Source Segregation of Waste Key to Methane Reduction from the Waste Sector

26 June 2024, Virtual Event

Pat CoatarPeter:

Perfect, thank you very much. Good morning, good afternoon, good evening, everyone. Welcome to the fourth installment of the Global Methane Initiative (GMI) Biogas Subcommittee Workshop Series, Mobilizing Methane Action at Open Dumpsites and Landfills. My name is Pat CoatarPeter, and I'm an environmental policy analyst with the U.S. EPA's (Environmental Protection Agency) Office of Air and Radiation. I'm very happy to be with you today for a 90-minute session on the really exciting opportunity to reduce methane emission from municipal solid waste, through source segregation. We have a number of speakers lined up to present some really fascinating examples of source segregation programs from various perspectives and localities, and we certainly hope that you enjoy it and learn a lot. That said, before we get started, I want to turn it over to our colleagues at Abt Global for a quick rundown on interacting with the platform for the webinar today. So, I'll pass it over to Katherine for an overview of interacting with Webex, and navigating the language function for today's presentation.

Katherine Rush:

Thanks, Pat. Thanks everyone for joining today. So, like Pat said, I'm just going to go over a couple of software overview tips before we get into the presentations today. So, first, there are two ways to connect with the audio. You can either listen through your computer speakers, or you can use the number that is posted on the webinar slide to call into the presentation. All participant lines will be muted for the duration of the webinar, regardless of the audio method that you choose.

So, we are going to use two panels for today's webinar: the participant panel and the question-and-answer (Q&A) panel. Both of these can be found on the right-hand side of your screen. You may need to click the arrow next to the desired panel to expand and see all the content, and if for some reason one of them does not appear, you can navigate to the bottom right of your screen and click on whichever panel you are missing.

So today, live captioning is available for this event, as the second presentation will be given in Spanish. So, to view or hide captions, you can click the "closed caption" button that is on the lower left-hand side of your screen, and then you can click on the arrow to select your preferred caption language. So, only the host will be changing the spoken language throughout the event, and we recommend that you make your closed-captioning language selection now, just so that it's enabled for the remainder of the webinar. And then just as a reminder, we are recording the session.

So, throughout the duration of the webinar, you can enter questions into the Q&A panel. When submitting questions, please select "all panelists" from the drop-down menu, as this will ensure that all speakers can see your questions. These questions will be moderated at the end of the webinar, during the Q&A session. The final materials will be posted to the GMI website, and with that, I'll pass it back to Pat.

Pat CoatarPeter:

Ok, thank you very much, Katherine. Hello again, everyone, and thank you again for being with us today. This is the agenda for the webinar today: I'll provide a brief introduction to the work under the Global Methane Initiative. Then I'll pass it over to Luis Vallejo from the Ministry of Environment, Water and Ecological Transition Ecuador, then we'll hear a case study from Indore, India, and Olavarría, Argentina.

Next slide, please. And next as well.

Great. So, I'd like to start with a brief introduction on methane and its importance to slowing climate change. Many of you may know this, but like carbon dioxide, methane is a greenhouse gas that traps heat in our atmosphere rather than letting it escape, leading to an overall rise in temperatures. Not only does methane have a higher global warming potential -- meaning it traps more heat per molecule than carbon dioxide -- but it's also considered a short-lived climate pollutant. So that means that it only remains in the atmosphere for about twelve years, which is a much shorter timeframe than carbon dioxide, which can linger for over a century. So, with this in mind, we can see that cutting methane now is an opportunity to immediately slow the rate of climate change. And furthermore, capturing this methane and converting it into clean energy has real energy security and public health co-benefits that we'd love to take advantage of. Next slide, please.

In response to this opportunity, to this short-term opportunity to make progress on addressing global climate change, the Global Methane Initiative was formed in 2004, and is celebrating its 20th anniversary this year, which is very exciting. The Global Methane Initiative, GMI, is an international public/private partnership, focused on advancing cost-effective methane mitigation projects and reducing barriers to the recovery and use of methane as an energy source. GMI accomplishes this mission by providing technical support to deploy methane to energy projects around the world.

And we also work in three key sectors: biogas, which includes municipal solid waste, agriculture, and wastewater, as well as working on reducing methane emissions from coal mines and oil and gas. U.S. EPA, as a founding member of the Global Methane Initiative, provides a range of in-kind support to develop tools and resources for partner countries in the initiative. Next slide, please.

As I noted, GMI's work focus is on three key sectors, one of which is biogas, which itself has three focus sectors. The biogas subsector at hand today, and the one that I suspect is important to many of you on this call, is municipal solid waste, or MSW. MSW is the third-largest source of global methane emissions, caused by human activity, contributing roughly 12% of all global emissions. In the municipal solid waste sector, methane is generated primarily through the decomposition of organic wastes -- for example, food waste or green waste -- in anaerobic or oxygen-free environments, such as dumpsites and landfills.

According to the World Bank, food and green wastes make up approximately 44% of the global waste stream: a huge proportion. And because that total waste generation is expected to increase by more than three times by 2050, reducing methane emissions in the waste sector is a key opportunity to mitigate the worst effects of global climate change. But again, we also see it as a huge opportunity to deliver co-benefits, such as better air quality and improved health by improving solid waste management systems. Next slide, please.

So, many of you may know, there's been an exciting growth of attention on methane abatement overall, and especially in the municipal solid waste sector, over the last few years, and GMI is working to

collaborate, coordinate, and support many of those streams of effort. As such, much of GMI's fantastic work is helping partner countries advance, for instance, the Global Methane Pledge, which is an agreement by over 150 countries to collectively cut global methane emissions by at least 30% from 2020 levels, by 2030.

There are currently 34 GMI partner countries that are also pledge signatories, and GMI provides cost-free support to partner countries to contribute to the pledge goal. We're very happy to see more and more countries taking on the work of reducing methane emissions, and we look forward to employing our decades of experience and our sector-specific tools to addressing climate change and improving the lived environment for communities around the world. Next slide, please.

So, the tools that I just mentioned are housed in U.S. EPA's Biogas Toolkit, which you can see here. The Biogas Toolkit is a compendium of resources, and it was created as part of our work on methane mitigation through GMI, but also through some of our domestic voluntary programs as well. The toolkit includes many resources which are helpful for municipal solid waste decision-makers interested in methane abatement, and the tool helps to educate all stakeholders on appropriate steps in project development. It really aims to improve project success, reduce real and perceived risks of projects, and lower the cost of projects overall. Next slide, please.

So, you can see here, on this slide, a list of the few tools we have included in the Biogas Toolkit, including the Solid Waste Emissions Estimation Tool, or SWEET, the Anaerobic Digestion, or AD Screening Tool, as well as the Waste Characterization Handbook Tool, and more. Each of these Excel-based tools were developed separately and serve as stand-alone tools, but they're related in their shared goal to mitigate global methane emissions through the abatement, recovery and use of methane. Many of these tools and the rest of the resources in the Biogas Toolkit are designed to approach projects, policies and financing in the municipal solid waste sector, from the project level to the national level, with a focus on the needs of project developers, municipalities, and national-level stakeholders. So, there's really something in there for everyone, and we encourage you to reach out if you have any questions or think one or more of the tools might be helpful for you. Next slide, please.

Great, so this is just another list of our biogas tools. Again, if you have any questions, please feel free to reach out and let us know. Next slide, please.

Great, so hopefully most of you have seen EPA's new Wasted Food Scale by now. This replaces our old food recovery hierarchy. The Wasted Food Scale ranks wasted food pathways from most- to least-environmentally preferable, based on lifecycle analyses and circularity assessment in our 2023 report called from Field to Bin: The Environmental Impacts of U.S. Food Waste Management Pathways. That report is available in eight languages, in both simple and detailed versions, and you can find it on the U.S. EPA website.

I did also want to note that earlier this month, the Biden-Harris Administration launched a national strategy for reducing food loss and waste, and recycling organics. And that strategy aims to prevent food loss, prevent food waste, increase the recycling rate for all organic wastes, and support policies that incentivize the prevention of food loss and waste and organic recycling. I basically mention all of this to highlight the work we're doing domestically to address this global problem, and again, highlight the suite of resources and tools that we have available to make progress on addressing climate change and delivering health benefits to local communities, by reducing methane for municipal solid waste management, at home and abroad. Next slide, please.

So, lastly, I just wanted to note that this is the fourth webinar in our series, Mobilizing Methane Action at Open Dumpsites and Landfills, and we hope you've been able to join the previous sessions, which have all been amazing. But we're including the links here to those recordings, in case you weren't able to join, or wanted to access those recordings and relive the fun.

Ok, so, that is going to be enough from me. I want to hand it over to our presenters, so we can learn from their really exciting cases. So, first up, we have Luis Vallejo, with the Ministerio del Ambiente, Agua y Transición Ecológica de Ecuador. Luis, muchísimas gracias por estar con nosotros. Por favor, adelante.

Luis Vallejo*:

**This section of the webinar was given in Spanish and has been translated into English here. For the Spanish transcript, please refer to the end of this document.*

Thank you very much, Patrick. Hello -- good morning everyone. Thank you very much. Let's start by thanking the Global Methane Initiative. Also, Abt Global, and EPA for organizing and for their consideration in allowing us to share the work we're doing.

Let me introduce myself. My name is Luis Vallejo. I work at the Ministry of Environment, Water and Ecological Transition of Ecuador, on a pre-investment project called Solid Waste Management and Inclusive Circular Economy, GRECI (Gestión de Residuos sólidos y Economía Circular Inclusiva). Currently, I've been working for ten years at the Ministry of Environment, and we've developed projects and activities focused specifically on the formation of national policy and planning for solid waste.

The topic we want to share with you today specifically refers to the activities that we, as a project and ministry, have developed regarding the segregation or separation of solid waste at the source or origin.

Here we have the content. We'll start mainly with macro data, to put into context the situation of solid waste management in the country. Then, we want to emphasize a bit the tools we've developed, mainly guides and instructions for the quantification and characterization of solid waste, as well as relevant projects and initiatives that we can identify here in the country, and the upcoming future sub-actions we have with the ministry, in relation to solid waste management.

And well, for those who don't know, Ecuador is located right on the equator. Located in the northwest of South America. Currently, our estimated population is around 18 million inhabitants. And territorially, administratively, we are divided into 221 cantons, which are the territorial units responsible, according to the regulatory framework, for managing solid waste in their jurisdictions.

And as of 2023, based on our projected population, it's estimated that in the country -- in Ecuador -- around 5 million tons of solid waste were generated, which represents approximately 0.23% of global generation. The per capita production of solid waste - that is, the average amount of solid waste generated by one person per day - is 0.8 kilograms.

Regarding the composition of solid waste, the majority -- conceptually, most of the solid waste, about 61%, consists of organic or biodegradable waste. It's important to keep this in mind, precisely because of what such waste generates: greenhouse gases.

And an important piece of data we also want to share with you is that, based on the generation and population of solid waste, in a trend scenario or current or usual scenario, we estimate that by the year 2050, it would increase by around 30%; that is, approximately 7 million in solid waste generation in the country.

On the specific topic of plastics, we want to share with you - considering the challenges involved in managing plastic waste - information we have from 2022. This data indicates that in this year, around 627 thousand tons of plastic waste were generated in the country, which, in relation to global generation, represents 0.17% of plastic waste production worldwide. It also shows us that an Ecuadorian generates around 34.8 kilograms of plastic waste. That is, the annual per capita production. And on average, 87% of the plastic waste that was collected, 87% of the waste, rather, generated, plastics, was collected. And we have the data that, unfortunately, 52% of this plastic waste is still deposited in landfills.

This information has been generated as part of developing a roadmap to address the plastic waste issue, which we have just launched in recent days. This roadmap has been created in accordance with the global plastic treaty that is currently being formulated, with the collaboration of the Global Plastic Action Partnership, and also the WWF (World Wildlife Fund). If you would like to review a bit of the summary of what it proposes in terms of data, figures, and a general scope of the roadmap to address the plastic problem, you can use that QR code right there to obtain more information.

And we want to share with you now a little bit -- a bit, rather, of specific information that has to do with separation at the source. So, unfortunately, this is a task that our municipalities still need to address. We have 33% of the country's municipalities, out of the 221 municipalities that make up the country, that have just started or are developing activities related to separation at the source.

14% of the municipalities already have a more consolidated implementation of source separation processes, and 48% -- that is, almost half of the country's municipalities -- have initiated containerization systems. Unfortunately, here the containerization processes, which involve containers located on public roads, do not establish differentiated containerization: that is, they don't allow for separation at the source. So, this information relates to the still low percentage of municipalities that have implemented source separation in the country.

Here's something -- a summary, a brief summary of the country's regulations on solid waste management. We, as the Ministry of Environment, have the leadership -- that is, the authority to issue national public policy for solid waste management. And this is specifically being carried out through our project, the GRECI project. Regarding activities, we are also specifically in the process of developing the national solid waste plan, which we don't have yet: it will be Ecuador's first national solid waste plan, which will be the public policy instrument whereby we can establish policies, indicators and national goals for solid waste management.

We are developing this plan in a participatory manner, and what's interesting here is that the technical component of the plan gives rise to instruments, tools, guides, and manuals that will complement the public policy being created regarding solid waste.

We want to tell you about several of these tools that we as a ministry have already developed and published. We understand that in the previous series of workshops - the webinars - topics related to the characterization of solid waste have been addressed.

This is a guide intended for municipalities, which aims to establish standardized guidelines and parameters that municipalities must follow to create solid waste characterization studies. Currently, unfortunately in the country, we are still lacking the quality of input data for the quantification and characterization of solid waste. So, with this tool, we aim to improve that quality by standardizing the procedures that municipalities carry out to generate information on the characteristics and quantity of solid waste.

How is this guide structured? Basically, it consists of two stages: estimating the quantity of solid waste generated -- or two processes, rather. And the second is the physical characteristics and composition of solid waste, carried out through four stages: planning, which is the formation and design of the plan that municipalities must create to implement this quantification study. The design stage, where waste generators are identified, and what's important and something we've incorporated here, is that we're differentiating procedures according to the type of municipality based on its population. Then we have a stage of collection, processing, and validation of information, preceded by the field stage of data collection. This allows us to have parameters precisely on the quantity and characteristics of solid waste. As we mentioned, it's divided based on the type of generator, into residential and non-residential waste.

It's important to mention that for the formulation of this quantification guide, we also had the support of Clean Air Task Force. We understand that they also collaborated with the initiative. And what was done here were trial and error activities. Through pilot plans, previously conducted in two municipalities of the country, which allowed us to calibrate the models - which allowed us to calibrate the models to define the sample size and procedures according to the type of municipality.

Now we want to tell you about the second tool we can publish, which is an instructional guide for implementing the phase of solid waste separation at the source.

The objectives we have, or rather, the impact we aim to achieve with this instructional guide, is primarily to carry out source separation in a correct and selective manner. To properly identify and separate solid waste. Also to reduce pollution due to poor management of solid waste, and to promote a culture of responsible consumption. And to encourage the adoption of comprehensive solid waste management policies, and reduction of the amount of waste that goes to final disposal sites. To also educate the population about the benefits of source separation, and to provide access to relevant information and, in this regard, to improve recycling points and proper disposal of solid waste and refuse.

The stakeholders involved in this phase, according to how this instructional guide is designed, are to be introduced through pilot projects or sectors. We have residential stakeholders, such as individual homes, houses, and multi-dwelling complexes. This includes public and private educational institutions, commercial establishments, industries, markets, hotels, and restaurants.

What criteria does this separation instructional guide consider? First, it's based on regulations. Currently, we have an environmental code that has the status of law, which establishes an obligation for municipalities to implement source separation. We also have a technical standard issued regarding the colors of solid waste storage containers. This technical regulation establishes colors for primary separation, which mainly involves three types of waste: organic, non-recyclable, and recyclable waste.

Additionally, this instructional guide outlines four implementation phases: planning, which allows for organizing and making a diagnosis; socialization, emphasizing the importance of engaging strategic

stakeholders in the territory; the implementation phase itself, with monitoring to be carried out by the Ministry of Environment; and the results phase, involving implementation, or rather, monitoring and evaluation through indicators established in this source separation program by the municipalities.

Lastly, at the end of the instructional guide, we provide operational recommendations specifically directed at the public, so they can take these into consideration and facilitate the processes of source separation.

Finally, we want to present relevant initiatives from various municipalities here in Ecuador. We have the "My Quito Recycles" project. Quito is the country's capital, with a population of approximately 3 million inhabitants. This project started recently, in May 2024. It's currently in a pilot phase. The objective - projected until the year 2027 - is to achieve 80% utilization of solid waste.

It's a pilot project focused on three sites in three parishes of the canton of Quito, and initially aims to benefit or involve approximately 30,000 inhabitants.

Now we want to share with you a project from a municipal alliance. Here, a municipal alliance refers to a group of several adjacent municipalities or cantons working together. The Pueblo Cañari municipal alliance is one of the good examples we have here in the country. It's a municipal alliance made up of four cantons. It's also already in an implementation phase, benefiting approximately one hundred thousand inhabitants, and has complementary activities related to separation, with environmental education programs and the installation of recycling machinery to facilitate separation.

Currently three types of waste are being separated, based on our national regulations for colors of solid waste storage containers.

Lastly, we wanted to let you know that through this code, if you can access it, you can review the information we have created as a ministry, specifically regarding all the activities we carry out as the Ministry of Environment, and the solid waste management and inclusive circular economy project.

There you can find our contacts, and we also want to reiterate our thanks. At the end, if there are any questions, we are happy to answer them. And now we want to pass it to Patrick. Thank you very much.

Pat CoatarPeter:

Great, great. Wonderful. Thank you very much, Luis. Muchísimas gracias. It's a really interesting look at the processes of designing and implementing a source segregation program, or really a number of programs from the national level. So, thank you very much for all of that amazing information.

I just want to remind everyone to please submit your questions for Luis and for other presenters using the Q&A function in Webex, and hopefully we can have a great conversation once we hear from everybody.

Great. So, let's shift the conversation slightly, to hear about the experience of a couple municipalities. We'll start with Aditi and Shraddha, to give us the perspective from India. So, please take it away, Aditi.

Aditi Ramola:

Patrick, let me just move to my slide. Here we are. So, thank you all. It's really nice for me to be joining you on this webinar on source separation of waste. In my opinion, one of the hardest topics in waste

management, and not because it's a hard thing to do, but I think it's just harder than the easiest option of, you know, throwing all your waste into one bin.

So, I'm just going to be a prelude to actually a presentation by the municipality of Indore, and Shraddha Tomar is going to present that. I'm just giving a brief introduction to ISWA (International Solid Waste Association) and a little bit about the global perspective on this topic. And then I'll pass it over to her.

Very briefly about ISWA -- ISWA, the International Solid Waste Association is a global independent nonprofit association that was founded in 1970, and is currently headquartered in Rotterdam, in the Netherlands. And the vision and mission of ISWA is to promote and develop sustainable and professional waste management globally, and also promote a transition to a circular economy. That's what we've been talking about for a decade now. And I won't spend too much time here on this slide, but if you'd like to know more about our member-based organization, you can visit us at ISWA.org.

Moving on to the topic of today. So, we've already heard from Patrick; he gave an introduction about how our sector is the third-largest anthropogenic sector that's emitting the greenhouse of methane.

And this slide would take me more than the time that we have right now, but I just wanted to present that IPCC -- the Intergovernmental Panel on Climate Change -- has estimated our sector to be emitting around 3% of greenhouse gases, and we as ISWA have made a case that, you know, it's much underreported. We are probably closer to 15, 20, and 25% of greenhouse gas emissions. And that's because the waste sector benefits don't always get counted in our sector itself, because to avoid double counting, IPCC partitions the economy into sectors, and waste sector is basically at the end of pipe, and we're looked at as an end-of-pipe management system.

But in these four quadrants, we've defined how, actually, if you count right, our sector might be, you know, anywhere between 15 to 30% of greenhouse gas emissions.

So, quickly, moving on, we recently released a report called the Global Waste Management Outlook 2024, and in that report, we estimated that approximately 2.7 billion people in the world do not have their waste being collected. So, if you look on the left side of the graph, you'll see North America, Western Europe, Eastern, Northern Europe as well, they're closer to 99 to 100% of waste collection. And if you go all the way to the right, southeast Asia, Sub-Saharan Africa, you know, they're only close to, what? Less than 40% of waste collection. So, bringing the world average to 75%.

And, why is this a stark reality? It's because, if you look at this graph, here we're estimating what the destinations of municipal solid waste in 2020 were, and here we are basically saying that after around 2 billion tons of waste were produced, 62% were handled in controlled facilities, which includes sustainable and sound landfills, energy recovery, waste and recycling, but almost 40% was not collected or mismanaged, by open dumping and open burning. So, if you look at this graph in another way, almost 70% of the municipal solid waste that was produced is either being openly dumped or burned, but also finds itself on some form of landfills; not always the right kind.

So, basically, this means that a lot of the organic waste that we are producing, and that we're generating, is ending up on these sites, and if it's not managed properly, it's producing methane in anaerobic conditions and leaking into the environment. Not really what the waste hierarchy recommends.

And if you move to this slide, we've basically mentioned some recommendations for what waste management priority should be, including the fact that municipalities need to prioritize sound waste management. We need to look at zero waste models, circular economy models. We absolutely need to completely end the harmful and widespread practice of open burning and dumping. And of course, rather than being end-of-pipe, we need to start talking to producers, retailers, designers, anybody who's putting goods into the market, so that, you know, we can avoid waste generation as much as possible, and problematic materials should be designed out or phased out, if possible.

So, why am I giving you this background? It's because one of the ways of dealing with the adverse impacts of organic waste reaching these dubious dumpsites, landfills, being dumped openly, is that there are adequate treatment options for this type of waste, especially the organic fraction that are range of methods that are available for us, whether it's composting, black soldier fly larvae production, recovering energy through biogas production, and so on. And the nice thing about these methods and technologies and solutions is that they are very scalable. So, you can start from, you know, a household, moving up to a community, moving up to a centralized facility at a city level and so on. And so, this can prevent methane being produced from the waste, and being leaked into the environment.

So, that's one case for why we need to, you know, do source separation and collect organics at the source. But, of course, the other reasons why it's good for the environment, and eventually for human health, is because it helps conserve resources, it improves better recycling quality, recycling efficiency, because you get clean fractions from source-separated waste, and finally it promotes a circular economy by keeping these materials in the loops for longer.

And so, there are many, many reasons why it makes sense to promote source separation of waste, but there are equally the same number of reasons why it's very hard to achieve and practice. And, that leads me to the next slide, which is about national legislation in India, because we are talking about a municipality in India, in central India, called Indore.

And one of the ways to nudge our way into doing source separation, if you wanted to achieve it at a national level, is to have laws that support it, legislation that supports it. And in India, with the notification of the Solid Waste Management Rules in 2016, it's actually mandatory for all citizens to do source separation of waste. And basically, it's mandatory for all waste generators -- so, households, individuals, commercial establishments, and so on and so forth. You know, markets, and the HORECA (hotel, restaurant and Cafe/Catering) sector and so on. So, we are required, by law, to separate waste into three streams: organic waste, or biodegradable waste, dry waste -- which is your dry recyclables, your plastics and glass and so on -- and then the third category is the domestic hazardous, where you have your small batteries, you have your, you know, sanitary waste and diapers and so on and so forth.

But what is law if it's not just a piece of paper, if not applied, you know? So, if it's not being followed or enforced, it's just a first step to create these enabling conditions for source separation. And, so, it's much harder to do it in practice and on the ground, and that's why we want to present today the case of Indore, which is a tier-two city, a medium -sized city -- at least for Indian standards -- located in the state of Madhya Pradesh in Central India. And it has been granted the cleanest city in India seven times in a row now.

But the case is that it wasn't always clean, it wasn't always this way. In fact, citizens of Indore were very frustrated with the waste management situation a decade ago, and now they have a very well-functioning waste management system, and that's why we want to present this successful case, and

here to tell us about the story and the journey, we have Ms. Shraddha Tomar who's the Solid Waste Management Expert at the Indore Municipal Corporation, where she has been since 2016, so she knows the story from the very beginning, and it's my honor to welcome her to this webinar, and to present the case of Indore to you. Shraddha, if you can unmute yourself, and just check if you can move the slides, otherwise I can do that for you. The floor is yours.

Shraddha Tomar:

Am I audible?

Aditi Ramola:

Yes, you are audible. Yes.

Shraddha Tomar:

Ok.

Aditi Ramola:

Mm-hmm. Can you move the slides?

Shraddha Tomar:

Ok, ok.

Aditi Ramola:

Press the little arrow.

Shraddha Tomar:

I just share my screen, then.

Aditi Ramola:

No, no, no; don't share your screen. So, on the screen, you will see the slides, and there's a little arrow next to 52…

Shraddha Tomar:

Yes, yes, yes.

Aditi Ramola:

Yeah.

Shraddha Tomar:

I can, I can.

Aditi Ramola:

Perfect.

Shraddha Tomar:

Thank you, Aditi. Hello, everyone. Basically, Indore is a city of approx. 30 lakhs[1] population. The waste generation is approx. 1150 to 1200 tons per day. You know, when we started our journey, our waste generation per capita was 410 grams per day. And at present we have the per capita of 397 grams per day. We have approximately 6 lakhs units to cater the services every day, and we have 19 zones in the entire city, which is -- the area of the city is approx. 276 square kilometers, and it is divided into 19 zones and 85 wards.

To talk about the entire solid waste management chain, the Indore Municipal Corporation has always focused on the certain parameters, like the backbone of the system, which we always believe in, is our door-to-door collection, and segregation. On this the entire system is depending upon. Ok? And in order to maintain the segregation, we also follow the norms of segregating the sweeping waste also, which is being collected through our workers every day, on a daily basis.

So basically, we have five pillars on which we have focus. It is like cleaning and housekeeping, collection and transportation, processing and disposal, sanitation, and the behavioral change. Because in order to make a sustainable solution, it is very important, like whatever the implementation plan we have, you know, proposed for a city, it should become a public moment in order to, you know, get the involvement in the system so that it gets sustained.

These were the certain challenges as the other, you know, cities in India are struggling. Like, they have secondary storage bin space across the city, and which are the medium of attraction for a lot of stray cattles, leading to a lot of, you know, traffic hinderance, rural accidents, and etcetera. We also had approx. of 15 lakhs of tons of waste placed at our dumpsite, which is approx. hundred-acre land. It was in 2015.

We started our journey basically in 2015, in which we did a study to do a city profiling of the city, in order to understand what are the size of the units, how many units are there, how many residential units are there, how many commercial units are there, how many industrial units are there, and then accordingly we did area-specific plannings. Initially, when we were setting up the entire things, we had a lack of infrastructure, so initially we did a -- we targeted like setting up the infrastructure for how we'll collect the waste, how we'll sweep the roads. Our motto was just to collect the waste, but we started with a mixed-waste collection, and then we went on to, you know, climbing up, you know, in order to achieve this segregation. And it was very important for us, initially, to discipline our staff to -- did a capacity-building of our staff.

Then in 2016, we successfully established a hundred-person door-to-door collection that was for mixed waste but we also declared ourselves as a bin-free city. Later on, in 2017, we went on for the three-bin

[1] 10 lakhs = 1 million

segregation. These were the -- some models through which we started our journey. Basically, as I said, we are always focused on these five pillars. So right now, we are focusing, like, we have already achieved the levels, so we are still focusing to ensure the sustainability, so we always focus on how we can keep on involving public right now. Like, we are also a water plus city, where we have a zero visibility of black and gray water. We are a city with 100% six-bin segregation. We are a city currently focused on reduction of per capita, and working on 3R (replacement, reduction, and refinement) principles. And we are also working on the digital interventions, how we can use more and more ICT (information and communications technology)-based mechanisms, so that we reduce our dependency on the manpower.

This is the process how in a year, we achieved the tag of a bin-free city and established 100% door-to-door collection. But in 2016, we had a mixed-waste collection. In 2017, we launched for a three-bin segregation, and in 2020 we launched for a six-bin segregation.

See, basically, if I talk about the segregation, we had a plan, a specific plan, like how many number of vehicles will be required, how many number of units will be there, how many number of trips will be taken, so we defined a, you know, a route plan for our vehicles, and we asked our driver and helper, which are accompanied with a volunteer of an NGO (non-governmental organization) which is impaneled to Indore Municipal Corporation (IMC). And along, these three people, every day going on the routes, when the people are coming out of their houses, they're interacting with them. Basically, the volunteer of the NGO is doing a -- playing a key role here, bridging a gap between the IMC and the citizen. And they play a vital role, why? Because, you know, they're connecting us with the citizen every day, you know, we are getting in touch with their everyday problem, the complaints we are getting are resolved within less time, so that we can keep engaging public and we can have a bond with the public, so that they can also get involved in our campaign of segregation.

So, basically, it took approx. after establishing a door-to-door collection in 2016, it took approx. only six months to establish three-bin segregation for us. Because initially, we focused on gaining the faith of the public and getting their trust on us, and maintaining a service delivery up to the 100%, so that, you know, it is our responsibility to give 100% in our service delivery, and they -- they can have a connectivity, like, as -- in Indian cities, generally it is there, like, people don't have faith on the municipalities. They think that they are corrupted, they don't work, and they are not doing their services properly, because they are struggling a lot with a number of things, like on, you know, like water supply is also our responsibility, the entire drainage system is also a responsibility, the electricity, the supply of the streetlights and everything, it's our responsibility.

So, you know, they have been struggling a lot because of a number of reasons. So, you know, we focus on resolving their complaints, and gaining their faith and trust on us, so that whatever we are asking them, they'll believe in it, and they'll -- they'll follow it. If we'll resolve their complaints. But, it is -- you know, after getting segregation at source, it is the responsibility of the municipality, like, how we are transporting the waste from, if we are getting the segregated waste without any human interruption and without getting mixed. Hence, what we did, we have established a separate systems here.

Like, we have a separate -- as you can see here in the chart, we have separate system for litter bin collection. We have separate system for collection of road-sweeping waste. We have system for collection of the units generates up to ten kgs (kilograms) of waste every day, which in-situ goes to the transfer station, and then from the transfer station to big containers in the hook loaders, we are transporting to the main processing site. And we also have a separate system called bulk collection

system, for the units which generates more than ten kgs of waste every day. We have a separate fleet for C&D (construction and demolition) waste collection, we have separate fleet for garden waste collection, and for sewer cleaning mechanism. For each and every, you know, streams of waste, we have separate fleet of collections, so that nothing gets mixed in between, and, you know, it gets transported with the quality to the processing site. And that is the reason we managed to grab the possibility of having Asia's biggest bio-CNG plant for 50 tpd (tons per day). But it all depends, like, how you -- what implementing your plan should be. Whatever you are planning for the particular specific area, it should be very appropriate. For that, you require a waste characterization and quantification studied prior. It should be done in a very effective manner, and the planning should also be -- for us, like, for administrative, if I talk about the ULB (urban local body) perspective, we have a number of, you know, before implementing, we have a number of stakeholders, too. First, to convince them.

Like, we have political leaders. Firstly, we need to involve them. It is very important for, as an Urban Local Body, to have a political acceptance before implementing anything, in any area. So, it was a -- you know, one of the difficulties for us to have a political acceptance, it was difficult for us to engage media so that media, whatever you are doing in the particular, specific area, media projects us in a positive manner, so that it gives a positive image in public's mindset. So, you know, there are a number of aspects that you need to focus on while implementation. You might be, you know, also need to, manage the things with the unions as you are deploying the human power here.

So, there are a lot of factors which involves in the implementation, and a lot of efforts being involved. As I said, we have a separate collection system for units that generate more than ten kgs, so we call it a bulk waste collection system here. We have a separate collection system for meat -- meat waste also, like fish market, meat market, butcher shops are being collected every day in a separate manner with a separate fleet.

And like approximately and in order to have a complete coverage every day, on an everyday basis, basically 800 fleets runs every day. Which have predefined routes, and which is being monitored through our integrated control and command center, and we not only ensure like 100% coverage, but we always ensure in order coverage. And we have a, as I said, we have 19 zones, like the entire city is divided into 19 zones. So, if we have 19 screens over there, and we have people sitting in two shifts monitoring, like, as we have the collection system, twice a day collection system in commercial areas, and once a day collection system in residential area. Apart from that, there are areas where we empty the litter bin four times a day. Sweeping also here is a -- you know, a 24-hour job. So, for collection of sweeping waste also, we have defined a different kind of vehicles. And we also have the predefined routes for them also.

So, all of the entire operations are 24/7, entire operations is being monitored to a center. And if they find any of the things which is not happening as per the plan, they immediately gets connected with the field staff, and they report it to the field staff, like, "you are not going in the proper lane," like, or, for example, "you have skipped the line," or, "you have skipped the point; you need to go back, cover it, and then go move forward." So, it's that kind of operations, or the monitoring is being connected every day.

And I think, this, as we are talking about the landfill and the methane generation, I would like to add our personal experience after ensuring or getting the source segregation at source. Like, we had a landfill which we, you know, constructed in 2010. And we estimated the landfill, the size of the landfill is approx. this -- you know, the capacity of the landfill is approx. 6 lakhs tons capacity. And we estimated it

for 25 years. But when, at that time, the generation of the inerts after processing was approx. 30 to 35%.

But after getting segregation, now the inerts is up to 5 to 10% only. So now we have, you know, increased the life of our landfill also. So, I think it is very important to segregate the waste at source itself, rather than, you know, going for a mixed waste collection sort of thing. But for that, it is very important to have a public involvement in the system, and build a 360-degree level aspects. So, it is very important to understand the practical aspects, and implement the things in according, to the field feasibility. Every area, every city, has different planning. So, I think the planning for segregation should be area-specific and city-specific. You cannot implement the exact plan, but you can somewhat learn from the other planning or the system or model, but exactly can't be duplicated in any of the city. I think over to Aditi.

Aditi Ramola:

Thank you so much, Shraddha. I think in the interest of time, I'm not going to go through the rest of the slides. These were just examples from South India. But I think Shraddha has given a fantastic overview of what Indore has done, and also made a good case for source separation. I mean, their landfill capacity and the timeframe for the landfills has gone up, just by source separation.

Just -- I just want to end with one thing, though. Because it is our -- it's an ideal, and it's also the goal, to have -- and I didn't start my video again, sorry. It is a goal to achieve source separation. It can also be an ideal that the city wants to reach, but we need to be realistic. It takes a lot of time; it takes almost a decade, in some cases. And in that case, the practitioners and the people who are on the ground should also, you know, have facilities that can deal with mixed waste and make sure that no untreated waste is reaching final disposal sites, so that we can reduce our methane emissions, and so on.

I was recently discussing behavior change with another ISWA expert and she was refuting my arguments and saying that it's not about behavior change; it's more about systems. Putting systems in place that make it easy for people to do source separation and making the right thing, the default thing. Or, making the default the right thing to do. But I didn't agree with her fully, so I do think it's also about behavior change, not easy to establish. I think you're going to hear good cases -- case studies from Latin America and the rest of the world, from Delterra, and that's where I'd like to just end. My last slide was actually a little tuk-tuk, awareness-raising tuk-tuk that we have for one of our projects. It goes around telling people how to do source separation at homes and so on. And that's my last slide. So, over -- back to you, Patrick. Thank you so much.

Pat CoatarPeter:

Great, thank you so much for all that really amazing information. I think it's -- it's clear that source segregation can be just a part -- obviously an important part -- but just a part of broader policies and movements to improve municipal service delivery while improving environmental and public health. So, thanks also for that great transition to our next presenters. I'm going to move over to our friends at Delterra to hear some interesting insights –

Klara Zimmerman:

Pat, sorry to interrupt, this is Klara Zimmerman from the GMI team. I also just wanted to make sure that we mention that we are going to soon be having a case study come out about Indore's transformation, and, you know, kind of put into kind of concrete just steps what Shraddha and Aditi presented, so I wanted to make sure the listeners keep an eye out for that from GMI. And sorry to interrupt.

Pat CoatarPeter:

No, that's great; thanks so much for bringing that to our attention. That's really important. Great. So, let's move over to Delterra, to Jeremy and Mariano, to hear about some really interesting insights. Again, I think Aditi touched on it at the end of her discussion, about the need to attend a behavior change at the household level, as well as the sort of system- and policy-level discussions that we've been having so far. So, I'll hand it over to Jeremy and Mariano to introduce yourself and let us know about Olavarría.

Jeremy Douglas:

Alright, thanks so much, Pat. I know we're behind time, so I'm going to try to go quickly to make it up. And a lot of people have said some of the great stuff that I was going to talk about anyway, so I'm not going to repeat some of those things. But, Mariano is the one you're going to want to hear from more anyway, because he is the Behavior Change practitioner at Delterra. So, who is Delterra? We're a non-profit organization that is working to develop and implement scalable, circular economy solutions in Global South countries.

So, we work across the entire value chain of waste systems, dealing with all different types of municipal solid wastes, ultimately trying to build the capacity of non-profit organizations -- or, of municipalities, primarily, to be able to have sustainably-functioning waste management systems, as we heard a lot of countries do not have that around the world.

We work currently in Argentina, Brazil, and Indonesia, and mentioned we work across the value chain, all the way from sort of upstream, helping companies think about design of packaging -- so, trying to turn off the tap at the source, before waste is even produced -- but then a lot of work downstream also, of helping manage waste that's put out into the world.

As you already know, and has been well covered, organic waste is a huge contributor to methane emissions and short-term emissions, so it's a great opportunity to have low-tech solutions to tackle climate change. And as you've also heard, most countries have -- especially in the Global South, 50% or more -- or around 50% of their municipal solid waste is coming from organic sources. And so, those three countries that we work in, you can see the lion's share is coming from organic waste. So, solving waste management is solving organic waste, primarily, for these countries. So that's something that we're focused on.

We work in a number of different areas, all the way from community engagement, behavior change, building the capacity of waste management services, whether that be a municipality, or in the case of Indonesia, sub-municipal or sort of informal sector, loosely-formalized organizations and individuals. But then we also try to match that with the demand side. So, collection and source separation is one thing, but who, then, is going to buy this material? And we see that if you don't think about the demand

side, then these sort of interventions can collapse, because people wonder why they would even bother separating these things, if there's no economic case for it, and the city is just continuing to spend money and doesn't see a way to actually recoup some of that. So that's why we feel it's really important to have the supply and the demand side for waste management.

And what I want to show today and what Mariano, my colleague in Argentina, is going to talk more about is some of the insights we've gathered on behavior change specifically. We've published these findings and reports on our website, so if you go to delterra.org and you go under our Knowledge Hub, we've sort of open-sourced everything we've discovered about behavior change and insights and interventions are freely available there and for anyone else who wants to use those, who are practitioners, like, please do. We want this to scale as much as possible.

And so, one thing I do want to highlight, that hasn't been mentioned as much right now, is that behavior change actually can be the most cost-effective way to keep organics out of landfill and to develop circular solutions for this. More effective as we found, and more -- like, more economical, than using technology. And this is especially true in Global South countries, that they don't have the budget to be able to invest into infrastructure, or even we've seen sometimes a city has been sold on some fancy piece of equipment, but it was not at all what they needed. There was no OPEX (operating expenditure) to go with that, for repairs and maintenance, and so it ended up just collecting dust and not being valuable.

So, behavior change, tried and true, low-tech, low-cost, high ROI (return on investment). So that's why we really believe that, you know, behavior change at source is the most effective way to improve the value of all materials throughout the chain.

So, what -- what I want to do is now focus on -- I'm missing some slides, but Olavarría is a city in Argentina that we've been working in for the last three and a half, four years. It's a mid-sized city, about 120 thousand people. And this was an interesting example for Delterra to look at: how could we transform an entire city's waste management system to go from almost 100% of their waste going directly to landfill, to increasing the diversion significantly of organics and recyclables? So, how could we take this city and transform it? And one thing I think is interesting for others who are working in different places around the world is, we've found that if there is already a certain level of infrastructure there and collection -- like, they were already collecting waste six days a week, unbelievably. They were picking up mixed waste six days a week. And so there was already the infrastructure, the collection.

The municipality was spending money on waste management. But they were just not doing any recycling at all. And no organics collection or diversion. They didn't have the MRF, the material recovery facility, didn't have any composting site or equipment. So, this was kind of an exciting opportunity, because they have a lot of the -- the framework in place, or a lot of the foundation, that we can build on. And we just needed to work with the city to look at, "how can we go from everything going to landfill, to recovering as much as possible?" So, most of that waste was going to landfill. And how did we manage to get people to shift from putting mixed waste out six days a week to having different collection and different separation? And that's what I want my colleague Mariano to talk about now, who is a Behavior Change expert, and has lots of experience and academic background in behavioral insights and how to get people to shift their behavior, because as I mention, that can be the most cost-effective way of driving change, and especially with organics as the primary issue that we're talking about today. So, without further ado, I'll get out of the way, and I'll hand it over to Mariano now,

to talk about some of the specific interventions that we did in Olavarría, and how we took it from 0% recycling to now a transformed city. So, over to you, Mariano.

Mariano Kristoff:

Thank you, Jeremy. Amazing brief. So, we do it with a recycling behavior journey. We have a human-centered design framework, at the core of our behavior change program design. And we have three principal stages: explore, design, and implement. We take some methodologies of design thinking and user methodologies and have a blend with anthropological innovation and behavioral science to do this. So, in our explore, in the discovery, we use qualitative research, like interviews, ethnographic and participant observations, as qualitative research. And also, we make some quantitative methods, like service.

So, with this information, we move to the analysis, and in the analysis, we want to understand the people we are trying to reach. And in Olavarría example, we identified a city, very family-friendly, with a modern infrastructure. A small-town feel, and a place where neighbors know and recognize one another. So, we learned, in this case, that the residents take pride in their city and want to have a stronger recycling culture. Residents also identified the practice of mixing all their waste together, instead of recycling some of it, as a pain point, so residents said they want to do their part to adopt more modern practice, in moving to the circularity.

So, with this explore stage done, our delivery is a design principles. And in this case, our design principles were, first, the waste management as a civic duty. Then the trend of urban modernization. Third, the reinforcement of new habits. So, we want to empower people with helpful reminders and make them feel equipped, and four, and of course, important, the face-to-face interactions. So, it's a city with a small-town feel, like I said, and to talk with another human was an important part of making information of compostables accessible, credible, effective. So, in an increasing digital era, it also stood out as an add-value, this face-to-face.

So, with all that in mind, we then move through the design, so we have to, we had workshops and ideations with stakeholders, and of course, with residents. So, once we understand Olavarría culture and attitudes, we set up the design of this behavior change experience.

We developed several mock-ups of what our recycling system would look and feel like and showed them to residents in focus group. Examples of that are, ok, I missed some slides. But we proved different concepts, and then we choose a concept of, focus on the impact, and focus also of, people like message about recycling as the way of the future. So, in this city, it was important, that. So, we choose that model, and then we link this concept with interventions, and we test different pilots to see what will have the best results to scale across the city.

We test door-to-door with starter kits. Starter kits are magnetics and some bags. Then we have good results, with that pilot. Then we prove another options, like videos and digital registrations. Not good enough. So, after testing various options, we understood that the blend focus on door-to-door interactions, but supplement also by top-down and digital channels was the most effective approach. So, we moved with that, and when we do that, we also used the door-to-door interventions to make two important things: one, to profile users, because when you are in the city, you have different waste habit persons. And also -- and we do that with surveys, in the door-to-door activation. And we also use that interaction to understand deeply the barriers. The roots of why the people are not separating.

So, after the first door-to-door, we identify these three archetypes of potential recyclers, and because of the results, we decide to focus our energy on the non-practitioners, no? Because we have more chance to make a better change there. So, as I said, we identified a lot of barriers. Now I will share with you two of them.

One, it's the lack of knowledge about how to properly separate. So, to do something against this barrier, we're thinking of two interventions. One, in the second face-to-face visit -- because we go again. Then, in the door-to-door visits. And in the second, we target potential recyclers and provide guidance on the practice of collecting organic waste over one week. So, one person look into their eyes, give the information, to change the habit against that barrier. And then, we implement a chatbot flow on how to compost. Enhanced with a trivia game, to add a playful element to -- through the digital interaction.

Well, another barrier was that citizens do not feel equipped enough to start this new practice, so we equipped them with some, some elements. And finally, there is the belief that after is collected, it ends up in the same place. And ultimately that's not generate a positive impact. So, because of that, we make things like divided the collected days, intervened with separate streams, the trucks. Added Chatbot flow with visual content on how the materials end up if correctly separated. And different things in public events, like for example, distribute compostable materials from the plant at public events, no? So, to show that what they are doing matters, and make a real impact in -- in the environmental.

That for me, thank you. Patrick?

Pat CoatarPeter:

Great, thank you so much, Mariano and Jeremy.

Thanks also to all of our presenters. Thank you very much for those amazing presentations. I think it really gives us a view into designing, testing, and implementing source segregation programs from a variety of angles and levels. We want to -- we at GMI want to be sure to drive the point home that these source segregation programs are an essential component of efforts to divert organics from landfills and reduce methane emissions from the municipal solid waste sector. So, the better we can get at keeping organic waste out of landfills in the first place, the more progress we can make on reducing methane from the MSW sector, and source segregation is one of those pillars to that approach. So, thanks again for all of that amazing information. We have some time now for questions from the audience. We've had some questions rolling in, which is great to see. I just want to remind folks to use the Q&A function in the app and to direct those questions to all panelists, and we'll shepherd it on from there.

So. I have a question for all of our panelists to get us started, but first, can I ask our panelists to please come on camera for our Q&A and conversation portion? Just so we can all be present. Awesome, thank you all.

So, I would love to hear more about the baseline data for your projects, and for -- maybe for some of the policies as well, sort of either some initial thoughts, or expounding on some of the thoughts you gave us during your presentation, recognizing that each municipality has a different starting point from which to dictate, which will dictate sort of different interventions. I wonder if you could tell us, or revisit what are some of the baseline data that you needed to make your program a success, and I'm guessing some

of it was waste characterization data, but, you know, sort of what else were the inputs that led to success and was it readily available, or is it something that you had to coordinate with local government, or with other contractors, if you are the local government? Or invest in technical assistance to generate that data yourself?

So, maybe let's start in reverse order, and I can pass it over to Jeremy and Mariano.

Jeremy Douglas:

Great, thank -- Mariano, did you want to start? Then I can jump in. Ok, I'll start -- yeah, we do -- I mean, at a very macro level, determining which city we work with, the baseline data we gather is across six different dimensions. We call it our circular cities framework. Again, that's published on our website, but it looks at policies, collection and separation, demand market, infrastructure, budget, political willingness. So, there's -- before we even decide to work with a city, there's that sort of baseline data gathering of like what capabilities are in place, what is the current situation. We wouldn't work with a city if the mayor didn't -- wasn't motivated to move forward, so there's a huge political element to this, for sure.

But then once we get into actually deciding to work on this, we do look at that baselining with the waste characterization in order to determine, you know, like, what are the right interventions. But when it comes to organics specifically, I think a big thing that we look at is "how contaminated are the organics?" Because that will help drive insights around behavior change, if like, "oh, maybe people aren't understanding what goes in the organics, versus recycling, versus mixed waste." So that can help provide that feedback loop. But it also determines what the offtake markets and treatment options are.

A very clean organic stream will have higher value, and it could actually potentially be certified to go back into food production in agriculture. But very highly contaminated organics might be used for co-processing, or like, there might be other things that are offtake markets. So, I think that baselining of like the quality is really important.

And we've -- just final thing: we've started working with Google recently to use AI to put on the conveyor belts that are coming into the MRFs to be able to determine, like, how -- how much -- and this actually was trialed in India, but like, how -- how is the quality of those different collection routes, informing what we need to do at the household separation level, so that we can provide that feedback of, like, what's -- what's working and what's not. So, using AI (artificial intelligence) and technology, I noticed there was a question came up around that. Not necessarily that use, but that's another way that we're trying to incorporate that into baselining.

Pat CoatarPeter:

Great, thank you. Mariano, did you want to jump in there, or…?

Mariano Kristoff:

I think that Jeremy shared all the principal insights about this.

Just to add that in the Olavarría case, it was important to design a recycling system that was very pragmatic and impact oriented. That works very well in Olavarría case.

Pat CoatarPeter:

Great, that's really helpful. Thanks -- thanks very much for that overview. Sounds like some sophisticated methods that are rooted in the local context. Sounds -- sounds very helpful. Aditi and Shraddha, what sort of baseline data was helpful? Particularly thinking about -- I mean, obviously, in -- in the case of Indore, we're talking about a larger sort of municipal service reform project, but thinking specifically about source segregation, what are the types of baseline data that was helpful to designing that part of the project?

Aditi Ramola:

Do you want to go, or should I say something about Chennai? Oh, I don't think she can hear me. Ok, let me just give you an example of the examples that I didn't speak about. Agreeing with what Jeremy said -- with all of that, of course, political will and so on, without the mayor's support, I mean, Shraddha was not able to present for a very long time, but when we heard the story first about Indore, it was all about political will. So, once that's established, looking at waste generation patterns was very important. So at least in the Chennai case, they definitely want to know what the peak times are, when people go out to throw waste out into the street, and they always found that people, before leaving for work, wanted to put out the waste and not think about it. So, that's how the logistics were designed, so then they had to put out most of their collection vehicles in the morning, from 8 o'clock in the morning to, say, about 2 p.m. And their second shift would begin later on. So, that kind of data was essential, so people's behavior patterns was very essential for designing the best waste systems for them. Also motivational factors: you know, depending on the season, the seasonality, depending on which kind of festivals were coming along, because India we have a lot of celebrations, a lot of organic waste is generated in those festivals and so on.

And then, that led to, of course, resource optimization. Shraddha talked a little bit about ICT, which is basically Internet of Things, in some ways, information, and your computer -- computing system, so that you can track how your fleet is moving. So that, in the case of Chennai, they do a good job of monitoring how much waste is being collected from where, and these RFID (radio frequency identification) tags basically tell -- tell the truck that is going on a route that, "this bin is full; this bin is not full," so, you know, changing routes dynamically and so on. That kind of data is collected as well. Of course, characterization data about generation is absolutely necessary at the beginning, and you need to keep doing that periodically too, because one of the few findings we have from the GWMO (Global Waste Management Outlook), is that as your GDP (gross domestic product) is going up, you are generating more waste, and your waste is also changing, as you're going up the GDP ladder. So, having these waste characterization studies in a periodic manner also is very helpful.

And then finally, of course, designing these logistical systems that are actually effective and also affordable. Because we've seen also cases in cities and municipalities where they designed really fancy things, but then that kind of goes to waste because the operational costs are not being met, and people are not paying for waste collection and so on. So, a lot of these things are collected with the data that you collect right at the beginning of designing a system. And I hope Shraddha can hear me, so that she can come in. Shraddha, can you hear me?

Shraddha Tomar:

Yes, yes.

Aditi Ramola:

Ok, good. Please, if you want to add the Indore case, thank you.

Shraddha Tomar:

Actually, in India, we have -- implementation is one challenge, another is a sustainability challenge is also there with us. Now we have a plan value of the cleanest city of India. So, a lot of people are coming and attracting, and they want to establish themselves here in the city. So, it's very -- you know, it's an everyday task for us to keep getting them in loop of segregation. Because they are coming from another city, for settling down in Indore itself. So, it's like, to getting them into the loop is very important.

Another thing is, like, the sustainability in terms of financial things is also important. Like, you know, increasing the user charges and creating a number of domains for earning the money, you know? Because if I talk about Indore, the entire operation is in-house. We don't have any outsourcing in it. Ok? So, there is a huge cost involved in the collection and transportation, whether it is primary or in the secondary collection and transportation.

So the financial sustainabilities are also important. Keep on, you know, updating your staff, keep on motivating your staff, like to put in every day the same energy is also one of the tasks for us. Keep on getting the public, get engaged in it is also a task. Keep on getting the political leaders engaged in it is also one of the tasks, so that what about the changes we are doing in everyday system? Like, it always gets accepted by them.

And also the routes which we have predefined for each and every vehicle. It's -- you know, we need to keep on remodify it. In certain regular interval of time. So, you know, maintaining the segregation, I think Indore is sustaining it because the system is now handed over to the public. Now they are running the system, as -- you know, as a government body, we have -- like, as I am working here since 2015. But currently the fifth commissioner and the second mayor is sitting with us. Ok? And every time you cannot expect the same person with the same passion, with the same -- you know, and as you put into the system, and the same interest as the previous commissioner was taking, that this commissioner will also -- will take the same interest. We cannot expect it from the person. And, you know, it changes. Like -- when, you know, there is a transition phase, it changes. The systems comes -- you know, sometimes comes down, sometimes goes up. But it is sustained because the public is involved, and it was very difficult for us to convince them for us. That is the most difficult task in India, you know, for the political acceptance, and because we have a number of plans already predefined. All of the cities, I don't think so, there are any city in India, you know, that they don't have plans, but the implementation part is weak, just because of any number of involvement and the interference of the various stakeholders into the system.

So, you know, you need to deal with this sector, which, you know, I have already previous mentioned also. But I think financial sustainability also, we need to focus on, it's a major, you know, task for Indian cities at present. Because, you know, the commissioner who is heading, you know, his priority is not

only the cleanliness; he has a number of priorities to serve on. You know? So financially, that keeps on diverting the funds, to get in there. But, you know, as Indore, we are generating a lot of revenues through carbon credits to EPRs (extended producer responsibility). You know, after, as we are successful in giving services to citizens that are happy to pay us -- you know, user charges to us. So, via the ULB managing, the collection of approx. 90% of the user charges. Of the demand.

So, I think if the service delivery and the planning and everything keeps on in -- you know, in a proper manner of the chain, you know, that you will get the support from the citizens. But, you know, you need to not only focus on the cleanliness, but you need to also simultaneously focus on the other service delivery also, which comes under our responsibility to -- just to gain the faith. And the one thing, which I think you were also presenting, like the one-to-one interaction plays a vital role.

As I previously also shared, like, when you hammer the iron, and it takes the shape and it is hot, the same when public is coming, keep on hammering their mind, "please give your waste into the vehicle, please give your waste into the vehicle." "Please segregate into three bins, please segregate it." So, every day, you know, hammering on their mind with the same dialogue plays a vital role here. So…

Pat CoatarPeter:

Great.

Shraddha Tomar:

I think the segregation is the main key and the main backbone of the entire solid waste management chain, I would say, as per our learning. You know, because we didn't thought of having bio-CNG (bio-compressed natural gas), we didn't thought of having automatic -- you know, fully-automatic material recovery facility, and so on and so. We were just focused on the collection, satisfying our services, because we have a lot of petitions on us, publics were completely dissatisfied with us, and, you know, the collector and commissioner keeps on going to the high court and keep on giving the answers.

So, you know, our learning is just focused on the backbone, the entire system will automatically get set. You will gather the possibility for processing also…

Pat CoatarPeter:

Thank you.

Shraddha Tomar:

…but firstly you need to focus on, the study your waste very minutely, very, you know, in effective manner. You should be -- you know, the understanding with the kind of waste, and the quantification and the characterization should be very good, in order to have such planning. That is my…

Pat CoatarPeter:

Great.

Shraddha Tomar:

…opinion, because I am involved, and I have read that analysis for Indore, so my understanding with the city is at that level now. If I move to another city, then I'll also take some time to have understanding of the base with that city. But I think this makes you successful in this entire journey.

Pat CoatarPeter:

Great. Thank you so much. Appreciate that.

That's a great sort of all-encompassing view of the dynamic data needed to keep the -- or, to get the process started, to keep it going, and then, also to -- the sort of foundational need to have that data to make it a success. So, thank you very much for that. Luis, please feel free to tell us about the baseline data needed to make your program a success. We also have another question in the chat for you. I just want to note we're -- if you all are able to stick around for a couple more minutes, we'd love to extend it just to hear from everybody and keep the conversation going. But if you have to drop off, please feel free.

So, Luis, please tell us about the essential data from the waste separation program, or please answer the question, "What actions within Ecuador's roadmap are you seeing to develop the infrastructure for proper waste management?"

Luis Vallejo*:

**This section of the webinar was given in Spanish and has been translated into English here. For the Spanish transcript, please refer to the end of this document.*

Thank you, Patrick. Yes, to start with the question from the chat, in the country we are currently developing several national public policy instruments simultaneously. And the challenge we have is to effectively coordinate these instruments. As I was saying, we already have a roadmap to address the issue of plastic waste. And in addition to that, we are also formulating the national plan for comprehensive solid waste management, a national plan for reducing single-use plastics, and the national strategy for inclusive circular economy. It's called inclusive circular economy because the issue of involving grassroots recyclers has become very relevant in the country. These are the people, estimated at approximately 20 thousand families in the country, who work or are associated with these grassroots recycling activities. These are people who work, to a certain extent, more informally within the recycling chain.

One of our challenges is to define, through these policies and roadmaps, strategic axes on which the country's future actions will be implemented. And specifically, behavior change and responsible consumption have been identified as key elements, which go hand in hand with source separation. These form one of the main axes or pillars on which more specific activities or programs should be developed or implemented, particularly in relation to source separation.

As we mentioned, out of the 221 municipalities in our country, only 14% have implemented a sustained process of source separation. At the Ministry of Environment, we've analyzed several factors at a macro level that have contributed to the majority of municipalities failing to implement separation.

We agree with the other panelists that one of the most relevant issues, if not the most relevant, is political decision-making. In our country, local municipal governments have a four-year term, with a maximum of eight consecutive years in the case of re-election. However, processes or project initiatives that have been implemented for source separation have often failed due to issues of political decision-making.

Cultural factors also play a role. Our country has four distinct geographical regions. Most of the source separation projects or initiatives in the country are concentrated in the Andean region. Our analysis suggests this is related to cultural factors. The population in this region tends to have a greater awareness of solid waste issues.

We've also analyzed another factor, which I mentioned in the presentation: municipalities that have already implemented these public containerization systems - specifically public containers - find it difficult to implement separation processes. This is because the population is already getting accustomed to depositing mixed waste in these public containers.

Other components - or rather, factors - that we wanted to point out are that the municipalities that have implemented source separation are typically those with smaller populations. These are municipalities with populations of up to 50,000 inhabitants. Hence, the idea to implement pilot projects like the one I mentioned in the capital, Quito - projects that are more ambitious and can generate a greater impact at the national level.

In this regard, we are already coordinating to work with the municipality of Quito on these processes, or this pilot project that started in May, focusing on source separation. There are four sectors where intervention will take place. The decision was made to intervene in sectors with a high socioeconomic bracket. The idea is also to gradually involve the rest of the municipalities and cantons of the country in this source separation process.

That's what we wanted to share with you. We've also observed that the municipalities that have achieved sustainability in the source separation process are those that have already established, through their ordinances, a specific regulatory framework that defines source separation. Additionally, municipalities that have created a certain degree of autonomy have been successful. Unfortunately, institutionally, municipalities still have deficiencies, and those that have had better results in separation are the ones that have managed to create public companies. These companies have a degree of autonomy from the municipalities, allowing them to manage solid waste more effectively.

As I've said, we still face a significant challenge in implementing source separation across the country. However, with all these initiatives and the formulation of these technical tools, we have the ambition to define goals in the short and medium term. Specifically, goals that will implement a higher percentage of source separation in the country. Thank you, Patrick.

Pat CoatarPeter:

Great. Thank you very much. Sounds like lots of varied experience just sort of within that -- that national-level plan. Lots of moving parts, different types of municipalities to work with, and the availability or lack thereof of central data in the need to -- to generate that and gather that, and feed that into the system to make it a success.

So, we are a few minutes over. I just want to -- to take the time to thank everybody for -- thank especially our panelists for being with us today, and providing such amazing, useful information from a variety of different perspectives and different levels. I hope everyone enjoyed the presentation as much as me. Again, I want to extend a heartfelt thank-you to all of our presenters and thank everybody for taking time out of your day to learn about reducing methane emissions from -- from solid waste management through source segregation. We look forward to meeting and learning together again soon. We do have a last slide at the end of our slideshow today, with some information on how to engage GMI. We're continually updating our list of events and resources on our website, and occasionally sending information, including our newsletter, through our Listserv, so go ahead and check that out and please sign up for our Listserv if you're interested.

And finally, if you have questions, or would like to speak with the GMI team, feel free to visit our website and submit a "contact us" request. So, thank you again to all of our panelists. Thanks all for presenting the information, and thanks to all of our participants for spending some time with us today. Take care, everyone.

Original Spanish Transcript

Luis Vallejo (presentation):

Muchas gracias, Patrick. Buenas -- buenos días acá con todos. Muchas gracias. Vamos primero iniciar agradeciendo a la Iniciativa Global del Metano. También a Abt Global, y a la EPA por la organización y por su consideración hacia nosotros para poder difundir el trabajo que estamos haciendo.

Em, me presento. Mi nombre es Luis Vallejo. Yo trabajo en el Ministerio del Ambiente, Agua y Transición Ecológica del Ecuador, en un proyecto de pre-inversión denominado de Gestión de Residuos Sólidos y Economía Circular Inclusiva, GRECI. Eh, actualmente, me encuentro trabajando por diez años en el Ministerio del Ambiente, y hemos desarrollado proyectos y actividades justamente enfocadas en la formación de la política y la planificación nacional de los residuos sólidos.

El tema que nosotros queremos hoy compartirles justamente hace referencia a las actividades que como proyecto y ministerio hemos desarrollado en función de la segregación o separación de los residuos sólidos en origen o en la fuente.

Eh, aquí tenemos el contenido. Partimos principalmente de datos macros, para poner en contexto de la situación de la gestión de los residuos sólidos en el país. Luego, queremos un poco enfatizar en herramientas que hemos desarrollado, principalmente guías e instructivos para la cuantificación y caracterización de los residuos sólidos, así como los proyectos e iniciativas relevantes que podemos identificar acá en el país, y las próximas sub-acciones futuras que tenemos nosotros con el ministerio, en relación a la gestión de los residuos sólidos.

Y bien, para los que no conozcan, Ecuador justamente está -- está ubicado en la línea ecuatorial. Localizado al noroeste de Sudamérica. Actualmente, la población estimada de nosotros es alrededor de los 18 millones de habitantes. Y territorialmente, administrativamente, justamente nos dividimos en 221 cantones, que son las unidades territoriales responsables justamente por el marco normativo de prestar la responsabilidad y el manejo de los residuos sólidos en sus jurisdicciones.

Y datos al año 2023, en función de la población proyectada que nosotros tenemos, se estima que en el país se generaron -- en Ecuador -- alrededor de las 5 millones de toneladas de residuos sólidos, lo que representa un 0 -- aproximadamente un 0.23% de la generación a nivel mundial. Tenemos que la producción per cápita de residuos sólidos -- es decir, lo que genera un habitante, en promedio, de residuos sólidos -- del día, es de 0.8 kilogramos, de residuos sólidos.

Y en el tema de la composición de residuos sólidos, la mayoría de -- conceptualmente, la mayoría de residuos sólidos, cerca del 61%, corresponden a residuos de fracción o de tipo orgánico. Esto es importante tener en cuenta, justamente en función de -- de lo que estos residuos generan en -- de gases de efecto invernadero.

Y un dato importante también que queremos compartirle, es que en función de la generación y población de residuos sólidos, en un escenario tendencial o escenario actual o habitual, estimamos que para el año 2050, se incrementaría alrededor del 30%; es decir, más o menos 7 millones en la generación de residuos sólidos en el país.

En -- en el tema específico de plásticos, queremos compartirle -- justamente considerando, ¿no? la problemática que involucra el tema de la gestión de los residuos plásticos -- información que tenemos del año 2022. Nos indican que en este año, se generaron alrededor de 627 mil toneladas de residuos plásticos en el país, lo que en relación de la generación mundial, representa el 0.17% de generación de residuos plásticos. Nos indica también que un ecuatoriano está generando alrededor de 34.8 kilogramos de residuos sólidos. Es decir, la producción per cápita anual. Y en promedio, el 87% de los residuos plásticos que fueron recolectados, eh -- el 87% de los residuos, más bien, generados, plásticos, fueron recolectados. Y tenemos el dato de que, lastimosamente, el 52% aún de estos residuos plásticos se depositan en rellenos sanitarios.

Esta información ha sido generada, justamente, en función de la elaboración de una hoja de ruta, para atender la problemática de plásticos, que ha sido -- que hemos lanzado justamente en estos días, que está realizada en función del tratado mundial que se está formulando, de plástico, eh, con la colaboración de la Alian-- Asociación Mundial de Acción Plástica, y también de la WWF. Si ustedes quisieran un poco revisar el resumen de lo que plantea en datos, cifras, y -- y un alcance general de la hoja de ruta para atender la problemática de plásticos, pueden justamente ahí utilizar ese código QR para obtener mayor información.

Y queremos compartirles ya un poquito -- un poco, más bien dicho, información específica que lo que tiene que ver con la separación en la fuente. Entonces, lastimosamente, todavía esta sigue siendo una tarea pendiente en nuestros municipios, de atender. Tenemos el 33% de municipios del país, de los 221 municipios que conforman el país, apenas han iniciado o desarrollan actividades referentes a la separación en la fuente.

Eh, 14 ya tienen una implementación más consolidada, el 14% de los municipios, justamente procesos de separación en la fuente, y el 48% -- es decir, casi la mitad de municipios del país -- han iniciado sistemas de contenerización. Lastimosamente, acá los procesos de contenerización, que son estos contenedores ubicados en las vías públicas, no establecen contenerización diferenciada: es decir, que permita la separación en la fuente. Entonces, así justamente ahí podemos relacionar esta información de que existe aun todavía el bajo porcentaje de los municipios que han implementado la separación en la fuente en el país.

Eh, algo -- un resumen, un breve resumen de la normativa justamente del país, en el tema de la gestión de residuos sólidos. Nosotros como Ministerio del Ambiente tenemos la rectoría -- es decir, la facultad de emitir la política pública nacional para la gestión de residuos sólidos. Y justamente esto se está realizando a través de nuestro proyecto, el proyecto GRECI. Eh, las actividades, y específicamente, justamente estamos también en proceso de elaboración del plan nacional de residuos sólidos, que todavía no contamos: va a ser el primer plan nacional de residuos sólidos del Ecuador, que será el instrumento de política pública, a través de cual justamente podamos establecer lo que son políticas, indicadores y metas nacionales de la gestión de residuos sólidos.

Este plan, justamente, lo estamos construyendo de manera participativa, y aquí lo interesante es justamente que se deriva el componente técnico del plan, justamente instrumentos y herramientas, y guías, manuales, justamente, que van a complementar lo que es la política pública que se va generando al respecto de residuos sólidos.

Queremos comentarles sobre varias de estas herramientas justamente que como ministerio hemos podido ya desarrollar y publicar. Tenemos entendido, justamente, que en la serie de talleres anteriores, que se ha tenido justamente de -- de los webinares, se han tratado, es… temas justamente que tienen que ver con la caracterización de residuos sólidos.

Esta es una guía destinada, justamente, hacia los municipios, que tiene como objetivo establecer lineamientos y parámetros estandarizados, que deben ejecutar los municipios para formular los estudios de caracterización de residuos sólidos. Actualmente, lastimosa en el país -- eh, lastimosamente en el país, todavía tenemos una deficiencia en la calidad, justamente, de datos de entrada, de cuantificación y caracterización de residuos sólidos. Entonces, con esta herramienta, pretendemos justamente mejorar esa calidad, estandarizando los procedimientos en territorio que realizan los municipios para generar información de las características y la cantidad de residuos sólidos.

¿Cómo está conformada esta guía? Básicamente comprende dos etapas: estimar la cantidad que generan los residuos sólidos -- o dos procesos, más bien. Y el segundo, justamente la característica y composición física de los residuos sólidos, a través de la ejecución de cuatro etapas: la de planificación, justamente que es la conformación y el diseño de la planificación que deben hacer los municipios para implementar este estudio de cuantificación. La etapa de diseño, donde se establecen los generadores, y lo que es importante y es algo que nosotros hemos incorporado acá, justamente estamos diferenciando los procedimientos de acuerdo al tipo de municipio que está en función de su población. Luego tenemos ya una etapa justamente de recolección y procesamiento y validación de información, previamente con la etapa de campo de recolección de datos, y justamente esto nos permite tener parámetros, em… justamente de la cantidad de las características de residuos sólidos. Eh, justamente como les comentamos, justamente está partido en el -- en función del tipo de generador, en residuos de tipo domiciliario, y no domiciliario.

Eh, es importante mencionar que justamente para la formulación de esta guía de cuantificación, tuvimos el apoyo también de Clean Air Task Force. Justamente tenemos, entiendo, que es un… un colaborador también de la iniciativa. Y lo que se hizo aquí fue un -- actividades de ensayo y error. A través de pilotos, previamente, en dos municipios del país, que nos permitió calibrar los modelos, luego de -- que nos permitió calibrar los modelos para definir la cantidad de muestra y los procedimientos de acuerdo al tipo de municipios.

Ahora queremos, justamente, comentarles sobre la segunda herramienta que podemos publicar, que es justamente un instructivo para el implementar la fase de separación de los residuos sólidos en la fuente.

Y los objetivos que tenemos, lo que se obtiene con este instructivo, principalmente es llevar a cabo -- o el impacto, más bien, que tendríamos, es llevar a cabo la separación en la fuente de una manera correcta y selectiva. Identificar y separar adecuadamente los residuos sólidos. También reducir la contaminación, por el mal manejo de los residuos sólidos, y promover una cultura de consumo responsable. Además de eso, el fomentar la adopción de políticas de gestión de -- integral de residuos sólidos, y reducción de la cantidad de estos residuos que van a sitios de disposición final. Educar también a la población sobre los beneficios de la separación en la fuente, y proveer el acceso a la información relevante y dinamizar, en este sentido, puntos de reciclaje y correcta disposición de los residuos y desechos sólidos.

Actores que -- que participan en esta fase, justamente es… cómo está concebido este instructivo, es de empezar a través de proyectos o sectores pilotos. Tenemos actores domiciliarios, como las residencias, casas, viviendas, y también conjuntos multi-habitacionales. Instituciones educativas públicas y privadas, y establecimientos de orden comercial, industrias, mercados, hoteles y restaurantes.

Eh, ¿qué criterios que considera este instructivo de separación? Justamente primero se basa sobre la normativa. Actualmente tenemos un código que -- de ambiente, que está a nivel ya de ley, que justamente establece ya una obligación para los municipios de la separación en la fuente, y también contamos con una norma técnica de -- emitida sobre los colores de los recipientes de almacenamiento de residuos sólidos. Esta normativa técnica establece colores para una separación primaria, que principalmente se considera tres tipos de residuos: orgánicos, desechos y los residuos de tipo reciclable.

También, este instructivo contempla cuatro fases de implementación, de planificación, eh, organi-- que permite organizar y justamente realizar un diagnóstico: la de socialización con la importancia de vincular a actores estratégicos en el territorio, ya la fase en sí de implementación, con el seguimiento que se realizará desde el Ministerio del Ambiente, y también la fase de resultados, con la implementación, o más bien dicho, el seguimiento y la evaluacion a través de indicadores que se establezcan en este programa de separación en la fuente por parte de los municipios.

Por último, al final del instructivo tenemos recomendaciones justamente de orden operativo, justamente enfatizados o dirigidos a la ciudadanía, para que ellos puedan tomar en consideración esto y facilitar los procesos de separación en la fuente.

Por último, queremos dar a conocer iniciativas relevantes de varios municipios, que se tienen aquí en el Ecuador. Tenemos el proyecto “Mi Quito Recicla”. Quito es la capital del país, con una población de aproximadamente los 3 millones de habitantes. Ha iniciado este proyecto no hace mucho, en mayo del 2024. Está en una fase de piloto. Y el objetivo -- que se proyectan hasta el año 2027 -- es de poder alcanzar el porcentaje del 80% de aprovechamiento de los residuos sólidos.

Es un proyecto piloto que está ubicado en tres sitios, y en tres parroquias del cantón muni-- eh, de Quito, y en primera instancia se pretende tener un beneficio, o un involucramiento de aproximadamente 30 mil habitantes.

Y luego queremos compartirle el proyecto de una mancomunidad. Mancomunidad acá significa una agrupación de varios municipios o cantones contiguos. De la mancomunidad Pueblo Cañari. Este es… es uno de los buenos ejemplos que tenemos acá en el país. Justamente es una mancomunidad

conformada por cuatro cantones. También ya está en una fase de implementación, beneficiando aproximadamente a cien mil habitantes, y tiene actividades complementarias, que son involucradas a la separación, con programas de educación ambiental y la instalación de maquinarias recicladoras que faciliten la separación.

Eh, actualmente se está separando tres tipos de residuos, en función de la normativa nacional que tenemos, de colores de recipientes de almacenamiento de residuos sólidos.

Y por último, queríamos dar a conocer, a través de este código, si es que pueden acceder y poder revisar la información que hemos generado como ministerio, justamente en función de todas las actividades que realizamos como Ministerio del Ambiente, y el proyecto de gestión de residuos sólidos y economía circular inclusiva.

Ahí pueden encontrar nuestros contactos, y… e igual queremos reiterar el agradecimiento. Al final, si es que existen preguntas, estaremos atentos. Y ahora queremos darle el paso a Patrick. Muchas gracias.

Luis Vallejo (Q&A):

Gracias, Patrick. Sí, eh… justamente para empezar por la pregunta del chat, eh, actualmente en el país estamos desarrollando, justamente, a la par, varios instrumentos de política pública nacional. Y el desafío que tenemos nosotros es justamente poder articular estos instrumentos. Está -- como les comentaba, estamos -- ya tenemos una hoja de ruta para la -- atender la problemática de los residuos plásticos. Y además de eso, estamos también formulando el plan nacional de la gestión integral de residuos sólidos, un plan nacional de reducción de plásticos de un solo uso, y la estrategia nacional de economía circular inclusiva. Circular inclusiva es porque acá ha tomado mucha relevancia en el país el tema de la vinculación de los recicladores de base, que son justamente las personas, que en un estimado aproximadamente de 20 mil familias en el país, trabajan o están asociados, justamente, a estas actividades de reciclaje de base. Que son justamente las personas que trabajan, en cierta medida, de una forma más informal en la cadena del reciclaje.

Y justamente uno de los desafíos es poder -- a través de estas políticas y hojas de ruta -- definir ejes estratégicos sobre los que se implementen las acciones del país a futuro. Y justamente, se ha definido el comportamiento, el cambio de comportamiento, y un consumo responsable, que tiene que ver de la mano con la separación en la fuente, uno de los ejes, o pilares en los que se debe desarrollar o implementar actividades o programas más específicas, por ende, en la separación en la fuente.

Como les indicábamos, de los 221 municipios que tenemos en el país, apenas el 14% tiene ya implementado un proceso más sostenido de separación en la fuente. Hemos podido analizar a nivel macro, desde el Ministerio del Ambiente, varios factores que han incidido, justamente, en que todavía no -- la mayoría de municipios no logren implementar la separación.

Y coincidimos, justamente, con el resto de panelistas, que en tema relevante, o sino el más relevante, es justamente la decisión política. Acá en el país, los gobiernos municipales, locales, tienen un período de mandato de cuatro años, con un máximo de reelección de ocho años consecutivos. Pero justamente ya procesos o iniciativas de proyectos que se han implementado en la separación en la fuente, justamente se han caído por el tema de, de decisión política.

Y también, justamente, tiene que ver factores culturales. Acá en el país tenemos cuatro geográficas, verticales, bien marcadas. Y la mayoría de proyectos o iniciativas de separación en la fuente que se dan,

o se tiene en el país, están cen-- concentradas en la región andina. Y justamente hacemos un análisis que tiene que ver con factores culturales. Es justamente una población que tiene ya una mayor cultura, justamente, sobre la problemática de los residuos sólidos.

Y también tenemos un factor que hemos analizado, eh, lo que les comentaba también en la presentación es que los municipios que ya han implementado estos sistemas de contenerización, eh, público -- justamente de contenedores públicos, eh, se les dificulta implementar procesos de separación, porque ya la población está -- se está acostumbrando, justamente, a depositar los residuos de forma mezclada en estos contenedores públicos.

Otros componentes que queríamos -- o más bien, factores, que justamente queríamos indicar es también que los municipios que han implementado la separación en la fuente son municipios cuya población es pequeña. Municipios que bordan o llegan a un máximo de población de 50 mil habitantes. Eh, de ahí también justamente la idea de poder implementar ya proyectos pilotos como el que les comentaba a nivel de capital, de Quito, ya de -- que sea más ambicioso y que genere un mayor impacto a nivel nacional.

En ese sentido, esperamos y estamos ya coordinando para trabajar con el municipio de Quito justamente en estos procesos, o este pilotaje que ha iniciado en el mes de mayo, de la separación en la fuente. Hay cuatro sectores en los que se va a intervenir. Justamente se decidió intervenir en sectores en los que tienen un -- un estrato socioeconómico alto. Y la idea también es justamente poder ir con el resto de municipios y cantones del país, involucrando en este proceso de -- de separación en la fuente.

Eh, eso queríamos comentarles. También hemos visto que los municipios que han podido obtener una sostenibilidad en el proceso de separación en la fuente son los que ya han marcado, a través de sus ordenanzas, un marco regulatorio específico, que ya define, justamente, la separación en la fuente. Y también los municipios que han creado, en cierta medida, una autonomía. Lastimosamente acá, institucionalmente, los municipios todavía tienen deficiencias, y los municipios que han tenido mejor resultados en la separación son los que han logrado crear empresas públicas, que en cierta medida tienen autonomía de los municipios, para justamente poder gestionar los residuos sólidos.

Eh… estamos -- todavía está -- como les indico, tenemos un desafío todavía importante por implementar la separación en la fuente en el país, pero con todas estas iniciativas, la formulación de estas herramientas técnicas, justamente nosotros tenemos la ambición de poder ya definir metas, en el corto y mediano plazo. Justamente, que implementen el porcentaje de -- de separación en la fuente en el país. Gracias, Patrick.