the- the most food secure region in the world. In our in sorry, in our- in our report um this reflects again, you know, some of the domestic policies in these countries such as price controls or food distribution systems in- in North Africa.

Now, looking forward over the next 10 years, what are the underlying trends that will drive down this number of food insecurity? The first one, obviously, is income. And this is where we're expecting incomes to improve drastically from 2022, as the global economy and domestic economies suffer less from the effects of COVID- 19, a lot of the restrictions on movements and commerce are completely removed, in other words it's things of the past. But relative to the developed world you know there is a lag in- in the recovery across our countries, some countries will recover, you know, over the next two years. Other countries will recover their income growth over the next three years, for example. But ultimately, all countries by the end of the projection period return to their historical income growth trends. The other is food prices. Our projections for food prices are based on USDA's projections which are released in- in February of the- February of each year and its baseline projections for the world. And what USDA reports is that over the next 10 years, globally- in the global market for sure, uh food uh production will continue to outstrip food demand keeping world prices low. Which is a particularly important trend for us because as my colleague, Yacob Zereyesus, will discuss food demand will outstrip food supply in most of our countries. The second is a supportive environment for reducing food security. And again, what this means is a return to pre-pandemic stability uh in terms of the removal of the policies that have been put in place. Vaccinations, the population has reached a- a sufficient number for economic activity also to return without any hiccups.

And what we see, first of all, is if you look at the last column of what we are projecting, in terms of per capita GDP annual growth, is pretty robust growth for most regions in our assessment. Leading the way, is Asia with 4.3 percent annual growth annually, followed by Latin America and the Caribbean at 2.3 percent. North Africa, we're projecting growth rates of per capita GDP at 1.8 percent and Sub-Saharan Africa has the smallest um growth trend in our projections at 1.4 percent. And Sub-Saharan Africa, in terms of population growth, which I’m not showing here

but it is available in our report, is the only region in our sample where population growth remains positive, in our sample. Moreover, population growth is projected to outpace population growth, or GDP growth, resulting in this lower income growth that we are highlighting. Contrast this to the other regions in our report where we are projecting a slowdown in the growth of population, mostly driven by lower fertility rates in these regions. As we all know, that fertility rates are highly correlated to income growth, and also reflect a higher degree of women in the labor market.

In terms of prices- of international prices, as I said earlier, the USDA is projecting that food supply in the world will continue to outpace the demand- the global demand. The result of this is general price stability across four main commodity groups, that I'm showing here: corn, rice, sorghum, and wheat.

But at the end of the day, what matters for us as well are the trends at the domestic level. And reflecting the trends that I just showed you at the global level, here I am showing you overall for the four regions we cover in the assessment. We are projecting um- a decline in the food prices, particularly for the major grain- consumption grain in these countries. North Africa's line is a little bit different than the other regions, but mostly this reflects the price control policies in these countries. But nonetheless they- we are also anticipating a declining trend towards the end of the projection period.

Here, I'm presenting on this graph the premise of food insecurity that we are projecting for 2031 compare- in in- light green compared to our estimate for 2021 in dark green across the four regions in the assessment. And what we are finding is that Asia, given its robust income growth, will have the sharpest decline in- in absolute in relative terms, sorry uh- with regards to this measure of percent of food insecure, declining by 75 percent over the 10-year period, and by 2031, we anticipate that the prevalence of food insecurity will hover, on average, across countries about five percent. However, this this regional aggregation hides uh some important facts, uh particularly countries like Yemen, Afghanistan, and North Korea, will basically make little progress, if at all, in terms of this metric reflecting protracted conflict which also leads to, you know, slow economic growth. The other region all the way to the end uh that had a significant amount of food insecurity in 2021 is Sub-Saharan Africa. And we are anticipating some modest improvement in their metrics with the prevalence of food insecurity declining by 34 percent and reaching a little bit over 25 percent by 2031. Latin America and North Africa we are projecting that they'll cut their share of prevalence of food insecurity by around 45 percent. North Africa, as you recall and you can see in the graph again, in 2021 was the most food insecure region in our country based on the prevalence of food insecurity. Latin America in 2031, is anticipated to have a prevalence of food insecurity hovering around 10 percent of its population.

In terms of the number of food insecure people, this is where we see a sharp decline and, in the report, we are finding that across the 76 countries, you know, food insecurity- the number of

food insecure people will be cut from an estimate of 1.2 billion currently in 2021 to 638 million in 2031. And, as you can see from the graph, across the four regions the main contributor to this is Asia. Again, one of the things that I want to highlight are two things to put it into context in related to the COVID-19 pandemic. For the first few years of our projection period, you know, the number of food insecure decline gradually and then accelerate as income increases significantly. However, one of the things that we do find, not just in this report but in previous ERS studies particularly the one we did in January of this year, is that the number of food insecure long term, even in 2031, is higher than it would have been without COVID, and that mainly reflects the fact that GDPs are now projected to be much lower in 2031 than they would have been without COVID. Latin America and North Africa again cut their populations of food security in about half. And Sub-Saharan Africa while it may seem that in relative terms they make very little progress in this, number reducing the number of food insecure by 14 percent, they actually make a substantial improvement reducing overall their levels of food insecurity by over 70 million people.

In summary, in terms of our food security trends, what we find in Asia: strong income growth, particularly in central and southern sub-region, will drive the improvement in food insecurity. Over the next decade, however countries like Yemen, Afghanistan, and North Korea, their metrics remain relatively stagnant reflecting protracted conflict or- or protracted economies. Latin America, most countries reduce their food insecurity metrics. The one exception is Haiti where, again, protracted instability continues to affect the country. North Africa remains the most food secure region in our assessment reflecting some of the domestic policies in place even today. And in Sub-Saharan Africa, as I said before, a lot of the numbers in Sub-Saharan Africa are driven by central Africa the sub-region, particularly the D.R.C. and The Congo, and even though we're seeing modest improvements in the absolute numbers, if we were to take out this region Sub-Saharan Africa actually makes significant improvements in their metrics.

And with that, I would like to turn the presentation over to my colleague, Yacob Zereyesus, so that he can talk about our estimated and projected trends on grain demand and grain production. Over to you Yacob.

Thank you, Felix. So, I'm going to uh continue the presentation and give you some uh of our results on production trends and the overall grain demand in addition to the food demand, my colleague presented. And then I'll give you the- what's told in the report the Implied Additional Supply Required. Before I do that, I will want to quickly define some of the terms that we are going to use in this presentation. So, the total grain demand, which is referred to as TD, is comprised of food demand or FD, and other demand or they use which is OD and this comprises of uses for seed, feed, processing, and other uses. And the IASR, which is the Implied Additional Supply Required, essentially quantifies the total grain demand on a country basis, that's not projected to be met through the domestic production. And so, the IASR would be computed as I'll show you even some of the figures containing the report is then just a difference between the total grain given and the domestic production.

So, with that, you could see here that as Felix mentioned, one of the key takeaways here is that the demand for food will continue to increase over the coming 10 years of facing the growth rate for production and that implies that the Implied Additional Supply Required or additional grains will continue to increase. And- and that is shown in the last column, you know, for both the 2021 as well as the 2031. In keeping with the presentation, I'm going to focus on the overall 76 countries included in the assessments, as well as will give you some regional disaggregation across the four regions included in in the assessment.

So, you'll see here that the first graph that I'll show you here presents the total grain demand uh measured in millions of tons shown for both the 2021 as well as the 2031. The key takeaways here is that the growth in total grain demand uh has some regional trends there, mainly driven by Asia and Sub-Sarahan Africa. You could see the figures uh we show here that in 2021 the total grain demand across the eastern countries is estimated as about 1 billion tons and this is projected to grow to 1.3 billion tons by 2031. And uh in terms of the from 2021 to 2031, the total grain demand is projected to increase by an annual rate of 2.7 percent across all the countries. If you look at the regional disaggregation the- the demand for total grains uh is expected to increase the most in Sub-Saharan Africa, growing at an annual rate of 3.4 percent, and followed by Asia which is at our rate of 2.5 percent per year.

Moving on, if you look at the- you know this aggregation for the total grain demand in to its components, you'll see that we have two graphs here uh the one on the left uh has the measurements in millions tons for 2021. And the graph on the right is millions of tons for 2031 disaggregated by the food demand as well as the other demand. So, you'll notice here that the food demand, of course, is the largest component of the total grain demand. If you look at the- a little bit more detail the food demand uh, which is growing it's an annual rate of 2.8 percent over the coming decade, is also projected to grow faster than the grain demand for other use. In which case this also involves use such as feed, which also is expected to grow at an annual rate of 2.5 percent over the time in decade. Regional wise, you see that Asia accounts for most of the demand in 2021, of course that is the larger share of the region across the uh Asia population. The Sub-Saharan Africa, as regional demand for food, which is projected to grow at a rate of 3.8 percent per year, also grows faster than the demand for other grains, which is projected to grow at a rate of 3.2 percent per year. Whereas if you look at the Latin America and Caribbean, as well as the North Africa regions, the demand for grains for other years are projected to grow faster on an annual basis compared to the food demand in the coming 10 years. Circling back to the Asia region, the results show that the demand for food and the other years are projected to grow evenly from year to year based over the coming decade.

And again, here the one of the most important results in this report that the additional supply required which is driven by the domestic grain production as well as the overall total demand and so you will see here that the total grain demand will outpace the domestic production and the implication for that is that the Implied Additional Supply Required will continue to increase. And you'll see here the- the results here are for 2021 as well as 2031 and over this period the

grain production is expected to increase by 2.5 percent per year across the IFSA countries. If you look at the region of this aggregation, in this case, the Latin America and the Caribbean region is projected to see the highest growth rate of grain production uh in relation to the other regions. Asia is projected to see, the other hand, the lowest rate of growth in- in grain production on annual basis, that's estimated to be uh 2 percent per year and hence if you look at the implications of these two trends, in uh because in total grain demand versus the- the grain production, the Implied Additional Supply Required is projected to increase by about 3.3 percent per year between 2021 and 2031. A reason why the IASR will grow annually this process in the Asia region, which is uh projected to be 4.9 percent per year, probably followed by the Sub-Saharan Africa region that's estimated to be 3.4 percent. If you look forward into 2031, the same two regions are also projected to have the highest Implied Additional Supply Required of any other region included in the assessment.

So, in- in conclusion, in the 76 countries covered in- in the assessment uh across to end the presentation on a positive note, as my colleague mentioned earlier, the food security is expected to improve in the coming decade. More specifically uh the share of population that is food insecure will fall from. The number of insecure people also gone down from 1.2 billion in 2021 to less than 638 million people in 2031. In terms of the grain production, despite the revised growth over the coming decades, the demand for total grains will update the grain production and hence the- the Implied Additional Supply Required will continue to uh to grow.

So, with this, I'm going to bring the- this part of the presentation to an end and finish my presentation. Thank you very much, if you need further information on the report you can access it as in the link indicated in the slide, as well as you can reach out to either one of us via the email that is indicated in the slide. With this I'll pass the presentation back to you, Valerie.

Thank you Yacob, thank you Felix. As a reminder for all our listeners please use the chat feature located at the bottom left-hand corner of your screen to submit any questions you may have. For our first question: why are only low and middle-income countries considered in the assessment and not countries like the United States or the European Union?

Thank you, Valerie. The main reason is- is um the type of food security issues that these countries face, which require a different methodology. So in high income economies, of the four pillars I covered, while availability and access can be an issue as well most- most of the issue for them is utilization, quality food, um also as well as um how nutritious the food is, etc etc. And by that I mean the reason for this is in a lot of advanced economies there are robust uh food aid programs like in the United States this uh the SNAP program, Supplement Nutritional Assistance Program, to where a person who is food insecure can easily consume the 2,100 kilocalories per day. So our report would provide a false metric in that sense, where more people be would be considered food secure in the United States than they really are. And ERS in particular covers this in detail in another annual report, the one that looks at household food security in the United States, which is also forthcoming in the next month or so. Back to you, Valerie.

Thank you, Felix. Here is our next question: what's the difference between the number of food insecure versus prevalence of food insecurity? Let me repeat that question again: what's the difference between number of food insecure versus prevalence of food insecurity?

The prevalence of food insecurity is just the percentage of people in a population that cannot meet the 2,100 calorie threshold. And, based on that percentage, we are able to estimate from the total population the absolute number of people that cannot that are considered food insecure, in other words they cannot- they cannot consume the 2,100 kilocalories per day.

Thank you, Felix. Here's the next question: please clarify why grain prices are expected to be lower although production will outpace demand?

Okay so there's um- there's two worlds that we're looking at- at the report: at the global, level at the international market level. And the USDA and its report in in February uh is- finds that for not only just 2021, but uh even over the next 10 years, productivity growth will continue to be significant across the world to a point where supply is- is going to continue to strip demand. Now at the national level, for the 76 countries that we're looking at uh as- as my colleague Yacob alluded to, production most will- will definitely not keep pace for demand. So the price trends that you're seeing at the domestic level are mostly reflective of the stability in the international markets, where there's ample supply, on average, on average. Because of the 76 countries that we are evaluating, in about 26 of them we do find that over the 10-year period, domestic prices for major food grains have an upward trend. Back to you, Valerie.

Thank you, Felix, thank you. Next question is: even though food insecurity is projected to decline by 2031, is food insecurity higher than it would have been without COVID-19? And if yes, why?

Yes, food insecurity is higher than it would have been without COVID-19. Um, and we looked at this issue directly in an update to our last year's food security report, which was published this past January. Where we find that even though in- in relative terms economies will grow at their average long-term growth rate, in absolute terms meaning actual income levels, will be much lower than they would have been had COVID not happened. Although that's not a guarantee, because as you recall in the presentation, um you know we're assuming a trend that will not be impacted, for example, by issues like climate change, or further deterioration of an economy, or increases in civil strife. But mainly, because in absolute terms incomes will remain lower than they would have been without COVID, that is why food insecurity levels in 2031 are higher than they would have been without COVID.

Thank you. Are micronutrients part of the assessment?

So, one thing I didn't touch on the presentation is the food basket that we're defining. In short answer, no, because we are unable to get data on prices for these types of nutrients and we would have to parse them out by each food group. But, in general, we include the major grain- food grain consumed, we include roots and tubers, other foods, and secondary grains that are also

consumed in our country. So, because we cannot parse out, or find data, for the cost of these micronutrients, we don't directly take into account. Although, they are there in the sense that it'll just depend on the share that the four food groups that I defined are composed in each country.

Thank you, Felix. Let's see: can you tell us a little bit more about the food gap that you mentioned in one of your slides?

Yes, so the fruit gap again, as I've said, we- to define a person and consider person food insecure we define a target of 2,100 calories. Then we evaluate at each income decile, so we have 10 groups of income from the very poor to the richest uh income decile, in a country and based on that measure of income- or based on the amount of income that each decile has, we then estimate how much food they're able to purchase in other words or acquire. And then we translate that amount into calories. So, for the sake of an example, let's say a person in in decline, one the poorest of the poor, they're only able to purchase 1,700 kilocalories per day, then the food gap would be simply be 2,100 minus that 1,700 which is equal to 400 kilocalories per day. Back to you, Valerie.

Thank you, Felix. How well did the- the next question: is how will the demand for IASR look like in the other two regions, um referring to Latin American the Caribbean and northern Africa regions? And what is driving- what is driving their trends?

Thank you. This is Yacob Zereyesus. The IASR, I'd like to define it again, is the Implied Additional Supply Required, and that's the uh the difference between the total grain demand, and the- the grain- the domestic grain production. So, in- in the other regions in uh Latin America and the Caribbean and in North Africa, if you look at that they in general as I mentioned in the presentation, they overall- Asia is going to have the largest increase which is 4.9 percent, but if you look at the Latin America and the Caribbean and North Africa, in fact they- they have uh, you know, relatively the lowest. In Latin America and Caribbean, for example, it's going to grow over uh next 10 years at a rate of 1 percent per year and in North Africa um almost a little over that, twice as much, which is 2.1 per year. And if you look at each of these regions, in uh Latin America and the Caribbean, the main drivers are actually the demand for other uses, other than the food demand, uh the for these two regions the demand for other use which is for processing and feed are driving. More specifically, the Latin America and the Caribbean, for example the other demand will grow by 2.8 percent compared to uh 1.9 percent for food demand. And the same trend also applies for North Africa, uh the demand for other uh food, for example, is going to grow by 2.3 percent uh as compared to the food demand which is slightly below that one. Back to you, Valerie.

Thank you, Yacob. Looks like we're getting close to time so let's look at one more question: Do you take into account the population number in the nominated areas?

Yes, the population numbers um, you know, are the main drivers of food demand in our calculations and these estimates are- are come from the U.S. Government estimates, particularly the Bureau of Labor Statistics in their International Population Growth Data Set.

Thank you, Felix. Let's see, I think we have time for one more question, how about this one: if I remember correctly, Asia was the one projected to have highest IASR in 2031, what do you see as main drivers that projected IASR as highest for Asia than other countries?

Okay, so if you look at the- the overall, yeah you're correct, the IASR uh is projected to grow the fastest in Asia which is 4.9 percent. What's interesting here is in India, given that Asia accounts for the majority of the population which- which is also going to drive the food demand as well as the other demand, you will notice that uh in- in actual terms both the food demand and other demand are actually growing uh at a relatively comparable rate 2.5 percent to be exact. And- and hence the- the- but if you look at the grain production it is uh growing at a, you know, rate of 2 percent. So overall, if you add up all the food demand and other demand, the total grain demand is projected to go out 2.5 percent which exceeds the- the grain production and hence uh the overall production, I mean the Implied Additional Supply Required, will be the highest uh for- for the Asia region.

Thank you. All right, that's all the time we have for today. Thank you, Felix and Yacob, for sharing this report with us today and thank you to our listeners for joining us. As a reminder, a recording and transcript of today's webinar will be available on the ERS webpage next week. Thank you again everyone, I hope you have a wonderful rest of your day. This concludes our webinar.