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SUR L'ENVIRONNEMENT

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ENQUÊTE ET AUDIENCE PUBLIQUE SUR L'ÉTAT DES LIEUX ET LA GESTION DES RÉSIDUS ULTIMES

ATELIERS D'ÉCHANGE ET DE RÉFLEXION

VOLUME 2

Séance tenue le 14 avril 2021 à 8 h
par visioconférence

TABLE DES MATIÈRES

SÉANCE DU 14 AVRIL 2021
MOT DU PRÉSIDENT

LE PRÉSIDENT :

Mesdames et Messieurs, bonjour et bienvenue à la deuxième journée d'atelier et d'échange portant sur l'État des lieux et la gestion des résidus ultimes.

Les ateliers d'hier et d'aujourd'hui bénéficient d'une traduction simultanée en raison de nombreux experts et conférenciers nationaux et internationaux, et des besoins exprimés par plusieurs citoyens, tout comme certaines nations et communautés autochtones.

Pour entendre les propos dans la langue de votre choix, au Canada, veuillez composer le 1-855-703-8985, puis, pour l'anglais, veuillez composer le numéro de conférence 402-344-2940, et pour le français, le numéro de conférence est le 395-589-1562. Pour les autres pays, vous trouverez la liste complète sur le site Web du Bureau d'audiences publiques sur l'environnement, appelé le BAPE, au www.bape.gouv.qc.ca.

Yesterday's and today's workshops are translated live, due to the many English-speaking international experts and speakers, and the needs expressed by many citizens, as well as several Indigenous nations and communities. To listen to the language of your choice, in Canada, please dial the toll-free number 1-855-703-8985. Then, for English, dial the conference number 402-344-2940. And for French, the conference number is 395-589-1562. For all other countries, you will find the complete phone numbers' list on the website of the Bureau d'audiences publiques sur l'environnement, called the BAPE, B-A-P-E.

L'atelier d'aujourd'hui est diffusé en direct sur le site Web du BAPE, mais ne permettra pas l'intervention du public. Il fera également l'objet de transcriptions qui seront disponibles dans environ une semaine.

Permettez-moi tout d'abord de me présenter. Mon nom est Joseph Zayed et je préside cette commission d'enquête qui a la responsabilité de réaliser le mandat confié par le ministre de l'Environnement et de la Lutte contre les changement climatiques, Monsieur Benoit Charette. Je suis accompagné par mes collègues commissaires, à ma gauche, Madame Julie Forget, et à ma droite, Monsieur Pierre Renaud.

Je suis également accompagné par les quatre analystes de la commission, Mesdames Karine Jean et Marie-Pier Denis, et Messieurs Pierre Batellier et Jonathan Perreault. Mesdames Karine Lavoie, Rachel Sebareme et Cynthia Roussel complètent l'équipe.

Quelques mots, maintenant, sur le mandat que le BAPE a reçu du ministre le 16 décembre. Ce mandat est d'une durée d'environ 10 mois, et il a débuté officiellement le 8 mars dernier. Quant au rapport de la commission, il devra être remis au ministre au plus tard le 22 décembre prochain, alors que sa sortie publique se fera dans les 15 jours suivant son dépôt au ministre.

En vertu du mandat, le BAPE doit dresser le portrait actuel de l'élimination des matières résiduelles, ainsi que le portrait de la capacité d'élimination anticipée pour les 20 prochaines années. De plus, afin d'éclairer la prise de décision gouvernementale visant à combler les écarts entre la capacité d'élimination anticipée et les besoins, le ministre demande spécifiquement de réaliser une cartographie des parties prenantes, intégrant les rôles et les préoccupations des différents intervenants par rapport à la gestion des résidus ultimes, d'analyser les méthodes d'élimination ou de traitement existantes, ainsi que les technologies et les mécanismes innovants, notamment ceux utilisés ailleurs dans le monde, et dont le Québec pourrait s'inspirer pour récupérer des sources d'énergie ou des matières, tout en favorisant les principes de l'économie circulaire et la réduction des émissions de gaz à effet de serre. Il vise aussi d'évaluer des mesures, solutions ou exigences visant à assurer une meilleure gestion des résidus ultimes, en tenant compte des divers contextes régionaux. Enfin, il s'agira de déterminer des conditions favorables à l'acceptabilité sociale des différentes options analysées, en s'appuyant sur les meilleures pratiques.

La commission d'enquête a adopté une stratégie de consultation en cinq volets pour accomplir ce mandat.

(1) Une audience publique en deux parties, telle que le prévoient les règles de procédure du BAPE. La première partie s'est d'ailleurs déroulée du 23 mars au 1er avril;
(2) Une enquête auprès des gestionnaires d'installations d'élimination, par le biais d'un questionnaire. Cette enquête en est d'ailleurs à ses dernières étapes;
(3) Des ateliers d'échange et de réflexion sur les enjeux touchant la gestion des matières résiduelles -- c'est ce que nous faisons présentement;
(4) Une assemblée citoyenne constituée d'un échantillon représentatif de la population québécoise; et
(5) Des consultations additionnelles et spécifiques auprès des nations et communautés autochtones.

La commission d'enquête entame aujourd'hui le deuxième de neuf ateliers qui se dérouleront jusqu'au 29 avril. Ces ateliers visent à approfondir sa réflexion et à dégager des lignes directrices et des perspectives sur différents aspects de la gestion des résidus ultimes. Y ont été notamment conviés des organismes et des organisations, des municipalités régionales de comté, des gestionnaires de sites d'élimination, des chercheurs, des experts, et des représentants de la société civile et du milieu associatif, qui connaissent bien les enjeux qui gravitent autour de la gestion des matières résiduelles et des résidus ultimes, et qui peuvent partager leur réflexion avec la commission d'enquête, sans être trop restreints dans le temps.

La commission a identifié cinq grandes thématiques pour ces ateliers. Les deux premiers ateliers, soit ceux d'hier et d'aujourd'hui, visent à aborder, avec des experts nationaux et internationaux, les meilleures pratiques dans la gestion des matières résiduelles. Il s'agissait, hier, de conférenciers nationaux, alors qu'aujourd'hui, ce sont des conférenciers internationaux qui ont été invités par la commission d'enquête.

L'atelier d'aujourd'hui se fera sous la forme de présentations d'environ une vingtaine de minutes, chacune suivie d'une période d'échange d'une dizaine de minutes. Bien sûr, les conférenciers qui le souhaitent sont invités à écouter les propos des autres conférenciers.

Les quatre autres thématiques suivent le cycle de vie d'une matière résiduelle. Il s'agit tout d'abord des techniques, des approches, des innovations qui permettent d'éviter ou de réduire la génération de matières résiduelles. Suivront les enjeux relatifs à la planification, à l'opération et au financement de la gestion des matières résiduelles par les instances publiques et privées. La quatrième thématique portera sur le détournement des matières résiduelles de l'élimination par le biais du recyclage et de la valorisation. Enfin, la dernière thématique accordera une attention particulière à l'élimination des matières résiduelles au Québec, ainsi qu'aux enjeux techniques, environnementaux, sociaux et économiques qui s'y rattachent.

Je vous rappelle qu'une commission d'enquête n'est pas un tribunal et que son rôle n'est pas de prendre une décision. La commission doit faciliter l'accès du public à l'information, recueillir l'opinion des personnes intéressées, procéder à une analyse rigoureuse des enjeux, des controverses et des tendances, et ainsi éclairer le ministre, en lui faisant part de ses constats et de ses avis.

Mes collègues et moi sommes engagés à respecter le code de déontologie des membres et les valeurs éthiques du Bureau d'audiences publiques sur l'environnement. Ainsi, la commission a un

devoir d'impartialité, de vigilance, et elle doit agir équitablement envers tous les participants, tout en suscitant le respect mutuel et en favorisant leur participation pleine et entière.

ATELIERS D'ÉCHANGE ET DE RÉFLEXION

M. JOHN WANTE
OVAM
(SERVICE PUBLIC DE LA FLANDRE EN MATIÈRE DE DÉCHETS, MATÉRIAUX, SOLS)

LE PRÉSIDENT :

Sans plus tarder, il me fait plaisir de vous présenter le premier conférencier. Il s'agit de Monsieur John Wante, de OVAM.

Depuis octobre 2018, Monsieur Wante est responsable de la planification stratégique de la politique au sein du département de gestion des déchets et des matériaux de l'OVAM, l'agence flamande des déchets. Il coordonne également les modifications de la législation flamande sur les déchets et les matériaux.

OVAM est chargée d'établir le cadre général de la politique des déchets en Flandre. Monsieur Wante a travaillé pour passer de la gestion des déchets à la gestion des matériaux, en traduisant cela en nouveaux instruments juridiques et autres outils politiques, en se concentrant davantage sur la conception intelligente, la prévention, la réutilisation, les modèles commerciaux circulaires et le recyclage. Il est impliqué dans la planification stratégique de la politique environnementale et dans l'établissement d'un lien avec les politiques climatiques et économiques. Entre 2010 et 2018, il a dirigé l'unité d'innovation politique de l'OVAM. Entre 2003 et 2010, il a participé à la prise de décision européenne sur la législation sur les déchets, et a collaboré avec l'OCDE sur des études sur la gestion durable des matériaux.

Mr. Wante, I would like to very welcome you to this specific workshop, and I would like you to begin your speech right now, please.

M. JOHN WANTE:

Thank you very much and good morning everyone. Thank you for inviting OVAM to give you a presentation on our waste management and circular economy policy in Flanders.

I will try to share the presentation.

So, first, I will tell you something about Flanders itself. Flanders is a region in Belgium. So, in Belgium, there are three regions: Wallonia, Brussels, and Flanders. And the policies for waste and materials management, they are, for the largest part, run by the regions, not by the federal government. That is why I can present the Flemish policy on waste and materials management, and that will not be the same as the policy in Brussels and in Wallonia.

So, Flanders is a very densely populated area in Europe. We count 6.6 million inhabitants, highly industrialized, an important logistical centre also, with some large ports, and that means also that there was a high urgency to tackle the waste problem. Because if you have a very densely populated area, there is no space for landfills, there is also no space for incinerator plants, incineration plants, because, when you plan an incineration plant somewhere in the area, there will always be a town or a village in the neighbourhood that will protest against an environmental permit for an incineration plant, so, that is why we felt the need to limit the amount of waste sent to landfill, and also, to limit the amount of waste sent to incineration, and that gave rise to an advanced waste management policy, starting from the ‘80s.

So, a second driver for an advanced waste management policy is the climate problem. So, greenhouse gas emissions are for a large part emitted because of the burning of fossil fuels, and we burn fossil fuels because we need energy from those fuels, and that energy is, for the largest part, for more than 50%, required for handling materials. When we look at the energy consumption for disposal of foods and waste for food production, for production of goods, for mining of resources, transportation of goods, and all that, then we see that more than 50% of the energy is required by them. So, if you can, in some way, reduce the amount of materials used, or you can make sure that your economy becomes more circular so that you have to spend less energy in mining new resources, you can decrease the greenhouse gas emissions. So, actually, there are two -- the important urgencies, the space problem and the environmental local problems connected with it, and the climate problem. And, of course, also the scarcity of resources.

So, when we look at what happened during the past 40 years in the field of household wastes, we see that there was a significant step forward in the ‘90s with the separate collection of wastes. So, the graph in the right corner, right-and-above corner, shows how much waste by household was produced per inhabitant. The red part is showing you the amount of residual wastes that are sent to incineration plants, mainly, and to landfills, and the blue part is separately collected for recycling.

So, you see that, starting in the ‘90s, the largest part of household waste was residual wastes. Then, halfway in the ‘90s, there was a drastic decrease of the amount of residual wastes, and now, we are at a level of around 140 kilograms per inhabitant, and we have a target for 2030 to meet, that is on 100 kilograms per inhabitant. So, there is still a long way to go to reach that target.

When we look at what happens to the blue part, so, that is mainly recycled or composted. So, around 44% of the household waste is recycled, then, another 22% is composted. And we have the ambition that, by 2030, the amount of recycled and composted waste should amount to 77.5%. The other part of the waste, so, the residual waste, is largely incinerated. So, 29% of our waste is sent to incineration plants, and only a small part of that is going to landfills.

When I'm talking here about percentages, I am talking about the primary wastes. Of course, there are also bottom ashes coming out of the incineration. They also need to be landfilled, but that is a secondary waste, so these are not included in these numbers. Here, it’s limited to the actual amounts of household waste that is sent to a specific treatment method.

I am talking here about household waste, but for industrial and commercial waste, we have similar graphs and similar targets. And the ambition is more or less equivalent to what we have to reach for the household waste treatment.

We also have a target in our climate action plan to reduce the material footprint of Flemish consumption. We envisage a reduction of 30% by 2030, and that material footprint is actually measuring the amount of resources that is required to produce the goods that are consumed in Flanders. So, it takes also into account the materials that are needed for producing goods that are produced outside of Flanders, but are imported for consumption in Flanders.

So, for instance, if you have a smartphone and you need metals for that smartphone, then, the amount of ores in kilograms that is required to mine the metals for that smartphone, they are included

in that footprint. And that material footprint still has to decrease, and that can be done partly by prevention -- so, by using products more efficiently -- and partly by more reuse and recycling.

One of the key measures for obtaining good recycling rates is invests in separate collection. So, we have extensive separate-collection schemes in Flanders, to make it as easy as possible for citizens and for companies to discard there wastes in the right way, to separate the waste at the source.

So, therefore, we have door-to-door collection systems for several separate waste streams. We also have recycling parks where people can bring their waste to and sort it out on the site in more than 40 different waste fractions, and we also have an extensive network of shops that also have to take back certain waste streams for recycling.

The priority waste streams for the coming 10 years are diapers, because they are still present in large numbers in residual wastes, and we are looking for ways to recycle them or to make people more aware of the possibility of using reusable diapers. Then, secondly, we also want to make further steps in the separate collection of biowastes. So, by 2024, we have the ambition that all the biowaste should be taken out of the residual wastes. And there is also still a large room of opportunity for plastic wastes. We are already separately collecting quite a number of plastic packaging, but there are still further improvements possible.

There is also a ban on landfilling of combustible and recyclable wastes. There is a ban on incineration of recyclable wastes, and those bans help to divert waste from end treatments -- landfilling, incineration -- to recycling and reuse.

We also have a strict environmental permitting policy on incineration plants. So, we have to make sure that the incineration capacity that is available in Flanders is not over-dimensioned. So, we need to have a balance between the capacity to incinerate wastes and the amount of residual wastes that is offered for incineration, so as to avoid that an overcapacity for incineration would divert waste from recycling to incineration plants.

Secondly, there is also a very important measure in the economic field. So, we apply the polluter-pays principle, via different means. So, first of all, there are pay-as-you-throw schemes. So, households need to pay for the residual waste they produce. As an average, they have to pay 0,10 to 0,30 euro per kilogram of waste discarded. Some collection system are weight-based, others are

volume-based, but average, the range is between those numbers per kilogram. And the producers of commercial and industrial wastes, the pay market prices for getting rid of their residual wastes.

Complementary to that, there is also an incineration tax and a landfill tax to be paid by the operators of those installations. The tax is 13 euros per kilogram, and the landfill tax is almost 60 euros per kilogram for the non-combustible wastes. Those taxes are in addition to the incineration and landfill ban, because if you would have only a ban, it would be hard to enforce it. By introducing also a tax on incineration and landfilling, you make sure, or you make it easier that the ban on incineration and landfilling for certain waste products is actually respected.

Then, finally, we also have quite a lot of extended producer responsibility schemes, for packaging, for waste and electronic equipment, batteries, oil, vehicles, tires, solar panels, and they also help in getting enough budget for organizing the separate collection and recycling of those waste streams. Because, in those EPR schemes, it is up to the producers that place products on the market to finance the separate collection and recycling of those streams. So, in this way, additional money can be gathered for investing in separate collection infrastructure and treatment.

There is also an important role for reuse centres in Flanders. So, those reuse centres, they take back reusable goods such as furniture, textiles, electrical and electronic equipment. Those goods are cleaned are repaired, and resold again on the second-hand market, and those reuse centres work with, or offer jobs to low-skilled people that have difficulties in finding a job on the regular markets, so it's part of our social economy, and, in this way, those reuse centres serve multiple purposes.

So, they have an environmental purpose because they make it possible that reusable goods are resold and get a second life. They have also a social purpose because they offer jobs to low-skilled people, and they also sell goods at a very low price, so that people with a low income can also buy second-hand clothing and second-hand furniture and equipment, and all that.

Those centres succeed in selling 5½ kilograms of goods per inhabitant in Flanders, and some cities even have 20 kilograms per inhabitant that is, in this way, recovered. So, it's also a considerable contribution to prevention of waste.

We also have in our legislation requirements to reduce the amounts of products used and to redesign them. For instance, we have restrictions on the use of single-use packaging and catering

materials used on events and by government institutions. So, for instance, it is forbidden to use one-way cups to serve drinks on events and in all public buildings.

We also have recycled-content requirements for waste bags and for PET bottles. So, we have a target of 50% recycled PET in bottles, to be reached by 2025, and that is to guarantee also a market for the recycled materials. Because if you have legislation in place for separate collection, you also have to make sure that markets are created for the recycled materials that come out of those waste streams.

Then, apart from legislation, we also have more stimulating policy measures. For instance, we have the instrument of green deals that are voluntary agreements made with industry, with knowledge institutes, with local authorities, in specific domains, where the focus is on exchange of knowledge, exchange of good practices, launching experiments, doing all kinds of tests with new business models or new technologies.

And we have green deals on three domains. One is on circular procurement -- so, to try out new procurement schemes, for instance, to test out product-as-a-service business models, or to look for better opportunities to buy better reusable or recyclable products on the markets. A second example is...

LE PRÉSIDENT :

Mr. Wante...

M. JOHN WANTE:

Yes.

LE PRÉSIDENT :

... three minutes left.

M. JOHN WANTE:

Yes. Okay. I'm almost finished with the presentation.

Then, there is also on circular building green deals. So, there, we try to explore opportunities for better dismantling of buildings, so as to better reuse the items and recycle them, and we also look at design measures, so, to design buildings in such a way that they are easily dismantable at the end of life. And then, a third green deal is underway for prevention and reuse of packaging, for instance, for takeaway and for shops that sell all kinds of foods.

We also have financial subsidies. So, for all kinds of projects in the field that try to test out new production and consumption models, such as sharing-economy projects, or products-as-a-service projects and all that. So, that's more for the higher end of the waste hierarchy for the prevention of wastes.

And then, finally, we are also working on a transition agenda in six crucial domains. So, that is going beyond the sphere of waste management. That is really trying to establish a policy that is working on the complete lifecycle of products. And it is working on six domains: circular construction, plastics and chemicals, manufacturing industry, food, bio-economy, and water. Because, these six domains, they have a very high impact on waste production, and also a high impact on the material footprint or the water footprint, and there, we try to bring together different government departments, different private stakeholders, local authorities, to work on a joint agenda that is both working on new regulation, as on working on more stimulating measures.

So, this is, in a nutshell, the policy we have in Flanders on circular economy and sustainable materials management. So, I am open for any questions from your side.

LE PRÉSIDENT :

Thank you very much, Mr. Wante, for your presentation. My colleagues and myself have several questions. Mr. Renaud?

LE COMMISSAIRE :

Thank you, Mr. Wante, for your presentation. I have noticed that when you present the graphic of household waste, the waste went from, I would say general waste to recyclable -- the collection, it went from general waste to recyclable, but the total amount of waste produced didn't diminish much. It's pretty much the same, when you add up both. Am I to understand that consumption upfront has not diminished in the community?

M. JOHN WANTE:

Yes. We see that the amount of waste produced is slowly decreasing. So, there was a peak, let's say 10 years ago, and since then, it has very slowly decreased, but you are right that the biggest achievements are in the field of separate collection and recycling, but we were not so successful up till now to actually decrease the amount of waste produced, and that is because of the high consumption levels, the consumption of all kinds of goods is still high, and that is why we also have to work, in a circular economy, on finding ways to reduce the consumption of all kinds of goods.

LE COMMISSAIRE :

You mentioned that you plan to reduce the material footprint by 30% by 2030. What specific actions do you plan to make to achieve that objective? Most of the goods that -- or a great part of the goods that come in Flanders probably come from outside; how will you manage to reach the objective by 2030?

M. JOHN WANTE:

There are four main consumption domains that are responsible for that material footprint. One is construction, buildings. So, there, we see possibilities to reduce the environmental footprint of refurbishment and new construction, because we have a tool for architects that measures the environmental footprint of the building materials. So -- and we see there that, if you design your building in a better way, it is possible to reduce the environmental impact of the building materials with 30%, for instance. So, that’s one way to address it, to build better buildings.

Secondly, there is a large consumption from the transport sector, from mobility. So, reduction of the amount of cars will also be important. So, more systems like car sharing or public transport. We will need investments in those to reduce the number of cars that are in use.

Then, a third example is food. Food is the third domain that is very important, and there, we can still address food waste. So, reduce the amount of food that is wasted in shops because of food that is not sold that can still be used for other purposes, or reduce the food waste at the households.

And then, there are the consumption goods. Consumption goods like textiles, electronic equipment, furniture, there, we also see room for improvement to reduce the amount of goods

consumed. For instance, with textiles, we see that there is a problem with fast fashion, and we really need to address that, to make sure that better quality textile is put on the market, so that it has a longer lifetime and we can reduce the amount of textiles that are consumed.

But they are very challenging. We are aware of that. They are connected to our climate ambitions, and as we all know, our climate goals, not only in Flanders, but in all the world, they are very ambitious, so, we are aware of the fact that we will need very drastic measures, and on a system level, to reach them.

LE COMMISSAIRE :

Another point is I have seen that -- you mentioned that there is a ban on incineration of recyclables. From what I understand of science, most of the combustible materials -- plastics, paper, cardboard, organics -- they're all recyclable. If you cannot incinerate recyclables, what is left to incinerate? What can burn in the incinerator if you don't have plastic, paper, and organics?

M. JOHN WANTE:

Yes, it -- in principle, you can recycle a lot, and there is not much left to incinerate, and that is why we combined the ban with the tax, because if you would only have a ban, it would be very difficult to enforce it, because we will always find some plastics or textiles in residual wastes. But by making people pay for the residual wastes, and also by making operators that incinerate wastes pay for the waste they incinerate, there is also an economic incentive to take out the recyclables out of the residual wastes. So, the ban is needed to prevent, for instance, that separately-collected waste streams are sent to incineration plants. But what is in the residual wastes, there, we mostly rely on our taxes to get more recyclables out of the residuals.

LE COMMISSAIRE :

Thank you very much.

M. JOHN WANTE:

You're welcome.

LE PRÉSIDENT :

Mrs. Forget?

LA COMMISSAIRE :

Hi. Thanks for your presentation. I have a question on governance. I wasn't clear who was doing what in Flanders. So, who is the regulator, who is managing the stimulators, what you call like the different programs, and who is operating? Like what is the scheme between like the private sector and the public sector with regards to residential, ICI, and -- I think you say CRD, in English -- like construction, renovation, and demolition? So, just to give us a portrait on how you are organized, so we can better compare with here?

M. JOHN WANTE:

Yes. So, OVAM is part of the Flemish Ministry of Environment, and we are responsible for the wastes policy. And the federal government, so, the Belgian federal government is responsible for product policy. So, standards on putting products on the markets, they are a federal competence, but all kinds of measures that address the way you deal with wastes, they are a regional competence. It's also up to the regions to regulate the use of products.

For instance, we can ban the use of certain products like plastic cups on events, and the federal government, they can ban the placing on the markets of cups. So, that is the way it is allocated. And the stimulating programs, they actually are run in a kind of public-private partnership. So, we have a program called Flanders Circular, in which participants or representatives from industry, NGOs, local authorities and Flemish government agencies are joined in one platform, and they work on a common program. So, actually, people also from industry and also people from NGOs, they can participate and go decide on what kind of measures are taken. But those measures are largely in the field of stimulating measures. So, what kind of green deals will be made, they also work on more collaboration, on finding opportunities to better align different government policies, because there is a waste department doing this, and there is an energy department doing that, and there is an economic department doing a third thing, and sometimes, these are not aligned, and that platform, Flanders Circular, is used for trying to get more collaboration between also those different government departments, to make sure that all the measures are working in the same direction.

LA COMMISSAIRE :

And in terms of pricing, so, what is the exact price of landfill, on average, like for landfilling, per ton, or per kilogram?

M. JOHN WANTE:

Uh... that price...

LA COMMISSAIRE :

Excluding the tax, yes.

M. JOHN WANTE:

Yes. Yes. Yes. It will depend on the kind of waste, but in an order of magnitude, that will be around 100 or 150 euros per ton. And the landfill price is higher than the incineration price. The incineration price is around 120 euros. You need this difference to make sure that waste is diverted from landfill to incineration.

LA COMMISSAIRE :

And the reusable shops, are they NGOs, government-owned? What's the governance for these shops, like when you started them?

M. JOHN WANTE:

The reuse shops, they are a private organization, but they do not work on a commercial basis. So, they don't have shareholders that need a profit -- actually, they are also subsidized, so, around 45% of their income is subsidy, so, they are not financially independent from government subsidies. And they also need to cooperate with the local authority. Because the reuse centres, they work in a certain area of a city, or a cluster of towns, and they have to make sure that they collect reusable goods or make it easy for people to bring the reusable goods to their centres. And that is done in cooperation with -- sometimes with recycling parks that also are run by local authorities.

LA COMMISSAIRE :

Thank you.

LE PRÉSIDENT :

Well, due to the lack of time, I will ask you only one question. How did you determine that the producer *[sic]* of residual household waste is between 0.1 and 0.3 euro per kilogram?

M. JOHN WANTE:

Well, that price is more or less based on the price that municipalities charge to their citizens. Because, first, there was simply the obligation to charge a fixed price, and the local authorities could decide on what is that price, and then it was more harmonized, and now, we have put a price range that needs to be respected by all local authorities. But the price for the residual waste does not cover the complete cost of collecting and treating the waste. It is, let's say, financing almost half of the costs, and it is based on what people are -- or find acceptable to pay for the waste collection. Because if you have a tax that is too high, then, you will get problems with littering, and -- yes, it's finding the right tariff to make sure that people are prepared to pay it without throwing the waste in nature, or just out in the streets.

LE PRÉSIDENT :

Producers were involved?

M. JOHN WANTE:

In fixing that price, the producers were not involved. Because collection of residual wastes is to be organized by the local authorities, the producers are only involved in collecting and treating the recyclable wastes. For instance, for packaging materials, there is an agreement between the packaging sector and the local authorities that the local authorities, they collect the plastic packaging separately, and they send the bill to the producers to pay for that separate collection, and then, the packaging industry takes over the collected packaging, and they pay for the -- and organize also the sorting and the recycling of the plastic packaging. So, it’s actually done by negotiation procedure about what is a fair price for the collection.

LE PRÉSIDENT :

Thank you very much, Mr. Wante.

Dr. MARTIN J. GEHRING
VKU
(ASSOCIATION DES ENTREPRISES MUNICIPALES, ALLEMAGNE)

LE PRÉSIDENT :

And I would like to invite the second speaker, Dr. Martin Gehring. Dr. Gehring, let me introduce yourself in the French language.

Docteur Gehring possède un bagage en ingénierie environnementale. De 2000 à 2009, il a été assistant de recherche postdoctorale et professeur invité dans les université de Berlin, Dresde, Xinjiang, situées en Allemagne et en Chine. Ses principaux axes d'intérêt sont le traitement des boues d'épuration, les perturbateurs endocriniens, la gestion des déchets solides municipaux, le recyclage et la valorisation énergétique des déchets. Depuis 2019, il est responsable senior des politiques de la VKU pour le traitement des déchets, le climat, et la protection des ressources.

So, we are listening to you, Dr. Gehring.

Dr. MARTIN J. GEHRING:

Dear Mr. Chairman, Ladies and Gentlemen, thank you very much for the invitation to share our experiences in Germany, in especially municipal solid waste management with you. I hope you can see my presentation right now.

LE PRÉSIDENT :

Pretty good.

Dr. MARTIN J. GEHRING:

Great. Thank you very much. After a very brief introduction of the VKU, I want to emphasize a little bit on the historical development that lead to...

LE PRÉSIDENT :

Dr. Gehring, can you speak louder, or can you speak just in front of the microphone?

Dr. MARTIN J. GEHRING:

Excuse me. I'm sorry. Is that better now?

LE PRÉSIDENT :

It's better. Thank you.

Dr. MARTIN J. GEHRING:

Okay. I'm sorry for that. So, after a very brief introduction of VKU and the historical development, the federal, state, and municipal obligations, I will focus on especially the present challenges we are facing in Germany, and the future activities we consider the most important.

VKU is the German Association of Local Utilities, including companies that provide services of general interest in energy supply, water supply, wastewater disposal, broadband coverage, and city cleaning and waste management, with more than 1,500 members, about 430 of which are active in city cleaning and waste management. There is no obligation in Germany to be a member of VKU for municipal enterprises of waste management, but most of them, in fact, are.

The municipal responsibility for municipal solid waste management in Germany has been first established even as early as in the Middle Ages, with the first state regulations on municipal street cleaning. In 1893, the first law on municipal fees was established in Prussia, and in 1972, this municipal responsibility was laid down in the first federal waste disposal law here in Germany.

In the 1990s especially, or throughout the past three decades, the first very important step, in our opinion, to recycling of municipal solid waste was the federal packaging ordinance established in 1991, which was the first ordinance in Germany establishing extended producer responsibility for packaging materials, and later on, even recycling rates.

In 1993, the federal technical instructions on municipal solid waste have been established, including the phase-out of landfilling of not-pre-treated wastes until 2005, especially of biologically-degradable municipal solid waste. Those instructions included limit values for organic carbon, heat value, loss on ignition, and other parameters, so that not only biologically-degradable waste was included, but also, for instance, plastic waste, and later on, other recyclable end wastes and wastes suitable for energy recovery.

The municipal competence was laid down in the German Constitution after World War II, the Grundgesetz, and the municipalities have the right to regulate all affairs of the local community, including the right to actually execute, themselves, street cleaning, waste collection, waste disposal, wastewater disposal, and other services. They have the right to impose waste-disposal fees, which are disposed all over Germany by the local authorities. These fees must be cost-efficient, they must be cost-covering. The calculations are public, and they must not lead to profits.

On the other hand, the waste producers, which are private households and small businesses, have the obligation to make waste available to the authorities, and those have the duty to provide waste-disposal options. In all other cases, such as industry production, mining, construction business, et cetera, the waste producers are responsible for waste disposal themselves, including financing.

Germany is a federal state, so, the municipal responsibilities are accompanied by federal competences and obligations such as federal waste management legislation. State competences, so, we have 16 states with 16 waste management laws, and 16 waste management plans. We have federal and state waste prevention programs, but the concrete design of the waste management system, including collection system, treatment and final disposal, is done by the municipalities, and financed through fees. We do not have landfill tax, for instance, in Germany, neither an incineration tax.

Since approximately 1995, there have been collection, sorting, or recycling rates established on the federal level in Germany for several waste streams, including municipal solid waste, packaging

waste, waste batteries, end-of-life vehicles, mixed commercial waste and others, and I will come back to that later on with concrete figures.

However, we are facing main challenges in Germany as well. The first speaker has already mentioned many of these, which are relevant all over Europe. And so, the worst, in our opinion -- the first, in our opinion, is that the waste generation, especially municipal solid-waste generation, does not decrease. You can see here the development from 2002 through 2018, and there was a certain fluctuation, of course there were changes in the statistics, population growth, et cetera, but the total amount of municipal solid waste is more or less stable, about 50 million tons per year. That figure includes all separately-collected waste fractions, such as packaging and others.

For packaging waste itself, the amount of packaging waste itself is increasing clearly in Germany. You can see here that, since 2009, the amount increased by about 25%.

On the other hand, the recycling does not increase, approximately almost since 2015, the MSW recycling rate is more or less constant, 63 to 67%, varying a little bit. The European -- the recycling rate established by the European legislation should be 65% in 2020.

Also, we do not see an increase in biowaste recycling. This figure shows the biowaste in municipal responsibility -- so, household biowaste, and garden and park waste from public collection -- and since 2014, we have a more or less constant amount of biowaste. On one hand, we have a clear population growth, on the other hand, for instance, the climate change causes less vegetation growth in the summer, so, we have more or less a neutralization of several aspects here.

Another challenge is that the source segregation, the separate collection by the private households, is limited. We still have a residual-waste amount of 8.5 million tons per year, 40% of which is so-called bio-organic, and 2.3 million tons, or 28% are considered recyclable garden, kitchen, and food waste. So, that is the so-called realistic potential for the extension of the separate biowaste collection from households, but you can see here that many other waste fractions and residual wastes such as paper and board, hygiene products, composite materials, or -- include organic proportions as well, of course.

So, the most serious problem, in our opinion, regarding municipal solid-waste management is the personal environmental awareness, which is rather selective. In all public polls on environmental awareness, climate change/climate protection/energy efficiency/energy savings and effective waste

separation are the top two points mentioned by the people how they execute environmental protection. On the other hand, the impurities, so-called impurities in post-consumer packaging, for instance, are as high as 50% in many inner-city areas in Germany.

The causes for this discrepancy or for this limited quality of the separately-collected waste fractions are, of course, various, from cultural diversity, tourism, and anonymity in large housing estates, to especially reduced trust in official recycling statistics, and maybe the low cost of municipal solid-waste disposal. It is estimated that an average household of four persons pays about, -- depending on the state and the local regulations, of course -- pays from 170 to 450 euros per year for the waste disposal -- on average, maybe 300 euros. This is very hard to calculate, of course, since the systems are very different.

However, we also believe that low prices of products imply a low value in general, and especially also for the waste materials, so that probably the private households do not consider the waste materials worth of being collected separately. So...

LE PRÉSIDENT :

Dr. Gehring...

Dr. MARTIN J. GEHRING:

Yes, please?

LE PRÉSIDENT :

... you have three minutes left.

Dr. MARTIN J. GEHRING:

Okay. Thank you very much.

So, this slide is a summary of a number of recycling rates we have, and the status quo, legally established, and the status quo in Germany, and, for instance, you can see here that the status quo is, in municipal wastes -- municipal solid-waste recycling, possibly 45%, but the reported recycling rate

according to the calculation method used up to now is 67%. End-of-life vehicles, for instance, are recycled to 87%, but 2.5 million are exported, and 310,000 remaining unknown. So, all these problems with the recycling rates are well known to the public in Germany, and may, of course, have an impact on environmental awareness.

I will skip the market effects, of course, for instance, fast fashion was already mentioned by the first speaker.

So, the economic development, of course, has a big impact on the social development, a big impact on waste amount and waste composition, so, we think that especially eco-design regulations are most important for waste management, and more regarding the waste which is once generated, there are awareness campaigns, of course, which are very expensive and reduced in their effects up to now.

We think that communicating actual recycling rates is of major importance, and the evaluation of the success of the current legislation. Waste prevention should be the first level of the waste hierarchy, of course, as you know, but waste prevention in any forms, also reuse centres and others, is of absolutely minor importance up to now in Germany.

We think that the best method to reduce waste or waste amounts, or enhance recycling, are eco-design, and the internalization of environmental costs, as it is now possible for the first time in the European Union, with the plastic tax.

Thank you very much for your attention.

LE PRÉSIDENT :

Thank you, Dr. Gehring. Mrs. Forget?

LA COMMISSAIRE :

Can you expand on the no-incineration and landfill taxes? It's because you have other types of fees to finance? That's my first question. My second question is, like you decentralize to a very -- to municipal level, and I want to know if, with the numbers of municipalities, if there was some grouping of municipalities to make some efficiency, you know, economies of scale? Between the region and

the municipalities, is there some form of regrouping, especially when the municipalities are smaller? So, that's my two questions for you, and thank you for your presentation.

Dr. MARTIN J. GEHRING:

Yes. Thank you very much. We do not have landfill tax, for instance, or incinerator tax, because the waste management system is designed and decided by the municipal authorities. So, that is laid down in the Constitution, so there is no right of the federal government or the Parliament to impose duties for the municipalities.

Of course, they are setting the framework, and imposing taxes is a right of the federal or state level, but since the waste management is a municipal duty, the municipalities design the system and they impose the fee. And the fee is depending on the actual costs of the system. So, if they decide to collect 20 waste fractions separately, if they decide to construct an incinerator, or if they decide to do anything else, it will, of course, be reflected in the fees, in the local fees.

And your assumption is actually correct, of course, there are groupings of municipalities, in particular in case of high investments such as in waste-to-energy plants, or even landfills, which is legally possible, of course, but is limited to the necessary municipal activities. So, they must not compete with market activities, for instance. So, municipalities -- several or different municipalities may only group if they carry out legal obligations, and nothing else.

LA COMMISSAIRE :

Thank you.

LE PRÉSIDENT :

Mr. Renaud?

LE COMMISSAIRE :

I just want to understand, the landfill facilities and incineration facilities, they're privately owned, or they're owned by municipalities, by state government, federal government? Who owns these facilities?

Dr. MARTIN J. GEHRING:

They are either privately-owned, or publicly-owned by municipalities, for instance.

LE COMMISSAIRE :

The amount of waste that is sent to landfill as compared to what is sent to incineration, a general number in Germany, what is the most used means of elimination of waste?

Dr. MARTIN J. GEHRING:

Well, in the case of municipal solid waste, less than 1%, I believe, in -- or 0.1% of the waste is sent to landfills untreated. So, it is first sorted, composted, digested, incinerated, or anything else, and the amount of incinerated waste is approximately 50 million tons per year, from all sources of the economy, from all branches. From municipalities, industry, and others. The amount of landfill waste, of course, is much higher in the case of construction waste. But it depends very much on the type of waste we are talking about. Municipal solid waste is almost not landfilled untreated at all.

LE COMMISSAIRE :

Do you have a separate collection for -- well, in most cities, I would say, do you have separate collection for organics, or that type of material?

Dr. MARTIN J. GEHRING:

Yes, we have. We have the legal obligation for separate collection of organic waste. It is not sufficiently implemented in all municipalities -- we have to say that -- but yes, we do have separate collection systems for garden waste, kitchen waste, household biowaste, in Germany.

LE COMMISSAIRE :

And what is the method of choice for treating those organics? Are they composted, or are they digested in an anaerobic digestion system?

Dr. MARTIN J. GEHRING:

The proportion of digested biowaste is increasing continuously, but, of course, it depends on the chemical-physical parameters of the waste. So, garden waste, for instance, cannot be digested separately. Household biowaste can. So, it depends on the water content especially, for instance, and the degradability. Most of the biowaste is composted, of course, due to historical reasons, historical development, but I would say 20 to 30% of the household biowaste is first digested, and then composted.

LE COMMISSAIRE :

In the incineration facilities, I suppose the energy is recovered and used in the community? What is the -- I would say the most common installation that we would find in Germany? Incinerator and production of electricity, or production of steam, or...?

Dr. MARTIN J. GEHRING:

That very much depends on the local conditions, of course, the local framework. In Berlin, for instance, the steam is delivered to a power plant, but most of the incinerators produce both electricity and heat for housing areas.

LE COMMISSAIRE :

Thank you very much.

Dr. MARTIN J. GEHRING:

You're welcome.

LE PRÉSIDENT :

Yes. I think it's in slide 16, you made a link between the limit in the effective source segregation and the reduced trust in official recycling statistics. Can you give us some information about this link?

Dr. MARTIN J. GEHRING:

Yes, I did, actually. The packaging ordinance established a recycling rate of, I think 37.5%, which was always reached officially, but scientific studies have shown that the actual recycling of plastics, for instance, was 20%, or even less. In the case of mixed commercial waste, the recycling rate, including metals, was about 17%. And these figures, of course, have been communicated in the public, so the public is well aware of theory and practice, and the difference between the two. So, it is very hard, now, to convince, especially the private households, that the waste collected separately is actually recycled and reused in production.

LE PRÉSIDENT :

But who is responsible of the communication of the information?

Dr. MARTIN J. GEHRING:

Well, that depends of, of course, who is responsible for the disposal of certain waste streams. So, in case of the packaging materials, it is the producers. In case of residual waste, it's the municipalities. We also. According to...

LE PRÉSIDENT :

But this could be the reason why your arrive to different statistic information?

Dr. MARTIN J. GEHRING:

Not only. The calculation of the municipal solid waste recycling rate that has been used in the European Union in the past decades is an input rate. So, it is calculated by the input of the proportion of waste delivered to recycling facilities. It tells nothing about actual recycling, or even the share of recycling products or materials in production of new products. And people are well aware of that. That has been changed now, or it is going to be changed. That is why the municipal solid waste recycling rate is dropping from 67% to 45% officially, in Germany right now. And even that is possibly too high. We don't know that yet. But the media -- we have communicated that 67% as well, of course, because it was the official number, calculated the official way. But people are well aware that this figure doesn't tell anything about the extent of the actual recycling.

LE PRÉSIDENT :

Thank you very much, Dr. Gehring.

Dr. MARTIN J. GEHRING:

Thank you.

LE PRÉSIDENT :

And have a nice day.

Dr. MARTIN J. GEHRING:

Thank you very much.

Dr. STEFANIE SIEBERT
EUROPEAN COMPOST NETWORK

LE PRÉSIDENT :

We invite, now, Dr. Stefanie Siebert. Let me introduce you in French language, if you don't mind.

De European Compost Network, alors, Docteur Siebert est pédologue et possède un doctorat en sciences naturelles. Depuis 2000, elle travaille dans le secteur de la gestion des déchets biologiques. Elle a été responsable de technique de l'industrie allemande de l'humus et des substrats VHE, responsable de la qualité et conseillère en politique européenne de l'organisation allemande d'assurance-qualité BGK. Elle est directrice exécutive du réseau européen de compostage depuis 2011, et responsable de la gestion de l'ECN et de l'élaboration et la mise en oeuvre de sa stratégie et de ses politiques.

Please, you can go on, Dr. Siebert. We are listening to you.

Dr. STEFANIE SIEBERT :

Thank you very much. Good afternoon. I think I have, first, to share my presentation. So, I hope you can see my presentation. Can you give me a feedback?

LE PRÉSIDENT :

Yes. Pretty good. Thank you.

Dr. STEFANIE SIEBERT :

Okay. Thank you very much. Okay.

Thank you very much for the invitation. It's a great honour for me to speak in Canada at your conference. Yes, my name is Stefanie Siebert. I am representing the European Compost Network, and I have here a short outline about my presentation. I will introduce to you the European Compost Network. Then, I will give you some facts and figures on the European biowaste management, and then, I will go a little bit deeper into the legislative approach of the European Commission on the new circular economy, on the waste legislative developments with regards to biowaste, and also on the new Fertilizer Product Regulation. Then, I will also give some information about quality assurance for compost and digestate, and some further initiatives, if it's over for this.

Okay. The European Compost Network is a leading European membership organization promoting sustainable recycling practices for organic resources for composting and anaerobic digestion. ECM represents, in total, 65 members from 27 European countries. That means that we encompass also 22 national biowaste organizations across Europe, so we represent, in total, 4,500 treatment plants, which treat, in total, 48 million tons of biowaste.

When I report about the figures of biowaste management, I am reporting about figures of separately-collected biowaste. So, we do not include agricultural waste or other organic resources like sewage sludge in our statistics. So, we only report on biowaste.

As I mentioned before, we are a European umbrella organization of the different European countries. We have all the 65 members can work together with ECN in different areas, so, we are

mainly focussing to make lobbying work at European level, also to be included in the legislative developments of the European Commission.

So, we were very much involved, in the past, on setting mandatory separate-collection tariff for biowaste in the waste framework directive, and now, we are also in touch with the European Commission for the implementation of the fertilizer regulation and the new legislative initiatives of the European Green Deal.

The European Compost Network was founded 20 years ago, and several of our national members are focussing as well to produce, out of biowaste, high-quality products. This is also one main area, working area, in ECN, to define quality criteria for compost and digestate. Because we want to produce really good products which can be used in agriculture and horticulture, and which are safe.

So, we also want to develop some markets for these products, and that's also the reason why we have to be involved on a European level in the legislation, because we have different legislations in the member states, but we want also to export our products across the border.

As you can see here on the left side, we have also a wide variety of board members representing from different countries, from Belgium, from Flanders, from Italy, from Germany, Austria, Romania, Norway, Portugal, Lithuania, and Poland.

In 2019, we have published our first status report on European biowaste management. You can also see here there is a map of Europe, and you see that all the green-coloured places, these are countries which have contributed to the report. The reason why some countries are not covered in this report is relying on the fact that several countries in Europe have not set up separate collection for biowaste, or they are in the implementation phase and are not doing biowaste management so far.

We are considering to revise this or to update this report in 2022, because we have now also further developments on biowaste management in several different countries in Europe.

Here, from these 18 countries, you can see also the amount of municipal solid waste generated, and in the green bars, you see how much biowaste or organic waste is treated in these countries. But I will give you some further insights for some special cases from Europe, to have a better overview on this.

In total, we have estimated, with this report, that we treat around 48 million tons of biowaste in composting and anaerobic digestion plants. As I mentioned before, around 4,300 composting and AD plants are treating separately-collected biowaste in Europe. The majority are composting plants. We have 3,400 composting plants, 738 anaerobic digestion plants, and 133 combined anaerobic and composting plants. That means that we have a pre-treatment step to take out the energy to produce renewable energy, and afterwards, the material is composted.

Here, you can also see the figures of the different composting facilities and anaerobic digestion facilities, and combined anaerobic digestion plants in the different 18 countries, and you see as well, as in the first pictures, the majority are doing composting. The difference is in Denmark, where you can see that anaerobic digestion has higher amounts than composting, and as well as Sweden, but I think you will also have, later on today, a presentation from the waste association from Sweden, because the Scandinavian countries are very much more relying on anaerobic digestion of food waste than on composting. This is a difference to the other countries.

When you look to this graph, we have also calculated how much biowaste is treated per capita, and it's surprising that Slovenia, which jumped into the European Commission later than countries like Germany or Austria, or Belgium or the Netherlands, which are very far forward with recycling, and also this biowaste management, that Slovenia achieved to recycle a very high amount of biowaste per capita. So, it's also possible to implement separate collection in a very short way and not needing several centuries to -- uh... decades to develop biowaste management in a country.

I would like to show some case studies from Austria, Belgium, Germany, and Italy. I have chosen these countries because they are doing biowaste management since more than 20 years, and also to compare smaller countries from Europe, and larger countries together. So, Austria and Belgium, we can compare two countries because of their inhabitants, and you can also see in all these graphics that the amount of municipal waste will rise between 420 kilograms per inhabitant, to 630 kilograms. And in the further slides, I compare, then, the two small countries, Belgium, which you have heard before from Mr. Wante, and Austria, which is south of Germany, and you can see that those countries are comparable in their size, and also in the size of inhabitants, but you can see that there is a complete different picture how they treat biowaste.

So, Belgium is -- especially the region of Flanders, are treating 2.3 million tons of biowaste in composting and anaerobic digestion plants. In those countries, composting is dominating, but you can also see that a large amount of biowaste in the Flemish region is still treated in anaerobic digestion

plants. The difference here is that you see that we have, in Belgium, Flemish region, where 2.3 million tons are treated, we have 87 composting and anaerobic digestion plants, and when you compare this to Austria, where we have 1.3 million tons, we have 565 composting and anaerobic digestion plants. So, this is a complete different strategy. Austria is a rural country, and there are a lot of on-farming composting and digestate plants. This is different to Belgium, where we have larger plants where a greater amount of material is treated.

When we look to Germany and to Italy, so, Italy has also made a big step forward in doing biowaste management, and especially in doing separate collection of biowaste. They select up to 100, 120 kilograms per inhabitant of biowaste, of food waste especially, and you can, here, see as well that we have -- in Italy, you do not find any anaerobic digestion plants which do not have composting steps afterwards. So, every matter in Italy is, afterwards, composted. This is mandatory because they are not allowed to spread digestate directly on land. This is the same also in other countries in Europe, like in the Netherlands.

In Germany, you can see that we also produce a huge amount of digestate which is used directly -- directly on land.

The difference between compost and digestate, I think you know that compost is more a soil improver, because intention is to increase organic matter in soil with compost. During the compost process, stable humus material is produced, and therefore, it contributes to increase the organic matter content in soil.

In comparison to this, digestate is more an organic fertilizer. As you can see here, the composition shows that you have also a high amount of nitrogen, phosphorous and kalium, which is available in the digestate material. So, compost is used mainly as soil improver, and digestate as organic fertilizer, in Europe.

We have also calculated, on the separately-collected amount of biowaste, and they produce compost material and digestate, how much nutrients can be replaced, and based on the total figure of 15.7 million tons of compost and digestate, we can replace 1.5% of mineral nitrogen for basic fertilizing practices on soils, and 4.3 % of total inorganic phosphorous.

Normally, compost is applied with 30 tons per hectare, and with this, we apply 9 tons of organic matter to the soil.

So, we also calculated the potential to sequester carbon in the soil. With one ton of compost, we can sequester up to 30 kilograms of soil organic matter, and this is equivalent to save also 110 kilograms CO_2 equivalents. So, compost can also contribute to mitigate climate change. This is very important also in the discussion on climate change.

And, for this, we have also worked out a fact sheet, taking the current potential of compost into account, which is 48 million tons of biowaste which is composted to 12 million tons of compost, and with this, we can replace, today, 1.3 million tons of CO_2 equivalents.

As I mentioned at the beginning when I showed you the map of Europe, you saw that we have several countries where no separate collection is in place, and you have also heard from Mr. Gehring that there is still the potential to increase the separate collection of biowaste in Germany. We have estimated that -- not only we as ECN, also the European Commission has estimated that, in the future, we can separately collect 128 million tons of biowaste per year. And if we do, out of these materials, compost, then, we can save 3.5 million tons of CO_2 per year.

For these calculations, we have taken into consideration that 74% of the biowaste is treated in composting plants, and 26% in anaerobic digestion plants. So, depending on the incentives or whatever, it might be also a chance that more biowaste, in the future, will be treated anaerobically instead of composting, but I think this is still a way to go. For the time being, we have taken the figures which are today in place in Europe.

We have also done, in our survey, where are the markets for compost. It's clear, the huge amount, or the majority of compost is used in agriculture. Then, in growing media, in hobby gardening, and for landscaping purposes. Digestate, when we use digestate directly, it's mainly used, 90 to 95%, for agricultural purposes, because you have much higher nutrient contents, which are not suitable for growing media or for hobby gardening.

Okay, that biowaste plays an important role in the circular economy is clear, because we all know that biowaste will range between 20 to 60% of municipal solid waste, so, as an average in Europe, 37% of municipal solid waste is biowaste. And therefore, it is very important also to achieve the objectives of the circular economy package of the European Commission. The objectives are to reduce waste production, which was also discussed before that this was not achieved so far, and neither in Belgium, neither in Germany, so this is really a topic that we have to work on.

Then, another objective is to promote recycling, and also to save primary resources and to establish also markets for secondary materials. That means, as well, markets for compost and digestate.

This was mentioned before...

LE PRÉSIDENT :

Three – Dr. Siebert...

Dr. STEFANIE SIEBERT :

Yes? Three minutes?

LE PRÉSIDENT :

Three minutes left.

Dr. STEFANIE SIEBERT :

Okay. Okay. I will hurry up a little bit. Okay. You know that we have Waste Framework Directive in place in Europe since 2008, and there was set a recycling target for municipal solid waste of 50% until 2020 that should be reached by all member states. And the Commission has chosen this, has made a survey by all member states, and it was showing that several member states were not able to reach this existing recycling target of 50% by 2021, and they have also proposed actions and they have asked also the member states to do better separate collection and to also have mandatory requirements to sort biowaste, because biowaste is really the main waste stream in municipal solid waste, which has to be sorted out, because, otherwise, you will not fulfill the recycling targets.

With the new Waste Framework Directive which is in place now since 2018 in Europe, there are new targets for municipal solid waste recycling, in three steps. In 2025, the recycling target of 55, 60% in 2030, and 65 in 2035 have to be reached. And this is also a main driver also to go for separate collection of biowaste. And in addition, in this Waste Framework Directive, the European Commission has set as well that all member states have to implement separate collection of biowaste

until the end of 2023. So, all the member states are now working in the implementation of this regulation.

I will skip the landfill issues, because I think as well that Vanya Veras will talk about this other waste legislation in Europe.

We have also a clear definition for biowaste in the Waste Framework Directive, and you have to do separate collection of biowaste, otherwise, it will not be accounted for recycling, and the separate collection of biowaste is also a prerequisite to produce high-quality compost and digestate, and if you do not take out the wet waste, the organic fraction of the municipal waste, you will also have problems to take out other waste streams out of the residual waste.

Another issue on the European level is fertilizer regulation, which is also related to the circular economy. The commission wants to build up also a secondary market for recycled products, and compost and digestate will, in the future, also be regulated under the European Fertilizer Regulation, where we have harmonized criteria for compost and digestate, and for this, there is also a precondition set in the regulation that external controls have to be in place. That means that you have to set up quality-assurance schemes to control the input material, the treatment process, and the product quality at the end.

At ECN, we have described this in advance of the fertilizer regulation. In 2010, we have set up and harmonized a quality-assurance scheme for compost and digestate where all these criteria are described, and these are also more or less in line with the criteria which are set in the fertilizer regulation.

I have listed here only the heavy metal contents. As you see here in bold black, these are the limit values for the fertilizer regulation for compost and digestate, and in the purple colour, these are the limit values we have discussed and set in our quality-assurance scheme for compost.

Below, in the three lines, you see also the average values of the heavy metals in compost from green waste, from biowaste, and in digestate, and you see that all the limit values which are set in the regulation are not reached, we are much below EC's limit with the concentration of heavy metals in compost and digestate.

Okay. I think I come to the end. So, you know as well that the European Commission is working on the European Green Deal, where several other policy and legislative initiatives are set, and one of these initiatives is also that the Commission is working on a new soil strategy, also to improve the European soils, which are lacking *[sic]* on erosion, and we hope as well that this will give an incentive as well to place our products on the market, because we can contribute to increase organic-matter content in soil with our products.

And therefore, we have also set up an initiative, and everybody is also invited to sign this initiative that organic matter in our soils is needed, and compost and digestate can contribute to this.

Okay. You will also find further information on our website. We are *(coupure sonore)* celebrate the compost awareness week together with Canada, with the United States and Australia in May, and we will also have a workshop on the use of compost and digestate in growing media in May this year. This is also an international conference -- there are also people from Canada and the US -- will be in Belgium.

Thank you very much. This was in a very fast and short way.

LE PRÉSIDENT :

Thank you very much, Dr. Siebert. Can you stop sharing your presentation, please?

Dr. STEFANIE SIEBERT :

Yes. I will do. Sure.

LE PRÉSIDENT :

I just have a friendly question for you: Are you tired?

Dr. STEFANIE SIEBERT :

No. Not.

LE PRÉSIDENT :

Because you have so many words in one minute, I had to put my earphones in order to follow you.

Dr. STEFANIE SIEBERT :

Okay.

LE PRÉSIDENT :

Thank you very much for your presentation. I will ask my colleague Mr. Renaud to address you some questions.

LE COMMISSAIRE :

Thank you, Dr. Siebert, for your presentation. I was a bit surprised that composting is more largely used in Europe than anaerobic digestion. How do you explain that? In almost all the countries except Denmark and maybe Belgium, compost is the main choice for treating organics; how do you explain that?

Dr. STEFANIE SIEBERT :

There are different reasons for this. First, this was also mentioned by Mr. Gehring, that the composition of biowaste depends a little bit which treatment you use. If you are doing separate collection like it is done in the Netherlands, in Germany and Belgium, with large bins, where you have a very high amount of garden waste, structured waste in the bin, then, you will have also a problem to do anaerobic digestion. So, for green waste, anaerobic digestion is not suitable.

You have other collection systems like in Italy, where you use these biodegradable, compostable bags, where you mainly collect food waste. Food waste is super for doing anaerobic digestion, this is very energetic, but at the end, you have also to get rid of the digestate.

So, digestate, as I mentioned before, it's an organic fertilizer, and we have, in several countries in Europe also, not the capacities to apply digestate directly on the soil. So, this is not the case in -- in

Belgium, in the Netherlands, in Germany, you have massive other organic materials from agricultural sources which have to be applied on soils, and therefore, the digestate is more or less in -- yes, in contradiction with, or in conflict with the other agricultural residues. And therefore, doing, afterwards, composting, this is more or less -- uh... yes, a better way, also, to use this material afterwards -- sustainable.

The other effect was that anaerobic digestion is a little bit more complicated and a little bit more expensive. And I think for countries which are just starting the separate collection and doing biowaste management, I think they will start with composting before they are starting anaerobic digestion.

And then, you have to see -- and so, in the past, it was -- anaerobic digestion was intensified in all the countries, like Austria, Germany, and so on. With the renewable energy law, this was and is still a driver that anaerobic digestion is in place, but in principle, it's more costly than doing composting. That is the reason. But it might be increased in the future, yes.

LE COMMISSAIRE :

Okay. Is there a problem to find land to dispose of compost? At some point, the amount of compost that is produced from municipal organics comes in competition with the more traditional sources of compost, like cattle manure and agricultural material that is being composted. Do you find that it's a problem in the European Community?

Dr. STEFANIE SIEBERT :

This depends from country to country. So, when we look to -- as I mentioned before, to the countries like Belgium, the Netherlands and Germany, where we have really also a huge amount of livestock and manures, and so on, there are places or regions in Germany where it's difficult to get rid of this, but -- and we have also the Nitrates Directive in place, which takes also compost into account in the legislation, that you are not allowed to apply more than 170 kilograms of nitrogen, but when you make a total with composters and waste anaerobic digestion plants, so far, there is a higher demand for these materials, and they have problems to get rid of this. And especially, I think, in the southern part of Europe, in the Mediterranean countries, there is really a demand for stable organic matter, to bring it to the soil.

LE COMMISSAIRE :

Thank you very much.

LE PRÉSIDENT :

Mrs. Forget?

LA COMMISSAIRE :

I don't have any questions. Thank you for your presentation.

LE PRÉSIDENT :

So, thank you very much for your presentation, Dr. Siebert.

Mme AGNÉ RAZGAITYTÉ
CONFEDERATION OF EUROPEAN WASTE-TO-ENERGY PLANTS (CEWEP)

LE PRÉSIDENT :

So, we are calling now Miss -- Mrs. or Miss -- I don’t know, Mr. or Mrs. Agné Razgaityté.

Ms. AGNÉ RAZGAITYTÉ:

Hello.

LE PRÉSIDENT :

Yes. Hello. Let me introduce yourself in French language, if you don't mind.

Alors, Madame Razgaityté -- I’m sorry in pronouncing your word *[sic]*. I have the same problem with name, so, don’t mind.

Elle est de la Confederation of European Waste-to-Energy Plants. Donc, elle est responsable de la communication dans cette confédération depuis octobre 2014. Elle est responsable de la communication externe, de la collecte d'information sur le développement des politiques, et de sa diffusion auprès des membres. Elle est titulaire d'une maîtrise en science politique de l'Universitat Pompeu Fabra.

So, we are listening to you.

Ms. AGNÉ RAZGAITYTÉ:

Hello. Bonjour. Merci beaucoup pour cette invitation. J'ai eu le grand plaisir de visiter Québec déjà plusieurs fois pour des raisons personnelles, alors, je suis très heureuse de présenter le secteur de valorisation énergétique de déchets européen aujourd'hui dans cet atelier. Malheureusement, je suis beaucoup plus confortable de le faire en anglais.

So, I represent CEWEP, the Confederation of European Waste-to-Energy Plants. It's an umbrella association of the operators of waste-to-energy plants across Europe. Our members thermally treat household and similar commercial and industrial waste that remains after waste prevention, reuse and recycling, and generate energy from it.

In 2018, around 400 CEWEP member plants treated around 80 million tons of municipal and similar commercial and industrial waste, and CEWEP represents around 80% of the total European waste-to-energy market, while, in total, there are around 500 waste-to-energy plants in Europe, and they thermally treat around 96 million tons of waste.

Here, you can see the geographical distribution waste-to-energy plants in Europe.

So, this is the geographical distribution that I was talking about. Yes. You can see that most of the plants are in Northern and Western Europe, and there are less plants in Eastern and the southern part of Europe.

So, the sector has historically struggled with public perception, especially in countries where waste-to-energy plants is relatively recent, so, namely United Kingdom or Italy. There, the technology is often perceived as outdated, highly-polluting, and as having no place in a circular economy.

The current European waste-to-energy plants are modern waste-treatment facilities. As you can see, they are very different from the historical incinerators, but the image, unfortunately, still often persists. So, this is -- as from the early nineties, European waste-to-energy plants must fulfill very strict emission requirements, stricter than any other industry in Europe, in order to be able to operate.

The requirements were renewed once again in 2019, and here, you can see a basic scheme of a waste-to-energy incinerator. The blue part, the flue-gas cleaning system, normally takes around 60% of the space in the plant, and it's around 40% of the initial investment costs.

The European waste-to-energy sector stands between two policy streams. So, circular economy and waste policies on the one side, and energy and climate policies on the other side.

A bit about the EU circular economy targets. Dr. Siebert already mentioned them, but just for the context, in 2018, the EU set these so-called circular economy targets for municipal waste management, and according to these targets, in 2035, the EU members states should landfill not more than 10% of their waste, and recycle at least 65% of their municipal waste. Certain derogations apply to members states that lag really far behind, and stricter rules to count what is recycled were also introduced in 2018, but the effect will be seen only in 2020 statistics, so, in 2022.

Here, I would like to draw the attention to the fact that these targets are only set for municipal waste, which is just a small part of the total waste volume, and at the moment, there are no similar targets for commercial and industrial waste, at least not in the EU level.

Then, here is the general municipal waste treatment distribution in Europe. Under the current calculation method, 48% of waste is recycled in the EU, 27% is incinerated, and 24% is still landfilled. There are considerable discrepancies between the European member states. So, as we heard that, in the example of Flanders, there are many other Western and Northern European countries that they recycle large percentages of their waste, and they landfill almost nothing, usually with the help of waste-to-energy, which is the yellow part in this graph, but then, there are many countries that still landfill the majority of their waste, which is on the right side of the graph, in red.

The waste hierarchy, and waste prevention is considered the most preferable option, and landfilling or waste disposal is seen as the least-preferable option, is the guiding principle of the circular economy in Europe. However, according to Waste Framework Directive, the main law, let's say, regulating this on the EU level, when applying the waste hierarchy, the overall environmental

outcome must be considered. This means that aspects such as land-use, climate change, energy use, human health, have to be taken into account. And therefore, for specific waste streams in well-justified cases, it is okay to depart from the waste hierarchy.

Let's take the case of the residual waste. Reducing waste generation in general in the first place is the undisputable goal, but that will require change in product design, consumer behaviour, and that will take a long time, possibly decades or more, and concentrating policy efforts specifically on residual waste-stream production without having an overall approach can also have negative implications. Quantitative reduction targets for residual waste are a risk in fly-tipping, contamination of recycling streams, illegal dump sites, open fires inside and outside the country. And, yes, waste exports to countries with lower environmental and social standards, of course, should be avoided.

Here are just a few examples of headlines of increasing waste crime in Europe. And we have examples from Sweden, Finland, France, British waste ending up in warehouses in Poland, Finland. It just shows that these kinds of measures, applied blindly, unfortunately have the potential to contribute to the already high rates of waste crime.

When prevention or reuse is not possible, recycling should be the preferable option. Unfortunately, the reality is complex. For example, some packaging items prove to be extremely difficult, or even not possible to recycle, containing multiple different materials, often glued together. Here, I took an example of a packaging of a product that we all know, that has a plastic lid, metallic foil, foil-lined cardboard as main body, and a metallic base, the last two glued together.

Another point is that not everything should be recycled. Back in 2017, the European Commission published an extensive study for the strategy of non-toxic environment, where they argued that, in the recycling process, articles and the materials they consist of, that contain toxic substances, contaminate the respective waste streams, and are diluted in materials that do not contain toxic substances. And according to the modelling studies, it may take centuries to decontaminate a recycled-waste stream, even if preventive measures are implemented.

So, the question is: What do we do with these dirty, mixed, contaminated materials that contain substances of concern, and are possibly degraded after multiple types of recycling. So, these wastes that are not recycled, they do exist, making a point to the earlier discussion. And we think that waste-to-energy remains the only hygienic treatment option for this waste stream, because, at the end of the

day, the only alternative is landfill. And waste diversion from landfill, as the least-environmental waste treatment option, is one of the most important goals of the waste-to-energy sector.

It's in order to protect soil and groundwater from contamination, prevent microplastics from being blown into seas and rivers, harness the material and energy content of residual waste, and I think most importantly in the current context, is to avoid the creation of methane, a very potent greenhouse gas, equal to 28 times CO_2 in mass.

As a study by the German federal environment agency argued in 2015, diversion from landfill is the main contributor to greenhouse-gas mitigation in the waste management sector. In other words, landfill diversion is the low-hanging fruit in climate mitigation.

Even with all the policies aiming at landfill reduction, Europe still landfills 175 million tons of nonmineral waste a year, and this waste emits more than 140 million tons of CO_2-equivalent emissions. And at least 153 million tons of CO_2-equivalent savings could be achieved by diverting waste that is currently landfilled to quality recycling and waste-to-energy, and by substituting fossil fuels used in the generation of energy with waste-to-energy.

Currently, the three main EU institutions are negotiating the European Climate Law. A proposal suggests setting a target to reduce greenhouse gas emissions by 55 or 60% by 2030, in comparison to 1990 levels. What all three institutions already agree on is that the EU should become climate neutral by 2050. Currently, the rest of EU legislation is being assessed in order to adapt it to these ambitious climate goals, and all sectors will have to contribute.

And landfill diversion is not the only waste-to-energy contribution to the climate goals. Waste-to-energy also recovers metals and minerals for recycling from the bottom ash, therefore replacing raw materials and saving considerable amounts of greenhouse gases.

There is a continuous innovation process that allows increased recovery of the materials from the bottom ash. For example, a recently-opened Valomet plant in Ghent, in Belgium, recovers very small metal particles which couldn't be recovered otherwise before. And metal recycling in particular contributes to greenhouse gas savings, as one ton of recycled metals from the bottom ash saves two tons of CO_2-equivalent emissions.

The metal part of the bottom ash consists of around 80% ferrous metals, 15% aluminum, and 5% other nonferrous metals. And from the iron present in the European bottom ash, around 1.4 million tons yearly, around 26 cruise-size ships could be built.

From the residual waste, European waste-to-energy plants produce precious energy in the form of electricity, heat, and process steam, this way replacing fossil fuels. I know that, in Québec, you have abundance of renewable electricity by employing hydropower, but I would like to present you with a case of industrial process steam.

In the Belgium harbour of Antwerp, two waste-to-energy plants provide steam to five local chemical companies, this way replacing their gas-fired boilers that were shut down, and reducing the CO_2 emissions by 100 000 tons yearly. There are many other examples all over Europe of this kind of industrial symbiosis between waste-to-energy and chemical, paper, metal, and other industries.

Another popular way to use the energy provided by waste-to-energy is to provide heating to large public buildings like hospitals, university campuses, airports, et cetera. The sector is also not behind on innovation. A new European hydrogen strategy launched last year proposes considerable investment in hydrogen generation. It has a potential to decarbonise heavy urban transport like city buses and waste trucks. And, indeed, strong synergies could be developed between waste-to-energy and clean hydrogen.

We already have some examples. One of them is Wuppertal plant in Germany, where 10 new fuel-cell-powered buses are on the road. They're being filled in the hydrogen filling station next to the waste-to-energy plant, and they're not -- the Wuppertal plant is not stopping there. The project seems to be successful, and they are planning to also have waste trucks running on hydrogen.

Numerous waste-to-energy plants in Europe are also working on carbon capture and usage or storage projects. I took a few examples. So, for example, there is an AVR plant in the Netherlands that captures CO_2 and supplies it to the local greenhouses. There is also a Twence plant in the Netherlands that produces sodium bicarbonate from CO_2 captured in their facility, and there are quite a few CCS projects underway, mostly in Norway, Denmark, or the UK. These technologies have a potential to make the residual waste management carbon-neutral in the future.

So, just a quick sum-up. Waste-to-energy keeps the cycle clean by dealing with unwanted organic components in the material cycles. So, basically, it acts as a pollutant sink, fulfilling a hygienic

task for society. Waste-to-energy helps, together with recycling, to minimise landfilling, and waste-to-energy turns nonrecyclable waste in an environmentally safe way, to secure energy and valuable raw materials.

That's it. Thank you, and I will be happy to answer any questions.

LE PRÉSIDENT :

Yes. Thank you very much, Mrs. Razgaityté. Mr. Renaud?

LE COMMISSAIRE :

Thank you for your presentation. Energy from waste, I know that a number of European countries have regulations as to how much or what percentage of renewable energy they must produce for their needs. Waste-to-energy, does that qualify as a renewable energy, or -- is it considered renewable in the sense of a country's regulation?

Ms. AGNÉ RAZGAITYTÉ:

So, under the EU regulation, around 50% of the energy produced in the European waste-to-energy plants is considered renewable. It depends on the input, on the waste input, because around 50% of the input is of biodegradable origin. And I don't mean biowaste -- that was already discussed -- but it's mostly, let's say, dirty paper, cotton, and things like that that are biodegradable. So, it's around 50% renewable. The exact percentage may vary from plant to plant and from country to country.

LE COMMISSAIRE :

I understand that the choice of incineration has been made by a number of countries in Europe. What is the explanation? What are the -- I would say the criteria that make incineration better than landfill, and why are some countries going more on landfill, and others going on incineration? What are the factors that will favour incineration over landfill?

Ms. AGNÉ RAZGAITYTÉ:

I think that, traditionally, in certain European countries, incineration has become popular because of the lack of energy and space, so, kind of the two came together, because if you don't have a space to have landfill, especially in a country like the Netherlands, let's say, that is very densely populated, you have to think of different ways, and also, especially in the northern countries, the energy produced in waste-to-energy plants often covers 50 or more percent of the big cities' heating needs, through heating networks. So, it's also because of the need for energy. So, I think that that was a big driver, historically.

Now, the European countries, since we have to reduce landfilling to less than 10%, at least for municipal waste, we don't really have, let say, the choice, landfilling or incineration, because landfilling is perceived as the worst, and it is the worst thing that you can do, just dig this waste that can be -- at least, still, the energy could be retrieved from -- in the ground, and have methane coming from it. So, it's becoming not an option, let's say.

LE COMMISSAIRE :

And as selective collection becomes more and more efficient, where they reduce the amount of plastics, the amount of paper, cardboard, and all those things that are combustible, will the incineration remain a good option, even if the calorific power of the waste decreases?

Ms. AGNÉ RAZGAITYTÉ:

Well, we're not really looking for plastic waste that much. I think that if you put only plastic waste in the incinerator, the calorific value is too much, but I don't think there will be a moment where -- on the one hand, you have all these moves to even recycle the diapers, as we see, and all these things, but on the other hand, more and more chemicals are added to substances-of-concern lists, so, we don't want to put them back in the cycle. I think it's -- I don't have a crystal ball, so I think it's hard to see what's going to be in 50 years from now, but, for the moment, and for the next few decades, I think waste-to-energy is definitely here to stay, and we perceive ourselves as the enabler of this circular economy, because we take the dirty part, we take the parts that, at the end, nobody wants, actually, and we take value from it.

LE COMMISSAIRE :

Thank you very much.

LE PRÉSIDENT :

You mentioned that public perception is quite bad with regard to waste-to-energy incineration. Did you make any study in order to determine why, which are the main factors that make that the public has a bad perception?

Ms. AGNÉ RAZGAITYTÉ:

We haven't studied it, but we see that, for example, our Nordic members have no real big issues with public perception. So, there, they have waste-to-energy, or something very similar for like 100 years now, or more, and they're -- I've seen videos myself from India, where people living next to the plant say that they're very happy to have it there, because the energy is cheap for them, while in the southern parts of Europe and in the UK, where waste-to-energy is quite new, it's a little bit difficult.

So, these are the general tendencies that we see. The reasons for it, I think, is that, historically, before the flue-gas cleaning systems were introduced and obligatory, indeed, it was not always -- the plants that were there were not as clean. So, the image persists from this historic memory of the way the plants used to operate. So, that's one of -- I think one of the main reasons. And personally, I think that, also, it's a psychological -- social and psychological reasons, that the idea of burning waste for people is something that they perceive as a very -- very smelly, very negative thing.

But I don't have a magic recipe of how to fight it, but one thing that we have noticed with our colleagues and members that have been building new plants was, to bring people to a facility, or to show how this actual contemporary facility operates, to answer all their questions, is usually a way to go, because we hear that people arrived to -- people that are against incineration, they arrive to the facilities and they see the bunker, the little window that opens into the fire, and they're like, *"Oh, so it's not like a field that is just open burning,"* or something. Because the perception is very skewed. So, I think just to show how -- first of all, to show how it really looks like is already a good step. But I don't think there is a magical recipe. It has to be a dialogue with the communities around.

LE PRÉSIDENT :

Thank you. And you also mentioned, if I understood good your presentation, that wastes are responsible of 140 million tons of CO_2 equivalent; right?

Ms. AGNÉ RAZGAITYTÉ:

Yes.

LE PRÉSIDENT :

I wonder, what is the emission, for all Europe, in terms of greenhouse emissions?

Ms. AGNÉ RAZGAITYTÉ:

You mean -- so, that was a number from the waste that is still landfilled currently, and I'm not sure I understood the rest of the question.

LE PRÉSIDENT :

I just want to know what is -- well call, in French, *"dénominateur"*...

LE COMMISSAIRE :

The proportion. What percentage does that represent, the greenhouse gas from waste, as compared to greenhouse gas from all other sources?

Ms. AGNÉ RAZGAITYTÉ:

I don't have this number just by heart, but I can -- I could send it to you. I'm sure one of my colleagues does.

LE PRÉSIDENT :

Okay. It will be very appreciated. So, thank you very much.

Donc, merci beaucoup à tous les auditeurs. Nous allons entreprendre une pause d'une quinzaine de minutes. Et donc, nous reviendrons à 10 h 40. Merci.

PAUSE DE QUELQUES MINUTES
REPRISE DE LA SÉANCE

Mme VANESSA CHESTNOT
FÉDÉRATION EUROPÉENNE DU VERRE D'EMBALLAGE (FEVE)

LE PRÉSIDENT :

Mesdames et Messieurs, nous allons poursuivre le deuxième atelier en invitant Madame Vanessa Chestnot pour faire sa présentation. Permettez-moi de vous la présenter.

Madame Vanessa Chestnot, elle est Senior Product Policy Manager à la Fédération européenne du verre d'emballage, FEVE. Les membres de cette fédération produisent des emballages en verre à destination des marchés de l'agroalimentaire, des boissons, de la parfumerie, cosmétiques, et de la pharmacie. Madame Chestnot, à vous la parole.

Mme VANESSA CHESTNOT:

Merci beaucoup. Tout d'abord, je voudrais vous remercier pour l'invitation à participer à cet atelier et à la possibilité de vous donner une perspective européenne sur le recyclage du verre en particulier. Donc, ce que je vous propose de faire aujourd'hui, c'est d'abord de vous expliquer en quelques mots qui est la FEVE, ce que notre organisation représente, ainsi que l'importance du recyclage pour l'industrie du verre, avant de vous présenter un peu le cadre réglementaire européen et les principes qui, je pense, expliquent la bonne performance de la collecte et du recyclage du verre en Europe, et enfin, finir par quelques -- une conclusion sur les prochaines étapes, et comment on peut aller encore plus loin en Europe.

Donc, en quelques mots, la FEVE est la Fédération européenne du verre d'emballage. Donc, nous représentons plus de 90 % de la production de verre d'emballage en Europe. Donc, nos membres sont présents à travers toute l'Europe, au travers d'un réseau assez dense de 144 usines, et donc, qui produisent des emballages en verre -- donc, des bouteilles, des pots et des flacons -- à destination principalement du secteur agroalimentaire, mais aussi des marchés pharmaceutiques, de la parfumerie et des cosmétiques.

Je pense qu'il est important de mentionner aussi, dans le cadre de nos discussions aujourd'hui, c'est que le développement durable est vraiment un moteur très important pour nos membres, qui investissent, annuellement, 600 millions d'euros pour améliorer l'efficacité énergétique des usines, réduire les émissions de CO_2, et moderniser l'outil de production.

Donc, juste très rapidement, je voulais vous montrer nos membres qui ne sont pas nécessairement connus du grand public, puisqu'ils fournissent les emballages en verre vides qui seront ensuite remplis de vin, de spiritueux, de bière, et caetera. Et un de nos membres est O-I, que vous entendrez un peu plus tard dans la journée.

Donc, avant de passer en revue le cadre européen, juste un petit rappel du verre et du fait que le verre est un matériau parfaitement adapté à une économie circulaire. Donc, le verre est 100 % et infiniment recyclable, et actuellement, le verre recyclé représente environ 52 % des matières premières qui sont utilisées dans la production de verre d'emballage en Europe. Donc, en fait, le verre recyclé est la première matière première utilisée dans la production de verre d'emballage en Europe, et les autres ingrédients sont donc le sable, le calcaire, et la carbonate de soude, qui sont des ingrédients naturels.

Donc, le verre est vraiment un emballage qui est plébiscité par les marques et par les consommateurs, du fait de son aspect durable, mais aussi par ses qualités, puisqu'il est non toxique, inerte, et donc, il n'y a pas de migration entre le contenu et le contenant. C'est un matériau barrière, vraiment, qui protège le produit qu'il contient.

Juste peut-être un mot en plus sur le verre recyclé, qu'on appelle aussi calcin, ou *« cullet »*, en anglais. Donc, comme je disais, il représente 52 % des matières premières utilisées actuellement dans la production de verre d'emballage en Europe, et c'est vraiment une priorité de nos membres d'augmenter le recours au calcin, parce que ça a vraiment des avantages environnementaux. Ça réduit la consommation d'énergie, et également les émissions de CO_2. Donc, nos membres sont

vraiment très impliqués pour augmenter le taux de contenu recyclé dans leurs produits, et ça fait partie vraiment de la stratégie de décarbonisation de l'industrie.

Je voulais vous montrer ce graphe qui montre l'évolution du taux de collecte pour recyclage en Europe entre 2006 et 2018. Et on voit clairement un progrès significatif de 60 % en 2006, à près de 75 % en 2018. Donc, 75 % des emballages en verre qui sont mis sur le marché en Europe sont collectés pour être ensuite recyclés. Et ce que, je pense, ce graphe montre bien, c'est qu'il y a une réelle progression qui est due, notamment, au cadre réglementaire, et j'y reviendrai, mais c'est très important pour nous en tant que verriers, parce que la quantité et la qualité du verre collecté a une influence directe sur le contenu recyclé et la quantité de contenu recyclé qui peut être introduit dans le verre d'emballage. Donc, pour nous en tant que verriers, c'est crucial de s'assurer qu'on a accès à plus de verre, et du verre de meilleure qualité.

Donc, ce que je voudrais faire maintenant, c'est de vous expliquer brièvement le cadre réglementaire européen, qui contient un certain nombre de principes qui, je pense, peuvent expliquer la raison pour laquelle on a atteint ce niveau de performance assez satisfaisant de plus de 75 % de collecte pour recyclage du verre en Europe. Donc, je ne veux pas vous noyer sous les détails de la législation, mais juste pour indiquer qu'on a des directives, donc, des textes législatifs qui sont plutôt horizontaux, donc, c'est le cas de la directive-cadre sur les déchets, ou la directive sur la mise en décharge, et on a des textes législatifs qui sont plus sectoriels, notamment sur l'emballage et les déchets d'emballage, qui nous préoccupent au premier chef aujourd'hui. Et donc, dans cet ensemble réglementaire, il y a, je crois, un certain nombre de principes qui ont été essentiels, en fait, pour développer l'infrastructure de collecte et de recyclage en Europe, et expliquer la performance actuelle. Et donc, je voudrais passer en revue avec vous ces différents principes.

Donc, le premier principe, je pense, c'est que la législation européenne a fixé, dès 2001, des objectifs chiffrés pour le recyclage, ou, en tout cas, la collecte pour recyclage des différents matériaux d'emballage. Donc, ça a commencé en 2001 avec un objectif de 15 %. Donc, c'est assez intéressant de voir, rétrospectivement, ce qu'était cet objectif en 2001, sachant que, pour 2030, l'objectif est d'atteindre 75 %. Et je voudrais attirer votre attention sur le fait que, par le passé, donc, pour les objectifs 2001 et 2008, l'objectif était en termes de collecte pour recyclage, mais désormais, on passe à un objectif de recyclage réel, ce qui rend ces objectifs de 70 et 75 % à horizons 2025 et 2030 encore plus ambitieux. Et ces objectifs sont très importants, puisque c'est vraiment ça qui va permettre la mobilisation sur le terrain et dans les pays pour encourager l'économie circulaire du verre.

Un deuxième principe, c'est que, pour être mis sur le marché, les emballages doivent répondre à un certain nombre d'exigences essentielles, et une de ces exigences est que l'emballage qui est mis sur le marché doit être optimisé en vue de son recyclage. Donc, les producteurs, donc, les metteurs en marché, doivent vraiment avoir l'écoconception à coeur quand ils mettent leurs produits sur le marché.

Alors, je vous ai montré les objectifs chiffrés pour le recyclage du verre, notamment. Donc, ces objectifs chiffrés, ils sont adressés aux états membres de l'Union européenne, mais la directive sur les emballages et les déchets d'emballage, notamment, doit être transposée dans le droit interne, en fait, des états membres. Ce n'est pas applicable directement. Donc, il y a un texte national pour transposer les obligations européennes qui découlent de la directive. Et donc, dans le cadre de cette transposition, ce qui se passe généralement, c'est que les états membres délèguent la responsabilité d'atteindre ces objectifs de recyclage aux metteurs en marché ou aux producteurs, et aux importateurs. Et le concept qui sous-tend ça, c'est le principe de responsabilité élargie du producteur qui a été introduit en Europe dans les années ‘90, et l'idée, c'est vraiment que les producteurs soient responsables, financièrement ou en termes d'organisation, de la fin de vie de leurs produits qui, un jour, deviendront déchets, donc, en termes de collecte, de tri, ou de traitement. Et ça, c'est vraiment un principe essentiel du cadre réglementaire européen, et ça permet notamment une très forte collaboration entre ces organismes de responsabilité élargie, ou éco-organismes, et les autorités locales, notamment les municipalités.

Donc, il y a cette responsabilité financière et d'organisation d’un côté, mais aussi, souvent, un objectif de communication de ces éco-organismes vis-à-vis des consommateurs, pour les aider -- euh... déjà pour leur expliquer l'importance du recyclage, et également de les aider à faire les bons gestes de tri. Donc, par exemple, pour ce qui est du verre, c'est très important qu'on ne mette pas de céramique ou de porcelaine dans les bulles à verre. Voilà. Donc, ça, c'est aussi une des missions de ces éco-organismes.

Donc, il y a un certain nombre de règles qui sont définies au niveau européen, et une nouvelle règle est relative et l'éco-modulation des contributions que payent les metteurs en marché, et qui visera vraiment à prendre en compte la recyclabilité de l'emballage mis sur le marché pour déterminer le niveau de contribution de ces metteurs en marché. Et il y a aussi une volonté de l’Union européenne de généraliser la création de ces éco-organismes.

Cette *'slide'*, en fait, c'était pour vous montrer la -- je n'ai pas du tout l'intention d'aller dans les détails de cette *'slide'*, mais c'était vraiment pour vous montrer qu'en termes d'éco-organismes, il y a une diversité très forte de modèles et de configurations à travers l'Europe, et ce que je voulais montrer, c'est qu'on a ce cadre harmonisé au niveau européen avec des principes, mais après, il y a une très forte flexibilité au niveau national, et j'y reviendrai.

Ce qui est très important pour nous en tant que verriers, comme je vous le disais, c'est de s'assurer que nous avons accès à une certaine quantité de verre recyclé et d'une certaine qualité, et pour ça, la collecte sélective est absolument primordiale, donc, faire en sorte que le verre soit le plus possible collecté séparément des autres matériaux. Et ça, c'est un principe qui est inscrit dans les législations européennes et qui est obligatoire.

Donc, après, ce principe de collecte séparée peut être mis en œuvre différemment dans les différents pays, et aussi selon le choix des différentes municipalités. Donc, il peut y avoir des modes collecte porte-à-porte, bulles à verre, dans les déchets triés, et caetera, mais un principe qui est fondamental pour nous, c'est de vraiment collecter autant que possible le verre de façon séparée, pour éviter qu'il soit mélangé avec la céramique, encore une fois, ou le métal, le plastic, et caetera, qui vont ensuite influer sur le processus de recyclage.

Et un principe qui est complémentaire à ce que je viens de vous expliquer, c'est le fait qu'il est aussi important de réduire la dépendance envers la mise en décharge. C'est-à-dire que le verre, comme d'autres matériaux, est recyclable, et c'est important qu'il ne finisse pas mis en décharge. Donc, c'est pour ça qu'on a ce principe de collecte séparée, mais c'est aussi pour ça qu'on a une directive sur la mise en décharge, qui fixe un certain nombre de principes et d'objectifs pour que, vraiment, les flux de matériaux recyclables soient maintenus dans la boucle aussi longtemps que possible.

Alors, je voulais dire un mot sur les objectifs en termes de contenu recyclé, parce que c'est une discussion qui a lieu au niveau européen, est-ce qu'il faut introduire ou non un objectif sur le contenu recyclé, notamment pour le verre. Ça n'existe pas pour le moment, et pour nous, c'est la bonne approche, qu'il n'y ait pas cet objectif, parce que, actuellement, en Europe, la demande pour le verre recyclé est supérieure à l'offre. Donc, c'est pour ça que c'est si important pour nous de travailler sur la collecte, pour avoir accès à cette offre de contenu recyclé.

Donc, je voulais vous mentionner ça, au cas où ça faisait partie de pistes que vous considéreriez, sachant, et peut-être j'aurais dû le mentionner plutôt, que ce que je vous présente aujourd'hui est la perspective européenne prenant en compte le contexte européen, donc, il y a peut-être un certain nombre de leçons dont s'inspirer au Québec, mais ma présentation ne vise pas à imposer, ou à dire : *« Voilà! C'est le système qu'il faut mettre en place »*, et dans d'autres contextes, d'autres politiques peuvent évidemment avoir du sens.

Et d'ailleurs, ça m'amène à mon prochain point, puisque j'ai essayé de vous montrer que ce qui a fait le succès du système de collecte et de recyclage du verre en Europe, c'est ce cadre européen harmonisé. Mais comme je vous le disais, ce cadre européen est mis en œuvre, donc, transposé et mis en œuvre au niveau national, et les pays européens ont vraiment une certaine latitude pour mettre en œuvre des approches qui sont adaptées à leur spécificité nationale, mais aussi pour les municipalités de prendre en compte les spécificités locales.

Pour vous donner un exemple, ce n'est pas la même chose de mettre en place un système de collecte de déchets dans une ville touristique comme Barcelone, ou dans une zone rurale ou montagneuse des Alpes, par exemple. Donc, c'est vraiment important d'avoir ces principes au niveau européen, mais d'avoir une possibilité de s'adapter aux spécificités et aux contraintes locales, et c'est pour ça, par exemple, qu'on a cette variété d'éco-organismes et de configurations qui, aussi, prennent en compte un certain historique et un certain cadre national.

Et les états membres ou les municipalités peuvent compléter ce cadre européen avec des *'target'* -- des objectifs, pardon -- supplémentaires sur l'emballage, mettre en place des taxes sur la mise en décharge ou sur l'incinération, ou mettre en place un certain nombre d'incitations -- par exemple, une taxe sur les déchets ménagers qui prend en compte la quantité de déchets que les ménages jettent. Voilà.

Donc, je ne voulais pas vous laisser avec l'impression que, parce qu'on a ce cadre européen harmonisé, la situation est la même à travers l'Europe. Ce n'est clairement pas le cas, et ça se reflète notamment dans les différents modes de collecte, avec les bulles à verre ou le porte-à-porte, par exemple.

Alors, quoi d'autre? Ce que je voulais aussi vous mentionner, c'est l'importance de la coopération. Parce que l'économie circulaire est vraiment un système, et on a besoin d'une approche holistique, parce que c'est un système complexe, dont la réussite dépend de nombreux facteurs, et

aussi de l'implication de nombreuses parties prenantes tout au long de la chaîne de valeur. Donc, que ce soit l'alliance, aussi, de l'emballage en verre, que je représente, évidemment, mais aussi les metteurs en marché, les éco-organismes, les municipalités, les recycleurs, évidemment, donc, c'est vraiment tout un écosystème, et il est très important que ces différentes parties prenantes se parlent, pour -- avec un objectif commun. Et c'est la raison pour laquelle on a lancé, l'année dernière, un projet, qui s'appelle *« Close the Glass Loop »*, et qui est un projet qui réunit tous ces partenaires que j'ai mentionnés avant -- donc, les municipalités, les metteurs en marché, les recycleurs, et caetera -- en partant du constat que, comme je vous le disais, 76 % des emballages en verre mis sur le marché actuellement sont collectés pour être recyclés en Europe, mais on pense qu'il y a la possibilité, le potentiel de faire encore mieux, et d'atteindre 90 % de collecte pour recyclage d'ici 2030.

Et donc, c'est pour ça qu'on a lancé ce partenariat, pour atteindre cet objectif, et aussi pour mettre en commun, en fait, le savoir-faire et les expériences qui ont lieu dans les différents pays européens, pour que l'information circule. C'est-à-dire que si l'Espagne a des leçons à partager avec la Suède parce qu'ils ont des caractéristiques communes, qu'on ait cette plateforme qui leur permet vraiment d'être mis en contact, et pareil, de mettre en contact les différents acteurs, donc, les metteurs en marché, avec les producteurs, les municipalités, avec les recycleurs, les -- oui, les recycleurs, pour travailler sur les questions de qualité du verre, et caetera.

Donc, c'est vraiment l'idée de ce partenariat qu'on a créé au niveau européen, mais qui est aussi décliné au niveau national, et encore une fois, la raison d'être d'avoir ce niveau national, c'est d'avoir des solutions qui sont adaptées au contexte spécifique.

LE PRÉSIDENT :

Madame Chestnot, il vous reste une minute, si vous voulez conclure?

Mme VANESSA CHESTNOT :

Parfait. Je conclus. C'est parfaitement -- parfait. Donc, ce que je voulais dire en conclusion, c'est que notre industrie est vraiment très encline à travailler sur la collecte et le recyclage du verre, parce que ça a un impact majeur en terme environnemental, et que, comme j'ai essayé de le montrer, le cadre législatif européen a vraiment permis de mettre en place les infrastructures et le système qui nous a permis d'atteindre la performance actuelle, ayant en tête, à nouveau, et je pense que c'est un point très important, qu'il n'y a pas de solution qui marcherait en tout et pour tout, et donc, c'est très

important d'avoir des solutions différenciées, et l'importance de la coopération, dans ce contexte, pour vraiment prendre en compte les spécificités locales, donc, mettre ensemble les entreprises, les consommateurs et les autorités locales.

Et je vous remercie, et je suis à votre disposition si vous avez des questions.

LE PRÉSIDENT :

Merci à vous, Madame Chestnot. Monsieur Renaud?

LE COMMISSAIRE :

Oui. Bonjour, Madame Chestnot. Merci pour votre présentation. Si vous pouvez fermer votre présentation?

Mme VANESSA CHESTNOT :

Je vais faire ça. Voilà.

LE COMMISSAIRE :

Alors, Madame Chestnot, en Europe, le verre représente quel pourcentage des matières résiduelles qui sont produites?

Mme VANESSA CHESTNOT :

Donc, on a environ 17 millions de tonnes qui sont placées sur le marché, et donc, environ 11 millions est collecté pour être recyclé.

LE COMMISSAIRE :

Par rapport à un volume total de...?

Mme VANESSA CHESTNOT :

Je crois que le verre, c'est à peu près 20 % des déchets résiduels.

LE COMMISSAIRE :

Vous avez mentionné dans votre présentation que la qualité du matériel est fondamentale, là, pour pouvoir faire une réutilisation, un recyclage plus efficace. On parle de tri de couleur, on parle de présence de contaminants, là, céramique ou porcelaine. Quels sont les moyens qui sont mis en place, là, dans les différents pays, pour éviter qu'on se retrouve avec des produits à recycler qui ne sont pas adéquats pour les usines?

Mme VANESSA CHESTNOT :

Alors, ce qui était -- donc, j'ai mentionné différents modes de collecte. Donc, par exemple, les bulles à verre, qui sont en place dans un certain nombre de pays. Donc, ça, c'est un moyen assez efficace, parce que c'est vraiment collecter uniquement le verre, et parfois, même collecter le verre de façon différenciée par couleur.

Donc, en Belgique, par exemple, dans la bulle à verre, on met le verre blanc d'un côté, et le verre coloré de l'autre, et en Allemagne, c'est même les trois types de couleurs, alors que, par exemple, les systèmes de porte-à-porte sont souvent un système où le verre est mélangé avec d'autres types d'emballages, et donc, là, l'idée, c'est plus agir dans l'usine de traitement du calcin, pour éliminer, en fait, les matériaux qui ne sont pas visés -- enfin, le non-verre, en fait. Donc, les usines de traitement ont investi pour éliminer -- bien, justement tout ce qui est papier, plastic, métaux, et la porcelaine, et aussi trier par couleur quand ce n'est pas fait à la source.

LE COMMISSAIRE :

Est-ce qu'il existe des technologies, une fois qu'on a une cloche où on met le verre de toutes les couleurs, on lance ça dans la cloche, là, ça se brise dans la cloche, est-ce qu'il existe des technologies qui permettent de trier par couleur, même dans ces conditions-là?

Mme VANESSA CHESTNOT :

Oui. Donc, il y a eu tout un effort de fait sur le tri optique, justement, pour séparer par couleur après la collecte, sachant que, bien évidemment, c'est plus facile de trier par couleur à la source, mais ce n'est pas nécessairement ce qui est fait dans tous les pays, donc, c'est pour ça qu'il y a cet effort pour améliorer le tri optique et faire en sorte que les couleurs soient séparées dans le centre de traitement du calcin.

LE COMMISSAIRE :

Je vous remercie beaucoup.

LE PRÉSIDENT :

Merci, Monsieur Renaud. Madame Forget?

LA COMMISSAIRE :

Bonjour. Merci pour votre présentation. J'avais des questions sur vos membres, un peu comment vous êtes organisés. Donc, vous avez, parmi vos membres, les recycleurs, les producteurs, et les acheteurs? Donc, l'ensemble des joueurs, ou vous avez -- vous mettez l'emphase sur un des maillons de cette chaîne?

Mme VANESSA CHESTNOT :

Non. Alors, nos membres, ce sont vraiment les producteurs d'emballages en verre, donc, qui produisent les bouteilles, les flacons, les pots vides, et qui les vendent aux -- par exemple, Coca-Cola, ou Heineken, qui vont ensuite les remplir et les mettre sur le marché. Donc, nos membres, ce sont vraiment les verriers, en fait. Mais j'ai mentionné les autres, parce que, dans le cadre de *« Close the Glass Loop »*, ce projet qu'on a initié, on veut mettre en collaboration toute la chaîne de valeur, et là, on veut avoir le partenariat le plus large possible, avec les metteurs en marché, les municipalités, et les recycleurs. Mais nos membres, ce sont vraiment les verriers.

LA COMMISSAIRE :

Et est-ce que les verriers sont aussi les actionnaires des entreprises de recyclage, ou normalement, le recycleur, c'est vraiment une autre entreprise qui a émergé, là, lorsque le marché s'est créé?

Mme VANESSA CHESTNOT :

Il y a vraiment les deux -- les deux modèles. Il y a des recycleurs qui sont indépendants des verriers, mais certains de nos membres ont leur propre usine de traitement du calcin, ou alors, effectivement, sont actionnaires d'entreprises de recyclage. Donc, il y a vraiment les deux -- deux ou trois, même, modèles possibles.

LA COMMISSAIRE :

Parce qu'ils peuvent réutiliser sur place leurs matières recyclées pour refaire leur verre, là? Donc...

Mme VANESSA CHESTNOT :

Exactement.

LA COMMISSAIRE :

... il peut avoir l'intégration verticale, et d'autres qui sont plus en horizontal?

Mme VANESSA CHESTNOT :

Exactement.

LA COMMISSAIRE :

Et est-ce que -- donc, les entreprises -- un instant. Oui, je voulais savoir, dans votre historique, étant donné que vous avez un historique intéressant, là, pour le verre, à quel moment vous diriez que la taille du marché était assez grande où il y a eu, finalement, un momentum? Parce que,

évidemment, vous connaissez -- bon, le territoire, ici, c'est beaucoup moins dense, avec des grandes distances, alors, pour être capable d'avoir un momentum de marché, ce serait intéressant de savoir à quel moment ça s'est mis un peu à lever tout seul, finalement, parce que vous aviez assez de joueurs.

Mme VANESSA CHESTNOT :

Oui. Alors, je pense que ça ne s'est pas -- enfin, ma réponse, ce n'est pas tellement en termes de marché, c'est -- enfin, il y a eu des premières initiatives volontaires pour mettre en place un système de collecte dans les années '70, en réponse à la crise pétrolière, tout simplement, parce que les prix de l'énergie étaient si hauts que les verriers ont vraiment cherché à utiliser plus de calcin, pour réduire leur facture énergétique. Donc, c'est un peu comme ça que ça a commencé. Mais je crois que, vraiment, le moteur principal d'un changement d'échelle en Europe, c'est la législation.

Donc, la directive sur les emballages a été introduite en 1994, la directive-cadre sur les déchets dans les années 2000, donc, c'est tout ce -- tout ce cadre législatif qui a vraiment poussé les acteurs à se mobiliser et à développer les infrastructures, et aussi pour les états membres et les municipalités d'investir dans l'infrastructure de collecte et de recyclage.

LA COMMISSAIRE :

Merci.

LE PRÉSIDENT :

J'aimerais revenir sur un point pour lequel vous avez déjà donné une réponse à mon collègue Monsieur Renaud, mais auparavant, je souhaiterais savoir si le cadre réglementaire européen, qui inclut notamment la responsabilité élargie des producteurs, je présume que c'est un document public?

Mme VANESSA CHESTNOT :

Oui, oui, oui. Absolument.

LE PRÉSIDENT :

Est-ce que vous pourriez nous le faire parvenir?

Mme VANESSA CHESTNOT :

Oui. Bien sûr.

LE PRÉSIDENT :

D'accord. Maintenant, effectivement, hier, nous avons eu un conférencier qui a indiqué -- qui a mis en relief la difficulté que les récupérateurs de verre peuvent éprouver, en faisant une comparaison entre les verres de bière au Québec, qui sont d'une seule couleur, et donc, qui sont facilement -- pas recyclés, mais récupérés, nettoyés et réutilisés, contrairement aux autres types de verres, qui sont de couleurs variées, et qui, finalement, sont à toutes fins pratiques broyés, deviennent de la silice, silice qu'on récupère pour faire d'autre verre. Chez vous, ce que j'ai compris de votre réponse à mon collègue Renaud, c'est que, en fait, vous n'avez pas besoin de faire ce broyage?

Mme VANESSA CHESTNOT :

Alors, est-ce que vous parlez -- parce qu'il y a -- je n'ai pas parlé de réutilisable dans ma présentation. Je me suis focalisée sur le...

LE PRÉSIDENT :

Non. C'est moi qui ai parlé de ça.

Mme VANESSA CHESTNOT :

Oui. C'est ça.

LE PRÉSIDENT :

C'est moi qui ai parlé de ça.

Mme VANESSA CHESTNOT :

Exact. Donc, effectivement, en Europe, il y a un certain nombre -- donc, le verre peut effectivement être utilisé en tant que réutilisable, ou pour être recyclé, et il y a un certain nombre de

marchés, en Europe, du réutilisable. Donc, par exemple, l'eau minérale en Allemagne, ou la bière aux Pays-Bas. Donc, ces marchés existent. Généralement, ils sont assez régionaux et locaux, et il y a des discussions au niveau européen sur la façon de promouvoir le réutilisable. Mais ce sont des -- c'est un système vraiment très -- très, très différent du recyclage, et donc, là, ma présentation était vraiment sur comment collecter des emballages qui vont être recyclés dans des nouveaux emballages, lorsque c'est possible. Si possible.

LE PRÉSIDENT :

Mais c'est exactement là ma question. C'est là qu'était ma question : est-ce que ces verres qui sont récupérés pour être recyclés, est-ce qu'ils passent obligatoirement par un broyage...

Mme VANESSA CHESTNOT :

Oui.

LE PRÉSIDENT :

... pour en faire de la silice, silice, après, qui constitue, finalement, une matière première, et qui rentrerait dans l'économie circulaire?

Mme VANESSA CHESTNOT :

Oui. Donc, c'est vraiment -- l'idée, c'est que -- c'est pour ça que c'est si important de collecter le verre, parce qu'il va être ensuite traité au sein d'un centre de traitement du calcin, donc, pour enlever tous les contaminants dont on parlait avant, métaux, plastic, céramique, et caetera, et trié par couleur, et mis -- enfin, broyé, ou -- en tout cas, taillé dans une certaine taille, pour être réintégré dans les fours des verriers. Donc, c'est ça qu'on appelle calcin, c'est vraiment cette matière -- enfin, pas première, pour le coup, secondaire, qui va être réutilisée directement par les verriers, et qui vont permettre de réduire les émissions de CO_2, réduire la consommation énergétique. Donc, il y a un vrai bénéfice à remplacer des matières premières vierges par des matières premières secondaires -- le calcin.

LE PRÉSIDENT :

Donc, en Europe, vous n'utilisez pas du tout le verre comme matériau de recouvrement dans un lieu d'enfouissement technique ou sanitaire? Pas du tout?

Mme VANESSA CHESTNOT :

Il y a des -- effectivement, il y a plusieurs applications pour le verre recyclé en Europe. Donc, nous, évidemment, notre préférence va pour recycler des bouteilles dans des nouvelles bouteilles, mais il y a aussi du recyclage dans les fibres de verre, le verre condensé, effectivement dans la construction également, donc, ça peut être utilisé comme agrégat pour les routes. Mais ce qu'on veut promouvoir, c'est, autant que possible, parce que ça dépend aussi de la qualité du verre recyclé, promouvoir un *'bottle-to-bottle recycling'*. Donc, une boucle fermée.

LE PRÉSIDENT :

Une dernière petite question : est-ce que vous utilisez le verre comme additif dans la fabrication du ciment?

Mme VANESSA CHESTNOT :

Alors, ça, ça dépasse FEVE et nos membres, mais il me semble que oui, il y a des applications pour utiliser le verre au sein du ciment, pour notamment alléger les structures de construction. Mais -- je sais que ça existe, mais je ne peux pas vous en dire plus, parce que nous, vraiment, notre focus, c'est le verre d'emballage.

LE PRÉSIDENT :

Madame Chestnot, merci infiniment.

Mme VANESSA CHESTNOT :

Merci à vous.

Mme VANYA VERAS
MUNICIPAL WASTE EUROPE

LE PRÉSIDENT :

J'invite maintenant Madame Vanya Veras. Vanya Veras, de Municipal Waste Europe. Alors, Madame Veras est une économiste environnementale avec plus de 20 ans d'expérience dans la législation, les pratiques et les systèmes de gestion de déchets. Elle est secrétaire générale du Municipal Waste Europe depuis le début 2012. L'association représente les municipalités et les responsabilités publiques des déchets. Madame Veras aide à guider les municipalités et leurs entreprises de gestion de déchets, en coopération avec les parties prenantes, pour façonner la nouvelles législation qui oeuvre désormais à la réalisation d'une économie circulaire, et l'atteinte des objectifs de développement durable des Nations-Unies.

So, welcome, Mrs. Veras. We are listening to you.

Mme VANYA VERAS :

Good afternoon. Good morning to you. Thank you for the introduction and for the invitation. I am going to try to share my presentation, so that I can begin. Can you see my presentation now?

LE PRÉSIDENT :

Yes.

Mme VANYA VERAS :

You can. Okay. Very good. So, I can't see you, but I can see my presentation. So, I'll just make it, and then we can have a discussion.

So, you already introduced us, but I will just quickly introduce Municipal Waste Europe again. We currently have 15 members. These are European member states, from 14 EU countries, including Malta, which is our newest member, and several observers. So, as you correctly said, we represent European municipalities and their waste-management companies in their responsibility for the recovery of resources from wastes from households.

So, we are the umbrella association representing public responsibility for waste towards European institutions and stakeholders. We represent those responsible for the provision of the service of general interest that is waste management, so, the public authorities. Our members are committed to sustainable waste management, which promotes resource efficiency, and a circular economy. So, that's Municipal Waste Europe. Again, I can answer questions later.

Perhaps you have already heard this from other speakers today, but currently, we are implementing, or member states are implementing the latest revision of the Waste Framework Directive, as we call it. Here, I mention *"Directive on Waste."* This was adopted in 2018, after five years of negotiations, and for the first time, it aims, with its increased targets, with its EPR scheme, and with the calculation method for measuring how much is actually recycled, towards closing the loop of a circular economy. I'll go into a little bit more detail.

So, the waste package, as we called it, included, and includes the revision of the Waste Framework Directive, the Packaging and Packaging Waste Directive, the Landfill Directive, the Waste Electrical and Electronic Equipment Directive, and the Batteries Directive, which is currently under revision, and will henceforth be a batteries regulation, not a directive. The difference in the legal form is that a regulation is not open to interpretation when implemented in member-state law. A directive is open to interpretation.

So, this new waste directive sets ambitious recycling targets and landfill targets to be met by 2025, 2030, and 2035. So, we have, around the corner, a 55% recycling rate. Recycling in the current directive means measurement on inputs to final recycling. So, this is not the amount of waste separately collected, nor sorted, but actually recycled. This goes up to 60% by 2030, and 65% by 2035.

Also by 2035, we have a target for those member states still landfilling above 10% to landfill only, or a maximum of 10% of their municipal wastes generated every year. Our 2050 goal is equal to the Sustainable Development Goal, and that is climate neutrality, which is closely linked to waste management.

Another point which this new waste directive brings in is a transparent framework detailing what extended producer responsibility means, how it should be set up or corrected, and what requirements it holds for the producer. In many cases throughout the EU, EPR was introduced, and then interpreted by the producer and each member state, which led to municipal collection costs not being

reimbursed. So, one of these requirements is that the producer, through EPR, or with whatever system is implemented in the member state, must cover at least 80% of the costs to the municipality of separately collecting their product when it's waste postconsumer product.

In addition to that, the EPR introduces modulated fees. These are applying a penalty, so, a more expensive EPR fee to nonrecyclable products, and this is used as a disincentive to the producer to put nonrecyclable products on the market, so, to go back to the design phase and to eco-design.

With all of the new requirements in this directive, it is estimated that, from EU funding, approximately two billion euro per year will be needed to implement the directive, for a period of 15 years. There is also discussion ongoing on the adoption and implementation of two financial directives which include waste management; one is a taxonomy on financing, and the other one is on sustainable investments. Both of these refer to EU funding, but also to EU investments through EU banks. And these are currently designed to fund only the top steps of the waste hierarchy.

I am sure that you've seen this triangle before. We turned it upside down a few years ago. So, just to come back to the funding, it was invest in or fund waste-prevention activities, preparation for reuse, and recycling or composting, which includes anaerobic digestion. These are the three aspects which would still be funded. There is a large focus on food-waste prevention, there is an increased focus on repair and reuse, and there are obligations for separate collection, which I will come to in a moment.

So, I was asked to discuss with you and to show you, in a few steps, what EU member states have done in the past years, and it ranges from 20 years to under 10 years to go from near 100% landfilling, to under 10% landfilling. Those who were first in line took longer, because they were obviously finding out what to do. Those who are the latest achievers of under 10% landfilling have achieved this in about three years -- from three to five years.

So, in order to divert waste from landfill, we need to begin with separate collection at source. If we collect a mixed waste, then we have a problem that needs to be solved. If we collect separately at source, we have a clean material which is available for recycling, and therefore, recovery of material. This is the first step. And this goes equally for commercial, industrial, construction, and municipal waste. All of these topics are covered by EU legislation, but I will focus now on municipal waste, because this is the subject of today's meeting.

So, EU member states having successfully achieved low landfill and high recycling rates have designed convenient separate-collection systems that meet the needs of their population according to town or city or rural areas, and in line with their demographics. As a second stage, pay-as-you-throw is introduced, to encourage those reluctant to sort at source, and which increases the quantity and quality of separately-collected materials dramatically.

Just as an aside here, I will tell you that material producers at EU level -- so, we can focus on packaging, but it applies to all material producers -- are focussing more and more on working together with local authorities and working throughout the industry to increase -- to find ways to increase the quality and quantity of separately-collected materials, so that they have this material to put through the production process again.

So, if we take a stepwise approach to implementation, step one would be to introduce a landfill tax of at least 50 euro *[sic]* per ton -- I have equated this to 40 euro per ton -- so, I said $50 per ton, yes -- because there have been studies, numerous studies in the EU, demonstrating that a minimum landfill tax of 40 euro per ton is required to be effective in landfill avoidance -- so, landfill diversion, and at the same time, design a separate-collection system for packaging wastes, food waste, garden waste, paper and card, and bulky waste, as a minimum. This would be in year 1. And, of course, there are different examples for the separate collection of glass, metal, paper, and plastic.

One year, approximately, has been taken, even by those member states who have a short time line -- so, three to five years -- for going from 90% to under 10% landfilling, and to give the population time to adapt. Then, in year 2, they reduce the frequency of collection of all fractions, including the residual waste, and create a repair and reuse network.

If you are interested, there is an association called RREUSE, at EU level, and we are collaborating with them on an online study tour. This will be the second workshop, and you can register, or several of your members can register, if you like. It is between the 18th and 20th of May. So, it is several days of workshop.

Then, step 3 is in year 3, and this is when pay-as-you-throw is introduced for residual wastes. This distinguishes mixed waste, for the citizen, from the recyclable waste, making it costly and evidencing that separating recyclable waste, whether that is food waste, or dry recyclables, is that that is for free, and that residual waste is costly. So, the more they mix, the more they pay, the more they sort, the less they pay.

Here, I've got three images for different separate-collection systems, according to urban demographics and geography. So, this is a door-to-door collection system in a busy street, and it is for shops, mostly, and apartment buildings, but in areas where there is the space within the building to store the bins. This is a system in Ljubljana, Slovenia.

This is the separate-collection system in the outer area of cities, where there is more space, and it would be along the roadside, both in a low-rise residential area and a high-rise residential area.

And this is the system of underground bins, which is used in pedestrian zones and any inner cities. It is very useful, not only for crowded areas, but also in old city centres such as this one. Now, the way that pay-as-you-throw is implemented in this system is that, as you can -- the brown bin, the green, yellow, and blue, are free. They can be opened and the waste deposited inside. The black bins are for residual waste, and these can be opened only with the citizen's ID card. Inside, there is a restricted area, so this measures the volume of the waste being deposited, and the details of the citizen are gathered from the ID card, and the invoice is sent directly to their residence for that amount or that volume of waste.

Again, this was implemented -- this is the pay-as-you-throw, and it was implemented in year 3 of the Ljubljana transformation of waste management system.

Step 4, whose timing should be in line with step 1, is investment in treatment capacity. Because, in line with having a convenient and well-designed separate-collection system, you need to have the following steps, which will coordinate with the collection of this waste for recycling. This is in order for the whole system to work as a lifecycle, but also in order to continue to encourage citizens to sort at source.

So, the key investments needed are in sorting plants designed to treat the quantities and types of recyclable wastes generated in Canada, anaerobic digestion plants to treat food waste, manure if you wish to include that as well, and energy crops, again, if you wish to include those too, and composting plants for the co-composting of the resulting digestate with shredded garden waste. This is outlined in EU legislation, and it has proved to be very successful, also in combination with agricultural policy in EU member states who are already doing this.

And then, the third is investment in recycling plants, again in line with quantities and types of recyclable waste generated in Canada, but also in line with the needs of Canadian industry. So, if

there is a recovered material from waste which is a material needed in a Canadian production facility, then, this has closed a loop of the circular economy by investing in a recycling plant and making that material available to the producer locally.

LE PRÉSIDENT :

Mrs. Veras, you still have three minutes.

Mme VANYA VERAS :

Right. Okay. Sorry.

LE PRÉSIDENT :

Thank you.

Mme VANYA VERAS :

This is the main part of the presentation.

So, step 5 is deciding on treatments for sorting and recycling residues and mixed waste. This can be waste-to-energy or landfilling of inert wastes. This is simply more information on EU legislation. Communication campaigns are very important to go alongside this new waste treatment system.

And what are the expectations that you can expect? So, a well-designed separate-collection system has proven to achieve 70% separate collection in three days *[sic]* from a 0% start. This has been proven in numerous towns and cities in the EU, including Italy, Slovenia, Malta, the Nordic countries, Germany, Netherlands, and Belgium. That's just one example, or one batch of examples.

Point 4, I have made already, but -- so point 3. Point 4 is important, because it has also been proven on all of these occasions that waste management costs following this type of waste management strategy can be expected to fall, as compared to the landfilling scenario. So, that’s an important financial consideration.

Circular economy, of course, is another benefit. The most important benefit on this page in terms of climate change and climate stability is that applying one ton of compost from biowaste sequesters 30 kilos of carbon. So, rather than putting it in landfill and generating methane, which is 25 times more potent a greenhouse gas than CO_2, we can do the opposite and sequester carbon instead. And, of course, rather than being only a cost, waste management with recovery of materials can also generate an income.

That concludes my presentation. I am happy to take your questions. Thank you.

LE PRÉSIDENT :

Thank you very much. Mr. Renaud?

LE COMMISSAIRE :

Thank you, Mrs. Veras. It was very interesting. Thank you for your presentation. You mentioned the objective of 65% recycling, and that includes composting and anaerobic digestion, if ever this method is used; does it?

Mme VANYA VERAS :

Indeed, it does. Indeed, it does, and this is another benefit to, or say advantage to separately collecting and treating food waste and other forms of biowaste.

LE COMMISSAIRE :

Uh...

Mme VANYA VERAS :

Sorry. I was just going to add that, in the calculation method, because organic waste or biowaste has a very high water content, the measure of how much organic waste has been recycled is taken on input to the anaerobic or composting plant. So, this is another advantage to separately collecting and treating biowaste.

LE COMMISSAIRE :

Since it's the input, you're saying that it's on wet basis that the measurement is made?

Mme VANYA VERAS :

Yes. Because it is not possible to calculate what the dry weight will be after the process. And the significance in terms of waste management and management of emissions is to remove the wet waste, which is the biowaste fraction, from the mixed waste.

LE COMMISSAIRE :

Earlier this morning, a speaker told us that, in waste-to-energy installations -- that would be incinerators...

Mme VANYA VERAS :

Yes.

LE COMMISSAIRE :

... part of the energy can be considered as being renewable, since, in the waste that is being burned, or that is being used to produce energy, there is part of it that is biodegradable. I mean, would that part be considered as being recycling, or...?

Mme VANYA VERAS :

No.

LE COMMISSAIRE :

Waste-to-energy is not recycling?

Mme VANYA VERAS :

No. Waste-to-energy in the European law is considered as recovery. So, energy recovery. So, we have energy and material recovery. Material recovery is recycling. The experience to date is that, even with the best separate-collection system, apart from certain cases in certain zero-waste towns and cities, there is still a proportion of biowaste in the mixed-waste bag. So, this quantity or this proportion of biowaste going into a waste incinerator, or waste-to-energy plant. If that waste-to-energy plant generates both heat and power, it can be considered as a source of renewable energy.

LE COMMISSAIRE :

In your presentation, you mentioned, in step 4, that anaerobic digestion with co-composting for the digestate and the green waste is, I understand from what you're saying -- is that this is the favoured option to treat organics, or -- if, instead of using AD, we were simply using just composting, would that fit the purpose?

Mme VANYA VERAS :

Simply composting can be done as well. You have a lot of space in Canada, so, it is possible to have open windrow composting of both food waste and shredded garden waste, or green waste. The reason that many member states consider anaerobic digestion combined with co-composting to be the most advantageous is that, during the anaerobic digestion process, you -- biowaste -- sorry, biogas is produced. And so, you have a source of energy which can be used either to fuel vehicles -- it's often the case that it is used to you fuel refuse-collection vehicles -- or it can be turned into power and sent to the grid, and then, the digestate is still valuable and will create a rich compost when co-composted with the shredded garden waste. If we skip the anaerobic digestion step, then, we miss out on that energy production. It is not obligatory. It is a good financial model, which has worked for many member states.

LE COMMISSAIRE :

Do you think that that direction will be used more frequently than the composting-only solution, in European countries?

Mme VANYA VERAS :

I believe so. Even in the South. Originally, it was a system used in the North, particularly in Sweden, for example, where they analysed how much energy that they were putting into composting, because of the cold climate, and concluded that it was more advantageous to use anaerobic digestion, which had its own heat production, as it was in vessel, rather than to open windrow compost. But the energy-production aspect is also interesting to southern countries, so, I expect it to be the most used option going forward.

LE COMMISSAIRE :

Regarding recycling, what is the difference between the most performing countries and the ones that are less performing, and what actions give the best results? What do countries that perform do that makes them more performing than other countries?

Mme VANYA VERAS :

In the past, there would have been a different answer, but in those countries who have gone from landfilling to high levels of separate collection and recycling without using the waste-to-energy step, it is -- it begins and it ends with a good -- a well-designed separate-collection system. It is the difference between collecting a mixed waste, which, as I said previously, is a problem. Once you have biowaste, so, the wet fraction, mixed with the dry fraction, it is very difficult to extract a clean dry fraction from that. If it is possible at all, then, there is great use of detergents and water in order to clean it sufficiently for that recovered material to be recycled.

To date, the dirtier fractions are actually not processed into recycled new materials. They are sent to various locations around Europe or the world, to landfills, or even illegal landfills. Or, where it is possible, they're sent to incineration. So, putting in the effort to collect separately at source has its immediate rewards in sorting and having a valuable sorted material to sell, either nationally to a recycling facility, or internationally, to a recycling facility.

LE COMMISSAIRE :

Thank you very much.

LE PRÉSIDENT :

Thank you, Mr. Renaud. Mrs. Forget?

LA COMMISSAIRE :

Thank you for your presentation. I have a question on the investment part. So, basically, after, let's say, the step 1, where there's a separate-collection system in place, obviously, it needs to be sorted out, or recycled, or the anaerobic digestion. I mean, here, we have an asymmetric market. In some areas, the market is not yet really lifted. So, my question would be like, first, like what would be the most efficient investment? Is it public? Private? How did you see -- what different models exist in Europe? Is that a factor to be private or public, or not, like to start up the system, basically, to make sure that it lifts? So, that would be my first question. Is that a factor? Did you observe more performing systems, whether they're public or private, or it is not a factor?

Mme VANYA VERAS :

It's a good question. It differs according to *(coupure sonore)*. For sorting plants...

LE PRÉSIDENT :

I'm sorry, can you repeat? Because we didn't hear you during a few seconds. Can you repeat your answer, please?

LA COMMISSAIRE :

You froze. You froze for a while.

Mme VANYA VERAS :

Okay. Sorry about that. So, I said, *"Good question."* So, it differs depending on whether you are talking about sorting or recycling, or further treatment. So, for sorting plants, the most efficient sorting systems which exist in Europe are private. So, they're privately-owned sorting facilities. For sorting facilities, particularly for packaging waste, for example -- are linked with extended producer responsibility. So, the EPR systems will pay for the collection, and then send the material to the

sorting plants. And sometimes, they are co-owned by EPR organizations, which means that they are co-owned by the producer and the sorting facility, so, the waste management company.

When it comes to recycling plants, again, this is not an area of public activity. It is a purely private industrial area. So, it is privately owned. What -- I am -- I haven't seen it yet, but I am suggesting it, suggesting that there should be, or it would be interesting to have co-investments between the waste-management sector, the private waste-management sector, and the producers, for the recycling of plastics, glass -- paper is another issue -- again, metals is another issue.

When talking about anaerobic digestion and composting, these work in all three ways. So, purely public investment, public-private partnership, and private investment. If there is a private investment, the private anaerobic digestion plant owner and operator still needs to have a very close cooperation with the public sector -- so, the region or the municipality -- because they need to secure their feedstock. So, without receipt of the biowaste, the anaerobic digestion plant cannot function. So, it is -- the system that works the best is either fully public, or public-private partnership.

LA COMMISSAIRE :

I just want to confirm I understood well. For the recycling, you were suggesting that it would be co-owned by producer and waste managers; is that what you said?

Mme VANYA VERAS :

Yes. This would be...

LA COMMISSAIRE :

So, the waste-manager business with the producer business co-owned to recycling, so they are like more integrated?

Mme VANYA VERAS :

Yes. So, you link the receipt of the recovered materials with the purchaser of the recycled materials.

LA COMMISSAIRE :

Okay. So, not the waste manager, but the purchaser; is that so?

Mme VANYA VERAS :

Private waste-management company, plus producer of the materials or products.

LA COMMISSAIRE :

Not the purchaser? The one that needs it? That might be different.

Mme VANYA VERAS :

The one that needs it, yes. So, when I say *"producer,"* I mean -- if you think of packaging, it would be the packers and fillers who need the material to make their new packaging.

LA COMMISSAIRE :

Yes. Okay. I get it. My second question is, we had -- I don't know if you were there around yesterday, but we had like an expert that told us that recycling might not be a good option sometimes, that, you know, it should -- we should reuse and, of course – reuse, and not even produce to start with. So, I just want to ask you, in your -- I mean, in the experience in Europe, is recycling always the best option, on a GHG standpoint, on a cost standpoint, and is there -- are there recyclables that should be a priority? So, if you create a system, are there recyclables that, you know, like glass, for instance, or metal, that would be a lot better to recycle than anything else, and then, other material that, you know, might not be as a winning situation in terms of GHG. And I say that because, here, transportation between areas is -- you know, is bigger than in other places in the world, so it does factor in in terms of GHG generation, and also cost.

Mme VANYA VERAS :

Yes. Again, good question. It depends very much, not only on the materials, but also the product that you're talking about. So, if we're talking about packaging, the lifecycle analysis for recycling of -- collection and recycling of metals and glass is in favour of recycling. In paper as well.

Plastics, it depends on the plastic. So, there are very few plastics which are actually recycled today. These include PET, HDPE, and a little bit of polyethylene. Can you still hear me? Because you've frozen.

LE PRÉSIDENT :

Yes, we hear you.

LA COMMISSAIRE :

Yes. And you're not frozen.

Mme VANYA VERAS :

Okay. Thank you. We are having in-depth discussions which started in 2019, with the plastics industry, and this is a group which was created by the European Commission, the Enterprise Directorate General, and these discussions are focussed on the future of plastics, and which plastics are recyclable, what has to be done to make sure that all plastics are recyclable, and if they are not fully recyclable, then, the direction of discussions is that they should be eliminated, not used anymore. Reusable is certainly not an option which is being considered for plastics.

So, as far as municipalities are concerned, nonrecyclable plastics are a huge problem for us, and a very huge problem for sorting plants. So, we have requested, both in written form and in meetings, that the packaging industry focusses on using only fully-recyclable plastics. Some of the packaging which is the most problematic is multilayer flexible packaging. Currently, there is no recycling technique for that that is viable, both economically and technically. They are working on deep-polymerisation technology, but it is in its infancy, and currently, is very expensive. It's possible that that would be an option in the future. Again, it is something for the industry to decide, both in terms of cost and in eco-design.

There are some materials, such as PVC, which simply cannot be recycled. They can be granulated -- so, shredded. Currently, they're put in landfill in the most -- in the best scenarios. They can be granulated and used as road filler, for example. But heating PVC releases the chlorine, and both in incineration and in recycling, this is not controllable. It creates dioxins and furans. So, that's why that's not recyclable. And this applies to some materials -- mostly plastics. For...

LA COMMISSAIRE :

Thank you. Yes, so...

Mme VANYA VERAS :

Okay.

LA COMMISSAIRE :

Sorry.

Mme VANYA VERAS :

Sorry. I think that answers your transport issue as well, because if you're recycling glass, then, you're not returning it for reuse. I mean, your question also addressed prevention. Prevention is -- a prevention strategy is an important factor of our Waste Framework Directive. I didn't address it today, but it is another quite complex area, and it is very linked with separate collection of bulky waste, repair and reuse.

LA COMMISSAIRE :

Well, you did tackle it with the fee, like the fee in the extended producer -- like in the sense that, if the fee is modulated in a way you can play on the eco-design? I mean, this is what I understood that would be the measure, instead of -- unless you can go further upstream and require some eco-design, and this is where...

Mme VANYA VERAS :

Yes.

LA COMMISSAIRE :

Have you worked on that? Yes? Okay.

Mme VANYA VERAS :

Eco-design is not required right now. We have a -- we have three measures -- they're not all legislation -- currently reducing the marketability, really, of plastics. One is Single-use Plastics Directive, which puts a ban on the use of 10 different types of plastics which have been identified in sea litter. Then, there is a tax which came into effect this year on all quantities of nonrecycled plastics. And the tax is $0.80 per kilo. It's quite an incentive to eco-design.

LA COMMISSAIRE :

Yes. Thank you very much.

Mme VANYA VERAS :

You're welcome.

LE PRÉSIDENT :

Thank you, Mrs. Veras. So, we're going to stop.

Et nous allons arrêter, chers auditeurs, pour le dîner. Nous allons reprendre les travaux à 13 h 30. Merci d'avoir assisté à cette demi-journée, et à cet après-midi.

PAUSE DU DÎNER
REPRISE DE L'AUDIENCE

LE PRÉSIDENT :

Bon après-midi. Je vous souhaite la plus cordiale des bienvenues à cette deuxième partie du deuxième atelier d'échange et de réflexion qui porte sur l'État des lieux et la gestion des résidus ultimes. Permettez-moi de vous faire une très brève présentation des points principaux qui devraient vous aider à suivre l'atelier.

Les ateliers d'hier et d'aujourd'hui bénéficient d'une traduction simultanée en raison de nombreux experts et conférenciers nationaux et internationaux et des besoins exprimés par plusieurs citoyens, tout comme certaines nations et communautés autochtones.

Pour entendre les propos dans la langue de votre choix, au Canada, veuillez composer le 1-855-703-8985, puis, pour l'anglais, veuillez composer le numéro de conférence 402-344-2940, et pour le français, il s'agit du numéro de conférence 395-589-1562. Pour les autres pays, vous trouverez la liste complète dans le site Web du Bureau d'audiences publiques sur l'environnement, le BAPE, B-A-P-E, à l'adresse suivante, www.bape.gouv.qc.ca.

Yesterday's and today's workshops are translated live, due to the many English-speaking international experts and speakers and the needs expressed by many citizens, as well as several Indigenous nations and communities. To listen to the language of your choice, in Canada, please dial the toll-free number 1-855-503-8985 *[sic]*. Then, for English, you can dial the conference number 402-344-2940, and for French language, you can dial the conference number 395-589-1562. For all other countries, you will find the complete phone numbers' list on the website of the Bureau d'audiences publiques sur l'environnement, called BAPE, B-A-P-E.

M. JIM NORDMEYER
M. NICOLA PORRAZZO
OWENS-ILLINOIS

LE PRÉSIDENT :

So, we are going to call the first speakers, Mr. Jim Nordmeyer, and Nicola Porrazzo. So, let me introduce, first of all, Jim Nordmeyer.

Donc, il est vice-président de la durabilité chez Owens-Illinois Glass Inc. Il est basé au siège mondial de la société à Perrysburg, Ohio. En tant que vice-président, Monsieur Nordmeyer est responsable du développement et de l'exécution de la stratégie mondiale du développement durable d'Owens-Illinois. Cette stratégie s'aligne sur l'intérêt croissant des consommateurs et des clients pour la durabilité, améliore les performances commerciales, et soutient la croissance à long terme de l'organisation. Monsieur Nordmeyer a rejoint Owens-Illinois en 2006, et a occupé plusieurs postes,

notamment celui de vice-président, chaîne d'approvisionnement en Amérique du Nord, vice-président des systèmes ERP mondiaux, vice-président, processus commerciaux mondiaux, et a récemment dirigé l'intégration de l'acquisition de l'entreprise Vitro Food and Beverage. Il siège au conseil d'administration de la Glass Recycling Foundation, et du Southeast Recycling and Development Council.

Quant à Monsieur Nicola Porrazzo, alors, Monsieur Porrazzo est le directeur de l'usine de Montréal d'Owens-Illinois. Il est récemment revenu aux opérations après un long mandat dans les ventes et le marketing au service des clients locaux, nationaux et internationaux. En tant que directeur d'usine, Monsieur Porrazzo est responsable des opérations quotidiennes et de la gestion de l'installation située au 2376 Wellington à Montréal, assurant la sécurité des opérations et la production des contenants en verre pour l'industrie des aliments et des boissons. Il a plus de 35 ans d'expérience dans le secteur du verre.

So, Mr. Nordmeyer and Porrazzo, so, we are listening to you.

M. JIM NORDMEYER :

Okay. Thank you. And thank you for that kind introduction. And the pleasure to speak with you this afternoon is all ours. So, Nick and I will spend the next few minutes speaking to you about Owen-Illinois Glass, or as we are now known, O-I Glass -- shortened our name to protect the innocent. So, we'll run through a quick presentation and leave a fair amount of time for questions.

So, why do we love glass, here at O-I? And, first, a little bit about O-I. Because we're proud to be one of the leading producers of glass bottles and jars around the world. We are the only producer of glass bottles and jars in the province of Québec, and in all of Canada, for that matter, with a sister plant in the province of Ontario. Our vision about glass is very clear. We make glass -- or we will be the most innovative sustainable and chosen supplier of brand-building packaging solutions. As vision for our sustainability program, we will be the most sustainable producer of what we believe is the most sustainable packaging material.

So, why do we love glass? I just want to spend a few moments to talk about why glass is so important, why glass is such a preferred packaging material. It is pure, it's inert, it's made of 100% all natural ingredients. It ensures pure taste. What you put in is what you get out. It preserves the flavour of the food and beverage as it was exactly intended. It creates an emotional experience. It

adds value to the product, it builds senses, it stands out on the shelf, and it builds emotional connections with consumers through the touch, sight, and the sound of glass clinking together. But most importantly is sustainability.

Glass is 100% infinitely recyclable material. We heard that this morning from the presentation of Miss Chestnot from FEVE in Europe. It is a permanent material. It is a material that can be recycled endlessly, without the addition of virgin raw materials, to repurpose it for another use, or to be recycled back into another container. It does not harm the earth or the oceans. Yes, if glass is discarded onto the roadside, or put into a landfill, it will take many years for it to break down, but when it breaks down, it returns to silica sand.

Just a view of global customers. With 6,000 plus customers worldwide -- we have a sampling of a few here on this slide. Some names that I'm sure you recognize. Molson Coors, with operations in Québec, Diageo, also with operations in Québec. So, just two brands, two very important brands for our business, and very important brands for the food and beverage business.

And just a couple more slides about O-I. We have a long history, over 115-year history, borne as the Owens Bottle Company in 1903, right here in Toledo, Ohio. Of course, our headquarters is in Perrysburg. It is a suburb of the city of Toledo, Ohio. So, founded here, and have remained here since 1903. We sell nearly 40 -- or 39 billion containers globally around the world, we service to 6,000 customers, we have 25,000 plus employees, and we have a portfolio that spans beer, wine, spirits, non-alcoholic beverages and food. So, percentages of that distribution, you see here on the bottom of the slide.

And as far as our global locations, I said, yes, we are global. We have 72 facilities operating in 20 countries around the world, with 25,000 plus employees. It's the countries in white that are the countries where we have operations. And from this slide, I would like to invite Mr. Porrazzo to spend a few minutes talking specifically about our presence in Québec.

M. NICOLA PORRAZZO :

Bonjour, tout le monde. Alors, l'usine de Montréal, elle est là depuis 115 ans sur le même site. Elle est là avec des générations de verriers qui ont travaillé dans cette usine. Nous avons deux fournaises avec six lignes de production présentement, et nous fournissons les clients dont on a parlé un peu plus avant avec Monsieur Nordmeyer, mais aussi, on a nos clients québécois, comme Eska et

Lassonde, et les micro-brasseries locales, comme Boréal, et les grosses brasseries qui sont dans nos alentours.

Nous avons 380 employés à l'usine présentement, et nous faisons environ une fonte de 180 000 tonnes par année. Dans ces 180 000 tonnes de verre, il y a un pourcentage de verre recyclé qui est inclus là-dedans, et qui est nécessaire, je dirais, à notre viabilité comme usine.

Nous faisons environ, par jour, 1,5 million de bouteilles. Et ce qu'il faut comprendre à propos d'une usine de verre, elle doit être en opération 24 heures sur 24, sept jours par semaine, et pour une durée, en moyenne, d'un four qui a 15 ans, alors, on n'arrête pas notre fabrication. Il faut avoir la masse critique de clients et de matière première pour bien opérer en tout temps, parce que les fours ne s'arrêtent.

J'allais vous dire aussi qu'on a une équipe de travail incroyable. Les verriers de l'usine de Montréal sont réputés à travers l'Amérique du Nord pour leur savoir-faire techniquement. On fait les bouteilles les plus complexes de l'échiquier de clients qu'on a, des bouteilles qui sont de difficulté de haut niveau. Alors, nous sommes très fiers d'être ici.

Alors, nous avons des valeurs fondamentales qui sont primordiales. Notre travail est toujours ancré envers la sécurité de nos employés en premier lieu. On adresse la diversité de notre main-d'oeuvre, et nous avons des principes de travail qui sont basés sur l'imputabilité, l'intégrité, le travail d'équipe, la passion de notre travail, parce que, un travail qui demande beaucoup de -- de courage à...

LE PRÉSIDENT :

Monsieur Porrazzo...

M. NICOLA PORRAZZO :

Oui.

LE PRÉSIDENT :

Je vais vous demander de nous exempter de nous indiquer les bienfaits autour de votre entreprise...

M. NICOLA PORRAZZO :

OK.

LE PRÉSIDENT :

... puis d'y aller avec les dimensions qui sont, pour nous, les plus importantes.

M. NICOLA PORRAZZO :

Oui.

LE PRÉSIDENT :

Donc, quand vous parlez, par exemple, de 180 000 tonnes de verre par année...

M. NICOLA PORRAZZO :

Oui.

LE PRÉSIDENT :

... la fraction de verre recyclé, c'est ça qui nous intéresse.

M. NICOLA PORRAZZO :

Et ça s'en vient dans la présentation, Monsieur Joseph. On va...

LE PRÉSIDENT :

Je vous demanderais de vous limiter à ce genre d'information. Merci.

M. NICOLA PORRAZZO :

OK. Merci beaucoup.

So, Jim, can you take it over? We want to concentrate on the recycling content of our materials, and all that stuff, please.

M. JIM NORDMEYER :

Very good. Very good. So, very quickly, then, sustainability is about using innovation-driven transformation, it's about the ecosystem and achieving a balance of the people, the planet, and our collective prosperity. And over the last year, O-I has expanded their sustainability goals. You see 10 here on this page, but quickly, let me go to the next slide.

Why recycled glass is important? Because it impacts seven of those 10 goals. Most importantly, the 50% recycled-content goal that we have as a global average. It varies from 30%, all the way up to 90%, but we want to achieve a 50% global average. It reduces our greenhouse gas emissions, it helps us achieve our zero-waste goal, it reduces our energy consumption, it creates jobs in the communities in which we operate, it involves our supply chain, it reduces the water consumption in our supply chain. So, recycled glass is extremely important to our sustainability goals and maintaining a planet.

A few facts. We won't dwell here, we can make glass containers up to 95%, and have made glass containers that are 100% recycled content. O-I holds a global patent on being able to make glass containers out of 100% recycled content.

A few facts on this page. You have seen most of them in prior presentations. I will not spend time draining those. I will mention the one in the lower-right corner, about refillable glass bottles. Canada is still a market for a refillable glass bottle, the industry-standard bottle used by the brewers in Canada up to 15 times. Can be refilled much more than that, it can be up to 25. We have bottles in

the world that have been filled 80 times before they come out, and have been recycled and made into a new bottle. It is the most sustainable package that you can put your food or beverage in.

So, sources of recycled glass for us in various collection systems that we experience around the world. There are drop-off systems which -- participation rates typically low. The input stream to the processor is very good, it's 95% glass, the recovery rates are very good, the conversion cost, or processing cost, is low.

The deposit/return systems are great supply points for recyclable glass. However, it only typically addresses a small portion of the total glass that's in the market. In Québec, as an example, deposit/return on beer and carbonated soft drinks is just a very small portion of the total glass consumed in the province. Very high participation rate, great glass quality, low tonnage.

You can do glass only at the curb. It's typically -- gets a few other contaminants in it, but still very convenient.

There's dual-stream, and for the purposes of this slide, dual-stream is defined as beverage packaging material, or rigid packaging that is collected in its own bin, from paper, or steel, or other types of materials. It's, again, high participation rate. The quality of that stream drops because you have multiple materials, and your recovery rate drops, and your processing cost increases.

The worst and the absolute most convenient is single stream. Everything goes into one bin, all recyclables, highly contaminated, the glass stream that typically comes out of there, because it gets crushed and broken into very small pieces, and large pieces. We also bring a lot of other non-glass materials with that stream, as it's separated at a recovery facility. Typical contamination rates are 25% and higher. So, the recovery rate of usable material out of single-stream collection systems is very low, 65 to 70%, our -- I would say global average numbers, and the processing cost is very high, because you've got to spend time and effort and technology to clean it sufficiently to be used back into a glass container or other applications that could use glass.

So, a little bit about cullet use at Montreal. Our typical production profile, the two furnaces that Nick talked about, melting approximately 90,000 tons a day *[sic]* in each colour -- or, sorry, 90,000 tons a year in each colour. So, clear, or flint glass, brown, or amber glass. In flint, we can use up to -- and we do this in other facilities in the world, a 50% postconsumer stream, if it is very clean. And by *"very clean,"* it has to be 97% clear glass. We can tolerate some contamination of a green or

brown, but to maintain the specifications for our customers, it needs to be a very clean stream. Currently, in Montréal, we used 22%. We would love to use more, because, (a), it's a very clean stream in Montréal as it exists today, because most of it comes from the deposit system.

In amber, the cullet use is possible up to 60%. In fact, we could even go higher if we get the right mix of materials. Our current use is about a 32% yearly average, and what's driving that is really the eliminating factor is availability in Montréal. So, there's the material that is collected in the deposit/return system that reaches end-of-life and is recycled, and that makes up about 60% of the total cullet that we are currently using in the province. The balance is coming from Ontario, cullet processors in Ontario, and cullet processors in New Brunswick.

I will also mention that the processor that does exist in the province of Québec, 2M Resources, also sources input material for his operation from the northeast part of the US. He has streams coming from Vermont, New Hampshire, and Maine. So, that material that is being processed, the 60% that I mentioned, some of that material is actually coming from the northeast part of the US, because it just makes more economic sense to do that.

So, in summary, you know, the key to high recycle rates, and we've seen this in Europe, and we heard the presentation from FEVE this morning, it really begins with the quality of the collection system, and the accessibility of the collection system to increase the participation rate. When we look at the amount of glass that is consumed in the province of Québec on an annual basis, and what we can do in our facility in Montréal, we can consume most of the glass, or most of the glass that is consumed in Québec can be recycled in Québec, in Montréal, and turned into a new glass container in as little as 30 days. A little bit a lie; we're currently beginning an investment profile of nearly $70 million Canadian over the next three years in upgrading and rebuilding one of the furnaces, and in that plan is plans to increase the use of cullet as it becomes available.

And the last thought I will leave you with is glass is the perfect packaging material for the circular economy. If you think of the principles of the circular economy of *"reduce the need for,"* so, I can reduce the amount of glass needed in a container to be fit for purpose, I can reuse that container, is one of the few packaging materials that can be reused a number of times.

The industry-standard bottle in Canada currently is getting about 15 trips, and it's the brewers that are making the decision to take it out of circulation because of scuffing or other cosmetic defects. It's still a good bottle. And then, we recycle that back into a new bottle within 30 days. When it

reaches end-of-life, it can be recycled, and, of course, in the province of Québec, we use renewable energy in the form of hydropower, powering a lot of our electrical consumption in the facility. So, it is the perfect packaging material that fits in a circular economy.

And thank you for listening, and the motto of our founder, Michael J. Owens, *"It can be done."* And getting to high collection and recovery rates in the province, we believe is possible. We testified at a commission in August of 2018, saying you can expand the deposit/return system, you can ban the landfilling of glass, or you can create separate glass collection at the curb to increase participation rate, but at the same time, we also need to expand the processing capacity in the province, to take on those additional tonnage. Because it's easily another 70,000 tons, in our view.

LE PRÉSIDENT :

Thank you very much, you both. Mrs. Forget?

LA COMMISSAIRE :

Yes. Thank you. So, just walk me through the different steps. So, do you collect the glass, or somebody brings it to you, and then, of course, you manufacture the glass, and then, your customers take the glass and fill it? Is it the way it works, or do you collect yourself? Are you involved in the collection, for instance, like after it's sorted?

M. JIM NORDMEYER :

No. We, O-I, are not involved in the collection system. So, the collection systems in the province are the deposit/return system for those materials under deposit that are collected and then shipped to 2M Resources there in the province, where they do some additional processing, crushing, and then supply us with what we call furnace-ready cullet. We manufacture a new container, we ship it to fillers in the province as well as in the northeast part of the US, also in Ontario, where it is filled, put on the market, and then, recollected as it reaches end-of-life.

LA COMMISSAIRE :

So, you buy the powder, the glass powder?

M. JIM NORDMEYER :

We do. Yes, we purchase furnace-ready cullet. It's not a powder. Our specification, typically, we want the sizing to be around 15 millimetres in size, maximum size, about 25 millimetres. The reason we want it consistent in size is so that it handles well and blends well with the other materials, the virgin materials of sand, soda ash and lime, which are very fine, blends well in the furnace, and melts out properly in the furnace.

LA COMMISSAIRE :

And how much recycled versus new material do you use, on average, over a year, in the Montréal plant?

M. JIM NORDMEYER :

Well, there in Montréal, on an annual basis, we're using just shy of 70,000 tons of recycled material, out of 180,000 tons that we melt. So, that includes some of our internal -- the process creates some of its own internal scrap. That includes some of that, but about 60% of that 70,000 tons actually comes from 2M Resources in what they're collecting and processing in the province, and from the northeast part of the US.

LA COMMISSAIRE :

And what constrains you to make it even higher, so, like even a higher proportion is really the supply, so, I imagine that you reject a part of what you could buy because of those specifications you use? So -- no?

M. JIM NORDMEYER :

No.

LA COMMISSAIRE :

So, what's the reason? Is it just the volume of supply, or the specs?

M. NICOLA PORRAZZO :

C'est vraiment le volume. Si je peux répondre, là, c'est vraiment la disponibilité du calcin dans la région de Montréal. Alors, comme on vous a dit, on a, en moyenne, 22 % dans la couleur claire, et environ -- on peut aller jusqu'à 60% dans la bouteille brune, quand elle est disponible. Alors, on a une moyenne, l'année passée, je pense que c'est 32% de toute la fonte qu'on a faite. Ça fait que la grosse -- la plus grosse embûche est la collecte -- est la disponibilité du calcin, pour nous. Si on en avait plus, on l'utiliserait.

LA COMMISSAIRE :

And does it exist, a plant, at O-I, that is 100%? Like let's say that you have enough supply, could you be in a complete loop, or you always need a bit of new material to produce?

M. JIM NORDMEYER :

So, I'll answer the question two ways. We have demonstrated and have ran campaigns in furnaces where we've run on 100% cullet for a period of six weeks, because we had stockpiled it and we made it available, and it was proof of concept. We have furnaces, globally, that run 90% cullet every day, 365 days a year, because the material is available. In Québec, we very rarely reject any material from a specification point of view. We use everything that we can get.

LA COMMISSAIRE :

And do you use the material -- so, you use the material from Ontario, New Brunswick, and northeast to keep the plant running. So, you don't have objectives, I guess, set to increase that? Like do you have an objective so that you work with the supply, work with the different municipalities to increase that supply? Do you have a program to increase your supply?

M. JIM NORDMEYER :

Yes. We have an objective to increase our global average of postconsumer, or material collected from the curb, to a 50% global average. In the province of Québec, we would go as high as 60 or 70% on the brown or amber colour, and as high as 50% -- that's our target, as high as 50% on clear. And we are working with municipalities or collectors in increasing the collection rate.

We are working with our customers, because, to power their brand, and promoting recycling through the power of their brand is important, so that the consumer knows to do the right thing, to put it in the right collection container or collection system, so that it stays in the circular economy.

LA COMMISSAIRE :

Are you aware of the -- I don't know how you call it -- béton, in English? Concrete?

M. JIM NORDMEYER :

Yes.

LA COMMISSAIRE :

In the business, are you any -- I mean, I know -- are you involved in the concrete business, in the sense that, of course, it's not your primary business, but it's kind of a competitor to the primary product. So, if you have any comment on this?

M. JIM NORDMEYER :

No, we are very familiar with that business, Mrs. Forget. O-I does operate a cullet processing facility globally. We operate one here in the United States, in the state of Oregon. Glass container manufacturing, because of our specification of no ceramics, no metal, no aluminium, or aluminum in the stream, the sorting technology and the removal technology, anything less than about six millimetres is not clean enough for us. That material, typically, will end up in an abrasives application, a fibreglass manufacturing facility, or pulverized to less than one micron in size, and used in concrete. So, we actually -- in our operation in the state of Oregon, we supply a stream of material to a concrete manufacturer. He does additional processing, and he uses it in concrete replacement, or fly-ash replacement in concrete.

LA COMMISSAIRE :

I have a last question. How about the reuse business? So, basically, like to just wash the bottle and reuse it again. Is it, of course, also a competition to the crushing and remanufacturing? But because you're saying you lack supply, but obviously, there's also that line? You just said it's a very

small portion, however, so it doesn't have a real impact? Is that what you were saying in your presentation?

M. JIM NORDMEYER :

Yes. So, from our -- I mean, of the 39 billion containers that we sell annually, about 6% of those go into a returnable, refillable, reuse market; okay? If I look at North American business, of the total sales in North America, the returnable refillable business is only about 2%. Now -- but when that material reaches its end of life, when the filler, like Labatt or Molson Coors, they say, *"Oh, cosmetically, it's scratched, it's scuffed,"* they take it out of circulation, that does come back into the recycle stream. We crush it, remelt it, make a new bottle.

LA COMMISSAIRE :

And what is the best performing plant, I guess? Like why -- what are the winning conditions to be the best performing plant in terms of having a large supply, having a high content of recycling, and what would be the way forward, in Québec, to get Montréal to that speed?

M. JIM NORDMEYER :

Yes, the ideal combination is -- well, I would say population density. It's the availability of glass in a defined radius around the end market. That defined radius is around 250 kilometres. So, collecting all the material and cleaning it and using it within that radius makes good economic sense for the entire supply chain. And that is in Europe, it's -- we do it in many facilities. Over 40% of our facilities run greater than 60% cullet worldwide, and it's because of the population density, the availability of the glass.

Here in North America, our best performing facilities are in the state of Oregon, in the state of Pennsylvania, because of the availability of material. And we run nearly 80% in those facilities.

LA COMMISSAIRE :

But is it the collection system, or the regulations that made it possible in Oregon and Pennsylvania?

M. JIM NORDMEYER :

In Oregon, it is a very good deposit/return system, Oregon being the original state here, I guess in the lower 48, that introduced a deposit/return system that covers beer, wine, spirits, carbonated soft drinks, juices, teas, and water, so, a very good stream, and a very high participation rate.

LA COMMISSAIRE :

Thank you.

LE PRÉSIDENT :

Thank you, Mrs. Forget. Mr. Renaud?

LE COMMISSAIRE :

I have a question on the model that you use in Montréal. When the glass comes out of the sorting centre, or the sorting installation, it has to go through another subcontractor to prepare it for your use. Is it what I -- have I understood well?

M. JIM NORDMEYER :

Yes, you've understood well. The sorting -- or the processor in the province is 2M Resources. Nick, do you recall exactly what city they're in?

M. NICOLA PORRAZZO :

They're on the south part of Montréal, but, yes, to your point, they will take the glass from the recyclers, and then do the preparation for it to be ready for our furnaces. So -- and they have our specification.

Ils ont notre spécification pour préparer le calcin à la grosseur, et ils vérifient aussi s'il rencontre les normes de pureté, qu'est-ce que je peux utiliser, ce mot-là, là, pour ne pas avoir de contaminants, comme on a dit, comme de la céramique, de l'aluminium, et les autres choses qu'on peut -- qu'on ne veut pas avoir dans nos -- dans notre procédé.

LE COMMISSAIRE :

Monsieur Porrazzo...

M. NICOLA PORRAZZO :

Oui.

LE COMMISSAIRE :

... est-ce que cette entreprise-là a suffisamment de capacité -- aurait suffisamment de capacité pour répondre à vos besoins, là, si on augmentait, par exemple, pour le flint et le ambré, là, si on montait jusqu'à 50 et 60 % de recyclé?

M. NICOLA PORRAZZO :

Alors, je pense qu'il y a d'autres joueurs qui sont -- allô? Oui. Pardon. Alors, je pense que peut-être qu'il y a d'autres participants qui veulent entrer dans le marché. On est au courant que -- et peut-être Jim peut en parler un peu plus -- qu'il y a des gens qui sont en train de se préparer pour être prêts à faire de la préparation de matériel pour nous.

And Jim, can you expand on how many more suppliers will be in Québec, potentially, for recycling glass? I think that we have one person that's stepping up to that conversation, and the real question is, I don't think 2M has the capacity to take all of the new glass if deposit was -- if the deposit was wide across the province. So, maybe you have more knowledge on it, about the capacity?

M. JIM NORDMEYER :

Yes. So, that's correct. If there was a significant increase in the glass collected in deposit, an investment needs to be made, either by 2M to expand their capacity to process -- and processing is crushing, cleaning, removing organics, metals, ceramics, paper, from the stream. I do know of two other organizations that are looking at investing in cullet-processing capability. One is located in Trois-Rivières, and the other would be located there in the city, on the island.

LE COMMISSAIRE :

You are probably aware that the Québec government is about to extend the deposit/return to other types of containers; will this extension to other containers fulfill your needs to meet the 50% for flint and 60% for amber glass?

M. JIM NORDMEYER :

Yes, it will. If we are as successful as we believe it will be, this should create an additional 70,000 tons of material available in the province. So, that's above the nearly 70,000 tons that we are currently sourcing, so, we have the ability to reach both goals, and perhaps exceed them. It will become a balance of the glass chemistry to go higher.

LE COMMISSAIRE :

You've mentioned in your...

M. NICOLA PORRAZZO :

Sorry. Didn't we see also that type of increase when we -- in our sister plant in Ontario when the LCBO expanded their deposit? I think we saw the same type of cleaner stream of cullet. Alors, une meilleure qualité de calcin, et une plus grande disponibilité de calcin est arrivée quand ils ont fait l'expansion en Ontario. Et notre usine-soeur en Ontario en a profité.

M. JIM NORDMEYER :

That is correct. In Ontario, with LCBO and The Beer Store systems, we are rich in cullet in the province.

LE COMMISSAIRE :

You mentioned in your presentation that you have a 50% target. I guess it's worldwide for recycled glass in your operations. And 25% greenhouse-gas reduction. Is there a direct link -- I mean, if you reach the 50% recycling for the material, you will reach the 25%, or are there more measures that are taken to reduce the greenhouse gas emissions?

M. JIM NORDMEYER :

Yes. More measures will be taken, Mr. Renaud. So, there's multiple levers. Cullet, the use, and an increase of cullet in our operation is one of the major levers in reducing greenhouse gas. Every one ton of cullet that we can use reduces our greenhouse gas by 350 kilos. So, we're interested in improving that. Our other levers that we will be exercising to reduce our greenhouse gas is incorporation of renewable energy in the form of alternate fuels, or carbon-friendly fuels, and the reduction of our energy consumption, through other technologies.

LE COMMISSAIRE :

Thank you very much.

LE PRÉSIDENT :

So, thank you both for your presentation and for answering our questions.

M. WEINE WIQVIST
AVFALL SVERIGE
(ASSOCIATION SUÉDOISE DE GESTION DES MATIÈRES RÉSIDUELLES)

LE PRÉSIDENT :

So, the next speaker is now Mr. Weine Wiqvist. I will present you, Mr. Wiqvist, in French language.

Donc, Monsieur Wiqvist est de l'association suédoise de la gestion des matières résiduelles. Il a été directeur général d'Avfall Sverige pendant plus de 25 ans et en est aujourd'hui un conseiller principal. Avfall Sverige est l'association suédoise de gestion et de recyclage des déchets, qui compte 400 membres issus des secteurs public et privé de la gestion et du recyclage des déchets. 99,9% de la population suédoise est représentée par Avfall Sverige. Elle représente ses membres auprès des politiciens, des autres décideurs, des autorités et des médias, tant en Suède qu'à l'international.

Alors -- Mr. Wiqvist, we are listening to you.

M. WEINE WIQVIST :

Good evening. Bonsoir. Nice to meet with you. I will now try to share my screen.

LE PRÉSIDENT :

Sure.

BRÈVE SUSPENSION

LE PRÉSIDENT :

Je suis totalement désolé de ce temps d'attente, mais la technologie étant ce qu'elle est, aujourd'hui, d'autant plus que ce sont des personnes, des conférenciers, dont plusieurs sont localisés en Europe, donc, ça crée un peu plus de difficultés. Nous allons donc patienter jusqu'à ce que le conférencier se rejoigne à nous.

Nous allons faire une pause de cinq minutes, et nous reprendrons nos travaux.

SUSPENSION DE QUELQUES MINUTES

LE PRÉSIDENT :

Alors, Mesdames et Messieurs, nous regrettons ce contretemps, et nous demandons immédiatement au prochain conférencier de faire sa présentation. Il s'agit donc de Monsieur Weine Wiqvist.

So, we are listening to you, Mr. Wiqvist.

M. WEINE WIQVIST :

Thank you again. Sorry it was interrupted. I hope it will go better now. Unfortunately, it seems not to work with a full screen, but I hope you can see the slides anyway.

So, thank you for being invited to your seminar. I will just tell you shortly about myself. And, as said, I am the senior advisor of Avfall Sverige, which is the Swedish waste management association. I used to be the CEO for many years. I am also the past president of Municipal Waste Europe, and I used to be also the vice-president of CEWEP. I understand you have already had presentations by MWE and CEWEP, and I am also a board member of the International Solid Waste Association. I am also a member of the Swedish Commission for Circular Economy, which I have been appointed by the Swedish Government, and part-time adjunct lecturer at Lund University. It can be interesting for you to know that in the -- like 20 years ago or so, I was the Swedish Attaché for Science and Technology at the Swedish Consulate in Los Angeles.

Just some facts about Sweden. I assume you know it, but we are placed in the northern part of Europe. We are 10 million plus people, in area which is like one-third of the province of Québec. We have 290 municipalities, but let's say about 100 municipal waste authorities, because quite a lot of the municipalities, they moved together in waste management authorities.

When it comes to national politics, we have a minority social-democratic Green Party coalition, with a support from the centre and liberal parties.

Now, about Avfall Sverige, the Swedish waste management association. We are mainly an association for the municipal members and their municipal companies, but we also have a number of associated private members.

In our association, we have a vision which says that we have zero waste, and by *"zero waste,"* we actually mean zero waste, meaning no waste will occur whatsoever, not even for recycling. Of course, this will never happen, but it is kind of a direction. It will never be a reality. Of course, you know it's more or less impossible.

We are dealing with influencing the politics. We are developing our members, and we work very closely together with members, and together with other stakeholders in society. If you compare it to associations around the world and close to you, the SWANA, which I think are supposed to talk

after me, we are almost like SWANA, but not really. But we are both member of the International Solid Waste Association.

Always, when you try to make presentations for other people from other countries, you may -- things may look the same, but in reality, there are a lot of differences, because legal formats are different, the responsibilities are different, aims, targets, technology also can be different. But I think most important is that we are -- in Sweden, we are part of the European Union, and I think that the European Union regulates quite a lot, probably much more than your Canadian federal government rules versus the provinces. That is what I think, at least. I don't know if it's true, but this is an assumption, anyway. I will tell you more about that later on.

Of course, we are following what we call the waste hierarchy. I think you are very much in -- you know about it very well. And when it comes to the European rules, I assume that you have already heard some of this information before, so I will go a little bit quickly through it, and pay more attention to the Swedish practicalities later on.

But anyway, from our point of view on the Swedish ground, we think that a lot of -- let's say more than 80% of all relevant national legal acts are based on EU directives or regulations, which means that what is being done within the union is very, very important. And therefore, we do have common recycling targets which set the floor, so to say, because in each different member state or member country, you can then exceed the targets, increase it if you want, but you cannot be below.

And, of course, it’s allowed to have shipment to waste for recycling, and also energy recovery between the different member states, and we have common permission standards for selecting, sorting, composting, digestion, waste-to-energy, landfills, and so forth, and we also have common rules for EPR, extended producer responsibility, for packaging, WEEE waste, and batteries -- and also vehicles, actually. I will tell you more about this later on.

And this means that the recycling targets will be like 55, up to 60% within 2030, and 65%, actually, 2035. And therefore, it is important to understand that these new figures are real recycling. So, it's not collected amount versus what is put in the market, this is the actual recycling before it goes into the -- let's say the steel mill, or paper mill, or whatever. So, this means that you have to collect a lot more in order to cope with these recycling targets than we used to do. Therefore, I put on the screen, *"No fake recycling anymore,"* from this year. There is also a target to have a landfill maximum on the EU level to no more than 20% of municipal waste until 2030.

If we look to the figures of Sweden, we have about 4.8 million tons of municipal waste, which roughly is 460 kilograms per person, and less than 1% going directly to landfill.

I assume you have seen this chart before, through CEWEP, because I think we have the same chart. It shows -- the red bars are landfilling bars, and as you can see, you have Sweden to the far, far left, next to the EU average, and we have very, very little landfill. And then, you have -- the yellow bar is energy from waste, and the green bar is recycling. But these recycling green bars are the old way of measuring recycling. So, I would think that when we have the statistics from 2020, it will look a lot different. Specifically, I think some of the countries which have very high green bars will be reduced, because they cannot count for recycling anymore.

How did we reach this very low recycling quota of Sweden? Of course, there are many different steering instruments involved -- I will elaborate a little bit more on that later on -- but I think the most important steps were that we introduced producer responsibility like in 1995, we introduced a landfill tax by 2000, and then, gradually, a ban for landfilling of combustible and organic waste, 2005 and on, which gives the direction close to just a few percent of landfilling today.

So, instead, we convert waste as a resource for raw material, we produced biogas, biofertilizer, and waste-to-energy provides district heating and electricity.

I think the most important reason why we have this success, which I will call, is that there is, from the very beginning, a very ambitious goal, we have a clear responsibility between different actors. There have been financial stability, we used a new technology, and most important, there has been, all over this long period, a political commitment all over the parties. So, regardless whether we change the government, the transition towards less landfill continues.

But in order to achieve this, you cannot say it's a quick fix and you just put one steering instrument. That will not work. In reality, you have to use the whole toolbox, as I used to say, which means that we -- a number of different steering instruments, legal, economical, informative.

And to tell you a little bit more about the legal steering instruments that have been imposed in Sweden, first of all, we have the obligatory national and local waste and prevention planning. As I told you before, we have the landfill bans. We introduced source-separation rules, for example, packaging for food waste, and so on. We have the municipal responsibility, we have the producer responsibility,

and we have also, later this year, we have single-use-plastic bans, and we have different kinds of recycling targets, which normally exceed the targets we have on the European Union level.

So, for example, I told you already about the landfill ban and the recycling targets, which is now 50%, but it may be like 65% in 2030, and we also have a separate target for food waste, which are supposed to be converted into biogas and biofertilizers, at least 50% until 2020, which was this year -- or last year, in fact. And we also had a target for recycling of construction and demolition waste.

When it comes to legal responsibilities, of course, municipalities are responsible for household and similar waste from commercial shops, and so on, and also for waste paper. But then, we have the producer responsibility, which, normally, is called the EPR, for packaging waste, WEEE waste, batteries, end-of-life vehicles, and tires. And for all other kinds of waste, the waste generator is responsible.

If we then look into the economical steering instruments, again, we have a number of economical steering instruments. We have reduced VAT for repair, which is supposed to drive the reuse of products, we have the landfill tax which drives recycling and energy recovery, of course. Since two years, now, we have waste-to-energy tax which is supposed to drive recycling. We also have -- since a long time, we have a CO_2 tax on fossil fuels, and we have also an emission-trading system here in Europe, which drives energy recovery from waste. We also have a CO_2 tax exempt, which drives biogas. We have municipal charges which are differentiated and which drive sorting. We have, of course, the EPR fee, which drives design and better recycling options for packaging and WEEE waste, and so on, and we also have had, from time to time, investment support from the government, and so on.

So, I think it is important to understand that we did not reach this low level of landfill out of itself. We need a lot of steering instruments, also economically.

Again, when it comes to economics, on the municipal charges, we have the user-charge principle, which is a modulated fee, you can say, which is based on volume and weight, and an average small household in Sweden, they pay about 200 euros per year, which includes all the service, and it also includes VAT, and taxes, and everything, because we have to pay VAT for waste management service.

And then, of course, we have also the producer's fee which is put on the product you pay when you go to the shop, and they also have some kind of modulated fee, and these are decided by the producers, and if you combine all the different EPR fees which we have in Sweden, it combines to average of, let's say, something like 150 euros per year. Something like that. It's a little bit difficult to know, because the books from the producers are not open the way they are from the municipal part. So, sometimes, we have to do assumptions.

Again, when it comes to EPR, we have a deposit-fee system for aluminium cans, for standard glass bottles, PET bottles, for soft drinks and beer, and this deposit-fee system is supposed to be extended with other kinds of bottles, and especially for plastics. And here, we have very high recycling rates, about -- close to 90%, and the deposit is different -- different relationships, it's like 0,10 to 0,20 euro per bottle or can.

And then, I talk a little bit of informative steering instruments. We have introduced, in the municipalities, what we call prevention coaches. So, we have different kinds of prevention programs, we have awareness campaigns, and just to tell you, recently, we introduced a common waste symbol system. It looks a little bit complicated, but the idea is that these symbols should follow the product -- I show you here -- it should follow the product from the shop -- so you can follow the same product from the shop -- to your sorting and to the recycling bin. So, we are now trying to introduce this common waste symbol system, not only in Sweden, but also the whole Nordic, and also other countries in Europe as well.

I spent quite a lot of time to tell you about the steering instruments, because I think it's very important, because most of the time, you spend the time to talk about technology, but I think technology will not be there if you don't have the institutional infrastructure together with technology infrastructure.

Of course, I will now go very quickly through -- of course, we have different kinds of collection systems for sorting of different kinds of waste, we have infrastructure for recycling station, biogas -- you know, in Sweden, most of food waste which are collected goes to anaerobic digestion, and we are only composting the green waste, not the biological waste.

And, of course, we have energy recovery quite a lot, because we have a large -- many -- most of the larger cities have district heating networks so we can use heat efficiently, but sometimes, we also use the steam for industry, and, of course, we produce electricity.

LE PRÉSIDENT :

Mr. Wiqvist, three minutes left.

M. WEINE WIQVIST :

Yes. I have only a few slides more.

And I think we should pay some attention to this one, because it's important for you to understand. If you compare with Sweden, in Sweden, we have collection based on separation at source, by the materials. So, we don't have co-mingled collection, and so on, therefore, we don't have any MRFs, and we don't have the MBTs, because we focus to have high-quality collection already, from the very beginning. And I think that is a very important message to you, to understand that we -- sometimes, in the Nordic part of -- north part of Europe, we look a little bit different. Of course, we have both private operators and municipal operators, but you can say that there is a trend to have more in-house operations.

We are now in a transition, of course, from the linear economy through the recycling economy. I would say we are now, most of the time, in a recycling economy, and in the future, possibly in the circular economy.

Last slide. We are doing more. We have now introduced, this year, a plastic-bag tax. There will be some banning of single-use items, additional tax for single-use items, additional tax incentives for repair, and so on, and there will be an extension of the deposit system, additional support of biogas, and there will be more focus on design, and prevention, and reuse. And thank you.

LE PRÉSIDENT :

Thank you very much, Mr. Wiqvist. Monsieur Renaud?

LE COMMISSAIRE :

Thank you very much, Mr. Wiqvist. You mentioned that you only landfill less than 1% of the waste material, but then again, you have big incinerators. What do you do with the ashes? Aren't they landfilled?

M. WEINE WIQVIST :

Yes. Of course, all this -- first of all, the principles for the statistics is where do you land the waste in the first case? Of course, that is also the same for recycling, for example. If the number of recycling is where do you land the waste at the recycling unit or recycling industry, that will count for recycling. Then, we all know that it will be rest fractions. When it comes to energy from waste, in Sweden, the rest fractions from the waste-to-energy facilities or incinerators are sludge material, and most of the sludge materials are being used for road construction and for coverage of old landfill sites, and so on, and just a minor part, the ashes, are being landfilled. And, actually, it's not really landfill, it's also reused in old quarries. So, it's recognized as some kind of reuse, though, in fact, it's a kind of landfill anyway.

LE COMMISSAIRE :

In the graphic that showed the reduction of waste material produced by citizens over the years, there is a big effect right after the ban of combustible materials...

M. WEINE WIQVIST :

Yes.

LE COMMISSAIRE :

... there is a big drop.

M. WEINE WIQVIST :

Yes.

LE COMMISSAIRE :

But then, when you ban the organics, a little later on, a few years later, the drop is much less significant. What should I understand from that?

M. WEINE WIQVIST :

I think the understanding is that when you ban the combustibles, you sort of -- in the meantime, you will ban the organics. Because most of what is combustible is also organics. So, I think the legislator has understood that banning in two phases was not effective. It should have been banned, the organics, from the very beginning.

LE COMMISSAIRE :

Talking about the organics, I understand from your presentation that all the organics are treated through anaerobic digestion, there is no composting facilities or installations like that?

M. WEINE WIQVIST :

Well, for food waste, most of that goes for anaerobic digestion, but, of course, for green waste, these go to composting facilities. And, actually, some of the larger items of -- you know, the larger part of trees, and so on, it goes to incineration after crushing, and so on. So -- but for, you know, what is collected, like food waste from households, and from restaurants and schools, and so on, it goes to anaerobic digestion, together with, for example, most of waste from slaughterhouses and from industry, for agricultural industry. So, it's mixed together.

LE COMMISSAIRE :

And do you use biogas directly, or do you purify biogas...

M. WEINE WIQVIST :

Yes.

LE COMMISSAIRE :

... to inject it in a natural gas network or...?

M. WEINE WIQVIST :

To a very small extent. Actually, more than 90% of biogas is being purified and used as a fuel for buses, also, sometimes, together with biogas from sewage treatment plants. Your sewage sludge can be biogas as well. So -- because we don't have so much natural gas net here in Sweden, it's only in some small part, so, it goes to local or regional networks of biogas. And for buses.

LE COMMISSAIRE :

But still, the majority of the biogas is purified into methane?

M. WEINE WIQVIST :

Yes, yes. Yes, yes. Sure. Sure. Sure.

LE COMMISSAIRE :

And my last question is: I've seen that you intend to tax waste-to-energy.

M. WEINE WIQVIST :

Yes.

LE COMMISSAIRE :

By doing that, I understand that a lot less material will go to incinerators, and probably material that is combustible will be recycled otherwise. Aren't you afraid that this will reduce the efficiency of the incinerators and these facilities, when you reduce the amount of combustible material that goes there?

M. WEINE WIQVIST :

We haven't seen that, because -- so far. This tax was introduced this year, so it's very new, but we think it will not affect so much. Because there is also an increase of the waste generation, the whole time, but if you look into a longer time, maybe the next four or five years, we expect that the

number of waste going to incineration will be reduced. But we think that the industry, the people who operate waste-to-energy facilities, will adapt to the new situation, because -- therefore, perhaps the capacity will be shrunk, some of the oldest maybe go out of operation, and so on, so, we don't think it will be a big problem at all.

LE COMMISSAIRE :

And finally, you've chosen incineration over landfilling, although Sweden is a big country, you have a lot of land. Sometimes, we are told that smaller countries with a high density of population cannot use landfill, but Sweden is not in that category. Why, then, go towards incineration instead of landfill? Do you think it's environmentally better than landfill?

M. WEINE WIQVIST :

Absolutely. Absolutely. That was the political and the environmental argument from the very beginning, that incineration is overwhelmingly better than landfilling. Because if you put things into landfill, every resource will be destroyed, you will get nothing out of it, and it will be there for – forever. And you have to control it, and you don't really know what will happen into this landfill site, and it will create methane gases for a long time, of course.

We also have, in Sweden, you know, this installation for collecting of landfill gas. I actually built the first one in Scandinavia already late ‘81, but we all know it is not 100% effective, so the decision from the Swedish environmental protection agency and the government, already back in 1989 or 1990 or so, was that landfilling is the worst option, and we should try to avoid it.

Also, in Sweden, if we have place, but you should know also that most of the Swedish people are living in the south of Sweden, and there, the population density is not so different to some parts of Europe, for example. So -- but most important, it was truly because of environmental conditions. That was the -- and I think you can see that also now when you look into the European legislation, which also now puts a cap on landfilling to 10%, and some of the countries will be struggling for that for a long time. But I know there is a large difference, when you compare, for example, to USA, or maybe also for Canada. But even in the UK, for example, they have a lot of landfilling, even 10 years ago, today, the landfilling in the UK is down under 20%. And they also are building new waste-to-energy plants in the UK as well. And I think they are doing...

LE COMMISSAIRE :

Thank you very much.

LE PRÉSIDENT :

Mrs. Forget?

LA COMMISSAIRE :

Thank you for your presentation. I was interested to know more about you waste management authorities. So, are they like part of the country, or the regional level? Like what government level it is, and has it been developed by municipalities? Have they decided themselves how to form that authority, or it was top down? How was it decided, and when, exactly, those organisations were done?

M. WEINE WIQVIST :

Yes. First of all, these regional waste management authorities have been developed by the municipalities, by their own -- by their free will, and they come together so they form some kind of a new municipality, but it consists of a number of municipalities. So, some of these municipalities can consist of 14 or 15 different smaller municipalities, and we have seen, especially during the last 5 or 10 years, a large new interest of this, and the main reasons are because of competence.

Because you need competence in these authorities in order to steer all these effective measures I told you about. It's very difficult to do in a small municipality, only with maybe 30,000, or 10,000, or 15,000 people. We used to say that you need perhaps at least 100,000 people in order to be able to have enough competence. So, that's the main steering reason.

LA COMMISSAIRE :

Thank you. And could you explain a bit more the reduced value-added tax...

M. WEINE WIQVIST :

Yes.

LA COMMISSAIRE :

... that you were mentioning? I'm not sure I understood it.

M. WEINE WIQVIST :

Yes. Right. You know, in Sweden, normally, you pay VAT of 25% on everything. But if I go, for example, to a shop and would like to have my bicycle repaired, or my iPhone, for example, they only pay 12%. So, they have half of the normal VAT. So, this is how it works.

LA COMMISSAIRE :

That's simple. Thank you.

M. WEINE WIQVIST :

It's very simple.

LA COMMISSAIRE :

And the last question, so, to get better consumption from the Swedish people, and to have better sorting, so, did you use a labelling strategy, like to make sure that people are adequately informed and that it's super easy to take a decision at every step, like from the beginning of consumption to the end?

M. WEINE WIQVIST :

Yes. We try, and I showed you this new waste symbol system, and this is now being put on -- it was actually invented in Denmark, but now, we sort of also use it in the other Nordic countries, and the idea with this is that it should make it more easier for the consumer to follow the products you buy -- for example, if you buy, let's say, a milk carton, something like that, a milk container, you should see

the sticker already from the beginning, and you should know where to put it when you recycle it, and so on, and therefore, you should get some more information, and it will be easier to follow the information stream and be more aware about you're consuming.

LA COMMISSAIRE :

So, that's not done yet? It's underway?

M. WEINE WIQVIST :

We have some of -- I think about one-third of the municipalities already have introduced that, and we are now gradually imposing this on a free basis through the producers. Because the producers have to stick this on their items, so we have now contracts with most of the Swedish producers or the fillers, for example, because, you know, producers, they just produce the packaging, for example, but there is another industry who fill the packaging with products. So, we have to make agreements with all of them, but they are all happy, especially if we can have the same system, not only in Sweden, but in other parts of the Nordic -- or even in Europe, because, today, they have all different kinds of labelling and it creates a lot of disturbance. So, they are very happy.

LA COMMISSAIRE :

Thank you very much.

M. WEINE WIQVIST :

Thank you.

LE PRÉSIDENT :

Thank you, Mr. Wiqvist. Thank you for the participation and for your presentation.

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M. FRANCIS FORTIN
SOLID WASTE ASSOCIATION OF NORTH AMERICA (SWANA)

LE PRÉSIDENT :

And now, I am calling Mr. Francis Fortin from SWANA, Solid Waste Association of North America. Let me introduce him.

Titulaire d'une maîtrise en gestion de développement durable de l'Université de Sherbrooke, Monsieur Fortin est président-directeur général de Chamard stratégies environnementales depuis 2012. Chamard est une société de près de 50 professionnels exclusivement dédiés à l'identification de solutions créatives pour une meilleure gestion des matières résiduelles au Canada. Il est également président du conseil d'administration de la section québécoise de la SWANA, donc, le Solid Waste Association of North America, depuis 2014, ainsi qu'administrateur sur les conseils d'administration du comité sectoriel de la main-d'oeuvre en environnement EnviroCompétences depuis 2017, et du 3RMCDQ, le Regroupement des récupérateurs et de recycleurs de matériaux de construction et de démolition du Québec depuis 2019.

Monsieur Fortin, à vous la parole.

M. FRANCIS FORTIN :

Bonjour. Je vais vous partager -- si vous me permettez, bien, je vous dis bonjour, puis je vais vous partager mon écran aussi, j'ai préparé une petite présentation pour les minutes que j'ai avec vous aujourd'hui.

Vous voyez bien la présentation?

LE PRÉSIDENT :

C'est-à-dire, là, l'écran est noir -- oui. Tout à fait. C'est arrivé.

M. FRANCIS FORTIN :

Bon. Excellent. Parfait. Donc, aujourd'hui, en fait, j'aurais pu passer puis présenter certains enjeux très larges de la gestion de matières résiduelles et de résidus ultimes au Québec et en Amérique du Nord. Par contre, on a précisé vraiment deux sujets sur lesquels je voulais vous entretenir.

Bon, je vais vous présenter qu'est-ce que la SWANA, qu'est-ce que la section québécoise de la SWANA, rapidement, puis je vais vous parler de besoins en formation technique, parce que, pour nous, c'est -- peu importe ce qui se fait dans le futur et aujourd'hui, il y a des grandes lacunes pour y arriver, au niveau de la formation, et un sujet qui nous tient à coeur, qui est la gestion des débris post-sinistre, puis je vais vous expliquer pourquoi ça a un intérêt marqué dans le cadre des audiences actuelles.

Donc, rapidement, je sais qu'il y avait possiblement la chance d'avoir un représentant de SWANA au niveau américain, mais qui n'a pas pu être là dans les audiences aujourd'hui. Je vais quand même résumer, là, SWANA, c'est une association qui regroupe 47 chapitres à travers les États-Unis, le Canada, et un chapitre dans les Caraïbes. C'est 10 000 professionnels en gestion de matières résiduelles. C'est du *'membership'* personnel, et non corporatif, donc, c'est vraiment des experts et des gens impliqués dans l'industrie qui sont membres.

L'objectif de la SWANA, c'est vraiment l'éducation, la défense des intérêts des membres et la recherche, donc, de développer des conférences, des formations techniques, de la certification, et faire des publications techniques, et son objectif, c'est de transformer le résidu ultime en ressources.

Donc, j'ai cru, en sachant qu'il n'y avait pas de représentant américain de la SWANA, vous sortir quelques statistiques, là, américaines -- peut-être que vous les avez vues par d'autres représentants. C'est des statistiques qui ont -- juste avant le confinement, j'ai participé à notre événement annuel, qui est WasteCon, qui est un regroupement avec conférences techniques qui a lieu chaque année dans une ville différente, et par quelques conférences, là, je vous ressors des données, quand même, qui datent de 2013, mais -- sur les 347 millions de tonnes générées aux États-Unis, 1,900 lieux d'enfouissement qui représentent 64 % du gisement total du 347 millions de tonnes, 76 installations de *'waste-to-energy'*, 2,300 plateformes de compostage, mais qui représentent quand même seulement 6 % de toutes les matières générées, 586 centres de tri, et pour gérer ces matières-là, il y a quand même 3,350 centres de transbordement, centres de transfert.

Donc, tout simplement des petites statistiques qui peuvent peut-être vous être utiles. Le prix moyen à la tonne enfouie a passé de 43 $ US la tonne en 2010, à une moyenne, sur le -- bien, dans le pays. de 50,6 $ US la tonne, donc, une augmentation moyenne de 2 % par année. On sait qu'ils n'ont pas le même système de redevance et de calcul des coûts à l'élimination, mais c'était pour vous donner quelques statistiques supplémentaires.

Ça va être les seules statistiques que je vais vous partager pour les États-Unis. Je vais plus y aller, après ça, avec des enjeux qui nous touchent partout en Amérique du Nord, donc, États-Unis, Canada et Québec, pour les deux autres thématiques.

Donc, la section québécoise de la SWANA, c'est le seul chapitre francophone sur 47 chapitres, dont 45 anglophones, et un espagnol qui est à Porto Rico. Nous sommes associés à Réseau Environnement, donc, on travaille étroitement avec leur équipe au niveau de la gestion de matières résiduelles, puis on s'occupe, encore là, exclusivement du volet éducation technique en gestion de matières résiduelles, en développant des conférences, formations techniques, et en développant des publications originales et traduites, aussi, parce que notre société-mère, là, qui est à Washington, par la SWANA, développe énormément de contenus, que ce soit sur la santé et sécurité des travailleurs dans l'industrie, sur les lieux d'enfouissement, au niveau des collecteurs, et caetera, il y a des alertes -- par exemple, là, il y a eu un décès causé par un camion de collecte dans les deux dernières semaines, donc, on a des plans d'action pour accompagner les collecteurs partout en Amérique du Nord, surtout quand des catastrophes humaines arrivent à ce sujet.

Les objectifs de la SQ-SWANA, donc, la section québécoise, développer les connaissances dans le secteur des matières résiduelles, soutenir le développement de systèmes intégrés de gestion des matières résiduelles respectueux de l'environnement, et caetera, favoriser une atmosphère de collaboration via la diffusion d'information, formation continue, la recherche -- donc, ce que je vous expliquais.

Les deux thématiques que je voulais vous présenter aujourd'hui, c'est vraiment les besoins en formation technique qu'on relève, mais il y a des enjeux liés aussi à former plus de gens. Donc, par rapport à ça, la SWANA développe du contenu original et des certifications précises -- par exemple, la MOLO, qui est une des plus populaires à travers le continent, qui est *« Manager of Landfill Operations »*.

Nous, comme section québécoise, on n'a pas traduit cette formation-là, parce que c'est plusieurs dizaines de milliers de dollars pour quelques sites d'enfouissement, pour quelques LET, donc, c'est des formations qui ne se donnent qu'en anglais. Nous avons traduit, quand même, *« Gestion intégrée des systèmes de gestion de matières résiduelles »* pour un plus large public, parce qu'on est dans un très petit marché qui est le Québec.

Pourquoi je vous parle de ces certifications-là? C'est que, partout en Amérique du Nord, on voit une obligation d'avoir des travailleurs certifiés et qui suivent ce genre de formation de quatre jours, de trois jours pour certaines, ce qui n'est pas du tout le cas dans notre juridiction, donc, au Québec. C'est des formations qui ne sont pas connues et qui ne sont pas -- qui n'existent pas, non plus, en français, donc, je voulais juste vous le mentionner.

Un peu partout ailleurs sur le continent, on va le voir aussi dans les appels d'offres, comme quoi que, bon, on cherche un opérateur de site, l'opérateur doit être certifié pour opérer, puis ça, c'est un manque, donc -- je vais vous emmener d'autres enjeux aussi. C'est difficile de trouver de la main-d'œuvre qualifiée en gestion de matières résiduelles au Québec, et en plus qu'il y a un manque de formation, il y a comme un déséquilibre, donc, peu importent les stratégies qu'on met en place dans le futur, il va peut-être y avoir à pallier et à faire des liens au niveau formation.

Au niveau du contenu québécois, c'est sûr qu'on ne peut pas nécessairement se baser simplement sur des certifications qui sont développées aux États-Unis, donc, on adapte les contenus, mais on développe aussi beaucoup de contenus, là, pour aider les experts, que ce soit municipaux ou privés, à mieux optimiser les écocentres, à mieux rédiger les documents d'appel d'offres, aussi, à les outiller sur la compréhension des lois et règlements sur la gestion des matières résiduelles, et le dernier point, puis je vais vous en parler un petit peu plus tard, sur la gestion des débris post-sinistres.

Le 15 juin prochain, on fait un premier atelier d'échange avec les -- bien, en fait, un peu tout le monde de l'industrie, pour partager les bonnes pratiques sur la gestion de matières résiduelles municipales dans le cadre de la rédaction et la révision des plans de gestion municipaux, là, au Québec. Donc, c'est un événement qui est une première, là, qu'on est en train d'élaborer.

La participation à ces événements-là, malgré qu'on fait beaucoup de diffusion, est très difficile. Pourquoi? Bon, on est un petit marché, difficulté de développer des programmes structurants. On ne pourrait pas demander à une université de mettre en place un programme de gestion des LET pour

quatre -- peut-être trois ou quatre étudiants, là. Donc, c'est très, très, très difficile de développer du contenu concret.

Sincèrement, ce n'est pas le secteur le plus sexy non plus, si vous me permettez, la gestion de matières résiduelles. On le voit, on -- nous, on embauche -- puis là, je prends mon autre chapeau de consultant en environnement -- des stagiaires de différentes universités à chaque session, puis c'est souvent pas nécessairement le sujet ou le métier qu'ils voulaient faire et qui est le plus intéressant au niveau des études en environnement, donc, on a de la difficulté à attirer les talents, puis quand on attire quelqu'un, bien, il faut le former sur du plus long terme que dans d'autres secteurs d'activités, parce qu'on part souvent de zéro.

Et il y a aussi une grande disparité et/ou un manque de connaissances générales et techniques auprès de beaucoup de gens. On le voit, il y a beaucoup d'élus qui ne comprennent pas le système actuel de gestion de matières résiduelles au Québec, ils ne comprennent pas qu'il y a une redistribution de redevances, qu'il y a -- donc, il y a beaucoup, beaucoup de manque de sensibilisation, encore, il y a beaucoup d'organisations qui travaillent sur ça, mais il y a aussi une grande disparité entre les fonctionnaires d'une municipalité à l'autre, donc, dans ce qu'elle peut faire ou ce qu'elle doit faire.

Il y a beaucoup -- puis là, j'utilise d'*« experts »,* au Québec, puis je vais ramener sur le prochain point, je vais vous en reparler rapidement pourquoi je parle d'*« experts »*, puis il y a de l'intérêt minime pour la formation continue au Québec, ce n'est pas quelque chose de très intéressant quand notre ordre ne l'exige pas. Donc, ça, c'est un autre élément qui peut être un frein pour le futur.

Puis pourquoi je parlais d'*« experts »*, c'est qu'on est dans un marché très jeune. Bon, l'élimination existe depuis toujours, mais tous les autres programmes et toutes les autres initiatives, on est beaucoup dans l'innovation. Donc, innovations technologiques, il y a beaucoup, beaucoup de *'start-ups'*, puis -- ce n'est pas sans enlever rien à personne -- il y a beaucoup de manque de décision sur l'aide à la -- euh... de manque de connaissances sur l'aide à la décision.

Donc, il y a des politiciens qui vont prendre des décisions parce qu'un représentant technique d'une entreprise, qui est l'*« expert »* qu'il rencontre, lui explique que sa technologie est la meilleure. Donc, on a beaucoup de décisions, ici et là, qui peuvent se prendre de cette façon-là, puis -- parce que le système est un peu de cette façon-là. Donc, il manque quand même beaucoup

d'accompagnement technique, là, pour ne pas nécessairement -- d'aller chercher des alliés un petit peu plus -- un peu plus larges que la première personne qui nous présente quelque chose.

Donc, ce que je veux simplement emmener par le côté formation, on travaille très fort, il y a beaucoup d'autres organisations qui travaillent sur ça, mais ne pas oublier l'aspect éducation dans les décisions qui seront prises, parce que c'est ça qui va permettre vraiment d'avoir des résultats, à notre avis.

Donc, voilà pour ça. Le deuxième point que je voulais vous présenter, c'est vraiment sur la gestion des débris post-sinistre. Nous, on a -- en fait, le Québec n'est pas à l'abri des sinistres, des désastres, les changements climatiques vont emmener de plus en plus de sinistres. Il y a des records de quantités de matières qui sont éliminées, année après année, puis on ne sait jamais quand ça va arriver, et dans quelle municipalité ça va arriver.

Donc -- puis ça, c'est sans penser, justement, aux situations qu'on ne voit pas venir, comme Lac-Mégantic, comme la tornade à Gatineau plus récemment. Donc, ces sinistres provoquent des générations d'importantes quantités -- je vais vous présenter des chiffres tout de suite après. Malgré la fréquence des événements, le Québec est peu préparé, les municipalités sont peu préparées, n'ont pas de plan en cas de crise, puis nous, on a travaillé sur un guide basé beaucoup sur ce qui se fait partout aux États-Unis et dans le reste du Canada.

Il y a des juridictions qui l'obligent, d'avoir des plans de gestion, que ce soit étatique, au niveau des états, ou que ce soit plus au niveau municipal, aussi. Donc -- bon, c'est clair qu'il y a probablement plus de catastrophes liées à des tornades, par exemple, dans le Midwest américain qu'au Québec, mais de plus en plus, nous, les inondations génèrent d'énormes quantités de résidus ultimes qui ne devraient pas être des résidus ultimes, mais ça reste quand même ça la situation.

Donc, tous ceux impliqués s'entendent que le nettoyage doit se faire le plus rapidement possible afin d'aider les communautés à entamer le processus de reconstruction et prévenir les problèmes de santé potentiels qui pourraient être liés aux débris laissés sur place. Mais au-delà de ça, je crois que ça nécessite une meilleure gestion des débris. Donc, obligation réglementaire dans plusieurs états américains, et municipal au niveau canadien, développement de plusieurs outils qui a été réalisé par Northern Lights, qui est le chapitre au niveau des prairies au Canada, principalement lieu *[sic]*, aussi, qui ont été très utiles au niveau des feux à Fort McMurray, quand c'est arrivé, qui a fait -- puis je vais vous le présenter, qui a fait qu'il y a eu 70 % des résidus liés à la reconstruction

totale et au nettoyage de Fort McMurray, 70 % ont été recyclés et récupérés au lieu d'être éliminés, comme, habituellement, 100 % est éliminé, au Québec, pour le moment, à part quelques initiatives.

Donc, on a développé un guide à partir de ça, puis ce guide-là permet de fournir des outils nécessaires afin d'amorcer une démarche de planification, informer et sensibiliser les publics, et les élus et fonctionnaires, puis présenter le processus.

Je vous sors quelques statistiques, quelques éléments de ça. Donc, les désastres, il y en a beaucoup. Des inondations, des feux de forêt, des pluies verglaçantes, tornades, séismes, glissements de terrain, principalement ça qui va nous toucher, mais comme on l'a vu à Lac-Mégantic, il peut y avoir des déraillements, explosions, dispersions de produits chimiques, et caetera. Les conflits humains nous touchent beaucoup moins au Québec, mais quand il y a des grabuges dans la rue comme il y a eu tout récemment, bien, ça génère, encore là, des débris.

LE PRÉSIDENT :

Monsieur Fortin, il vous reste trois minutes.

M. FRANCIS FORTIN :

Parfait. Bon. Au Québec, la *Loi sur les compétences municipales* confère la compétence générale en matière de sécurité aux municipalités. La *Loi sur la sécurité civile* en précise les responsabilités. Les municipalités doivent par la suite mettre en place des éléments. Le seul élément qui encadre la gestion des déchets par rapport aux sinistres, c'est de procéder à l'enlèvement des débris et des décombres, et au nettoyage des lieux. Donc, il n'y a pas de mesures de recyclage.

Donc, je vais passer rapidement là-dessus, pour vous parler de statistiques. Par exemple, la ville de Canmore, les inondations de 2013, la ville de Canmore génère 12 000 tonnes de déchets par année. Donc, la seule inondation a généré 40 000 tonnes de débris en 16 jours, qui ont été 100 % éliminés. Donc, on a beau mettre en place tous les meilleurs systèmes et les plans de gestion de matières résiduelles dans une municipalité, ça représente plus de trois années d'efforts en 16 jours. Donc, c'est cet élément-là que je voulais principalement vous préciser aujourd'hui, de ne pas négliger les sinistres, qui représentent d'énormes quantités de résidus ultimes s'ils ne sont pas gérés. De façon bien gérée, bien, on peut aller chercher facilement des taux de récupération importants de ces matières-là.

Donc, voilà, rapidement, là, les inondations, là, des végétaux, débris de construction, des RDD, des appareils ménagers qui sont très polluants, il y a différentes techniques pour le faire.

Puis deux éléments que je voulais parler en conclusion : la notion de traçabilité, lorsqu'il y a des sinistres, pour être sûr que ça s'en va dans des lieux autorisés, parce que c'est très facile, lorsqu'on est en panique, d'envoyer ça un peu partout; et ne pas oublier les sacs de sable, qui est une matière extrêmement facile à gérer, mais qui peuvent représenter, encore là, des milliers de tonnes, lorsqu'on en a besoin *(coupure sonore)*. Donc, c'était l'élément que je voulais vous mentionner aujourd'hui. Puis je vous laisse la citation, qui précise, là, qu'après l'incendie de Fort McMurray, on parlait de 70 % des débris reçus qui ont été recyclés, parce qu'il y avait un plan, puis que ça avait été pensé d'avance. Donc, voilà.

LE PRÉSIDENT :

Merci, Monsieur Fortin. J'aurai juste une petite question avant de céder la parole à mes collègues. Vous avez beaucoup insisté sur le plan de gestion des débris après sinistre. Vous y êtes revenu à la toute fin, encore, de votre présentation. Opérationnellement, là, qu'est-ce que vous -- qu'est-ce que vous souhaitez?

M. FRANCIS FORTIN :

En fait, ce serait principalement d'avoir un cadre réglementaire qui -- mais, en fait, qui encadre la gestion d'avance, pour qu'on soit préparé lorsqu'il y a des sinistres un peu partout au Québec, puis qui fait qu'on réduit aussi ce volet-là au niveau de l'élimination, donc, qu'on -- en fait, ce que je veux dire, c'est qu'on souhaite faire dévier de l'élimination le maximum de matières, puis quand vient le temps d'un sinistre, on ne se préoccupe plus du tout de ce volet-là. Donc, si on est capable d'encadrer ce volet-là, pour qu'on se soucie de cet élément-là autant que dans toutes les autres sphères de notre vie, c'est vraiment -- c'est là que je voudrais qu'on y réfléchisse, là.

LE PRÉSIDENT :

C'est très clair. Merci. Madame Forget?

LA COMMISSAIRE :

Merci pour la présentation. Écoutez, je voulais savoir, au niveau des problèmes de main-d'œuvre dont vous avez -- avez-vous des données plus -- bien, disons des statistiques pour mieux exposer la problématique à la commission? Par exemple, est-ce qu'il y a des employés qui manquent au secteur qui l'empêchent de se développer? Est-ce qu'il y a un problème de rétention du personnel? Tu sais, au sens plus large, là, au Québec, en quoi le manque de formation est-il un problème au développement ou à la qualité du secteur? Est-ce qu'il y a des données à ce niveau-là que vous pourriez déposer à la commission?

M. FRANCIS FORTIN :

Oui, en fait, je pourrais -- EnviroCompétences, qui est le comité sectoriel de la main-d'oeuvre, a fait une étude l'année dernière sur la main-d'oeuvre dans les centres de tri, par exemple, de construction, rénovation, démolition, et de la collecte sélective, avec différents enjeux. Et le pourquoi est même chiffré. Cette étude-là est publique. Je pourrais vous l'envoyer. Je ne sais pas si EnviroCompétences fait aussi -- fait partie des consultations, là, mais ça pourrait vraiment être de ce côté-là, et non de notre association, on n'a pas de statistiques au sein de notre association.

LA COMMISSAIRE :

Peut-être juste déposer, là, l'information que vous détenez à Monsieur Perreault, puis on pourra peut-être demander directement à EnviroCompétences si on veut d'autres informations.

Et au niveau de la formation, je voulais juste savoir, le besoin de formation le plus important, il est où? Est-ce qu'on parle des municipalités? Est-ce qu'elles font elles-mêmes, notamment, leur PGMR? C'est au niveau des municipalités, au niveau de comprendre, aussi, le système québécois à l'ensemble des professionnels? Donc, pour être un peu plus précis, il est où le problème en priorité, là, disons les priorités de formation, elles sont où?

M. FRANCIS FORTIN :

En fait, pour tous les sujets, c'est qu'en gestion de matières résiduelles, on touche beaucoup de départements. Que ce soit dans les villes ou que ce soit ailleurs, souvent, on va avoir un conseiller en environnement qui va être formé, mais les gens aux finances, les gens en administration, à

l'opération, aux travaux publics, n'ont pas cette formation-là, mais tout le monde a son mot à dire ou a un droit de décision sur certains éléments. Donc, c'est un manque de formation plus large auprès de l'ensemble des parties prenantes à la gestion de matières résiduelles. C'est ça qu'on identifie.

Parce que là, il va y avoir des décisions qui vont se prendre de façon environnementale sur de la performance, mais ça ne passera pas au niveau économique, parce que les gens, au niveau économique ou financier, n'ont pas eu de formation, ils ne comprennent pas les bases du système, et vice versa. Donc, c'est vraiment -- je ne sais pas si je suis clair, là, mais c'est dans tout son ensemble qu'il manque un -- qu'on voit, là, qu'il manque cette formation -- de la sensibilisation, de la formation, des...

LA COMMISSAIRE :

Je comprends, mais pour être plus -- c'est juste que nous, si on veut savoir la problématique, il faut nous orienter vers quelque chose de plus précis. Je veux dire, d'un point de vue solution, c'est quoi? C'est qu'il y ait une personne qui soit plus dédiée à ça dans une municipalité pour s'assurer que tout le monde...? Je ne le sais pas, là, mais c'est juste de préciser, dans le fond, le commentaire sur la formation.

M. FRANCIS FORTIN :

Oui, puis même si, dans les municipalités, il y a des gens qui sont dédiés au PGMR, par exemple, au plan de gestion des matières résiduelles, ça ne veut pas dire que c'est ces gens-là qui vont prendre les décisions non plus. Puis si les gens qui prennent les décisions n'ont pas une base d'information pour prendre les bonnes décisions, il va y avoir des décisions politiques, par exemple, qui vont se prendre, sans -- dans d'autres orientations qu'il aurait fallu. Ça fait que -- c'est sûr que ce n'est pas...

LA COMMISSAIRE :

Donc, les décideurs? Donc, il y a un problème au niveau des décideurs?

M. FRANCIS FORTIN :

Oui, beaucoup au niveau des décideurs, puis je voulais surtout vous amener que s'il y a des orientations et des -- souvent, les gens font des modifications réglementaires sans nécessairement appuyer et encadrer les gens dans ces décisions-là, en fournissant les bonnes informations, puis vraiment plus les subtilités qui sont liées autour de cette -- c'est bien beau de dire une information et de la partager avec des lignes directrices, mais c'est tout ce qui est autour qui peut être intéressant à partager. C'était surtout ça que je voulais mettre la lumière sur ça.

LA COMMISSAIRE :

Merci.

LE PRÉSIDENT :

Merci beaucoup, Monsieur Fortin. La commission va arrêter pour quelques minutes, une très petite pause, et nous allons reprendre nos travaux à 15 h 30. Merci.

PAUSE DE QUELQUES MINUTES
REPRISE DE L'AUDIENCE

M. REDA KABBAJ
Dr. NICKOLAS J. THEMELIS
GLOBAL WASTE-TO-ENERGY RESEARCH AND TECHNOLOGY COUNCIL (WtERT)

LE PRÉSIDENT :

Mesdames, Messieurs, nous allons poursuivre la deuxième journée des ateliers avec nos dernières conférences. La première sera donnée par Monsieur Reda Kabbaj et par Docteur Nickolas Themelis. Permettez-moi de les présenter.

Monsieur Kabbaj est associé de recherche au Earth Engineering Center de l'Université de Columbia, et il est consultant. Il a co-fondé Concordia Clean Technical Inc., une entreprise canadienne de gestion holistique des déchets et de production d'énergie renouvelable. Il est le président de Waste-to-Energy Research and Technology Canada, hébergé à l'Université Concordia à Montréal, dans le but de développer le chapitre en collaboration avec les universités, les secteurs privés et publics, pour atteindre la durabilité dans la gestion des déchets. Monsieur Kabbaj est diplômé de l'IAE School of Management de Clermont-Ferrand, en France, et a terminé ses cours à l'Université d'Oklahoma aux États-Unis.

Quant à Docteur Nickolas Themelis, il dirige des recherches supérieures dans le domaine de la gestion durable des déchets, qui comprend des moyens de réduire l'utilisation des matériaux, le recyclage, le compostage, la combustion avec récupération d'énergie, et la mise en décharge sanitaire de matériaux non recyclables et incombustibles.

À l'Université de Columbia, il a été président de l'École des mines, et premier directeur du nouveau département de génie de la terre et de l'environnement. Il est le fondateur du Waste-to-Energy Research and Technology Council. Le docteur Themelis est titulaire d'un baccalauréat en génie chimique, et d'un doctorat en métallurgie chimique de l'Université McGill.

So, we are listening to you. You can give your presentation now, thank you.

M. REDA KABBAJ :

Thank you so much. Good afternoon. Thank you so much for the opportunity to present – okay. So -- je vous remercie pour l'opportunité de participer à l'audience publique, et je vais faire la présentation en français.

Donc, c'est quoi le WtERT? Donc, le Waste-to-Energy Research and Technology Council a été fondé en 2002 par le Earth Engineering Center de l'Université Columbia à New York, et l'Energy Recovery Council, qui est une association américaine des entreprises de valorisation énergétique des déchets aux États-Unis.

Donc, le Earth Engineering Center est membre de Earth Institute à l'Université de Columbia. Elle réunit les ingénieurs, les économistes et les politologues afin de trouver une solution aux grands problèmes environnementaux.

Au fil des années, des universités et des organisations de plusieurs pays ont créé WtERT, et ils sont membres maintenant au sein du Global WtERT Council. Et au Canada, donc, j'ai créé WtERT-Canada, qui est abrité à l'Université Concordia à Montréal.

Donc, la mission de WtERT est d'identifier les meilleures technologies disponibles pour la récupération des matériaux et de l'énergie à partir de tous les types de déchets, et d'aider les nations à faire progresser la gestion durable des déchets et améliorer la santé publique et la qualité de vie, en tenant compte des caractéristiques locales. Et, bien sûr, diffuser ces informations au moyen de publications, des pages Web en différentes langues, du site de WtERT, et à travers des séminaires.

Donc, on est présent à peu près dans le monde entier, cinq continents, avec des représentations dans 17 nations dans le monde, à travers 23 *'academic'* et *'research institute'* partenaires. Et on parle 14 langues.

Donc, il y a une façon rationnelle de gérer les déchets. Il y a le recyclage qui peut -- c'est des déchets séparés à la source qui peuvent être utilisés comme matériau, et il faut une nécessité de trouver des débouchés afin de tirer profit des matières recyclables ou compostées pour le conditionnement de ça.

Et le post-recyclage, c'est les matières restantes après tout recyclage possible et pratique. Et d'après les études de Columbia, après plusieurs années de recherche et de développement, il existe seulement deux façons de traiter les déchets post-recyclage. C'est les plus mentionnées dans les recherches. C'est soit par la mise en décharge sanitaire, ou bien le traitement thermique, pour récupérer l'énergie, les métaux et les minerais, qui est communément appelée *« waste-to-energy »*.

Donc, selon la hiérarchie de Earth Engineering Center, donc, bien sûr, il y a la priorité à la réduction des déchets à la source et le recyclage, l'*'anaerobic digestion'* et l'*'aerobic composting'*. Bien sûr, ces éléments devraient être séparés à la source. Et ce qu'on va focaliser le plus, sur le *'post-recycling'*. C'est qu'il faut donner priorité à la valorisation énergétique des déchets, et après, l'enfouissement. Et il y a différentes formes d'enfouissement, soit avec la valorisation et le captage du méthane, ou bien le brûler, ou bien sans capture du méthane. Et enfin, qui est le plus malheureux, c'est des *'open landfills'*.

Donc, quel pourcentage des déchets qui peuvent être recyclés pour une ville? Donc, on a fait une étude dans la ville de Milan, en Italie. C'est un bon exemple de recyclage intensif et de

compostage, avec une population de 1,35 million d'habitants, avec une population -- 80 % de population qui vit dans des immeubles de grandes hauteurs.

La ville recueille cinq flux distincts de déchets. Donc, il y a trois flux de matières recyclables -- papier, verre, métaux, et certains types de plastiques -- un quatrième flux de matières organiques compostables, et le cinquième flux, de déchets post-recyclage, qui est envoyé dans une unité de valorisation énergétique, Silla 2, située dans la ville.

Donc, la Ville de Milan fournit cinq bacs de collecte à chaque bâtiment à plusieurs étages, et aussi aux maisons individuelles. La ville, aussi, fournit également, à chaque ménage, un petit conteneur couvert pour les déchets alimentaires, qui est ensuite acheminé par les résidents vers le bac général du compostable dans leur immeuble. Le sac compostable, il peut être acheté dans les supermarchés, et coûte aux alentours de 1 centime euro par sac.

Donc, voici comment la collecte des déchets triés -- donc, il y a différentes couleurs. Il y a des sacs transparentes, déchets qui sont déchets non triés, et on voit la fréquence des collectes, qui est collecte de deux fois par semaine. Les sacs jaunes, qui représentent les plastiques et le métal, il est collecté une fois par semaine. Et les conteneurs blancs, qui -- pour les papiers, avec une fréquence de collecte d'une fois par semaine. Et les conteneurs verts, qui est uniquement pour le verre, et les conteneurs marrons. Et voici le petit bac marron qui est -- que les résidents, en fait, ont dans leur propre maison. Et la collecte est deux fois par semaine.

Donc, la réglementation du recyclage à Milan est fortement renforcée par des inspections périodiques par la Ville afin de s'assurer que les résidents font bien le -- séparent les déchets d'une façon exacte. Et les infractions sont lourdement sanctionnées. Les amendes peuvent aller jusqu'à 200 $ sur un immeuble, qui, à la fin de l'année, est réparti entre les ménages habitant un immeuble.

À l'heure actuelle, l'infrastructure de recyclage de la Ville de Milan et la participation des citoyens ont abouti à l'un des meilleurs systèmes de gestion des déchets en Europe. Les résultats de ce recyclage intensif sont présentés dans le tableau suivant. Donc, on regarde que les -- voici le taux des matières recyclées, avec leurs pourcentages. Et on constate que, après, le total des matières recyclées et compostées représente 40 %, et le reste des matières résiduelles sont acheminées dans une unité de valorisation des déchets en énergie, *'waste-to-energy'*, et qui représente aux alentours de 59 %. L'idée, c'est, après tous les efforts de séparation à la source et de recyclage, la Ville de Milan arrive à peine à la moitié de recyclage de ses matières.

Donc, les avantages du *'waste-to-energy'* par rapport à la mise en décharge, c'est la destruction des agents pathogènes, la conservation des terres, en particulier près des villes, 1 mètre carré par 10 tonnes, et avec une réduction du volume des déchets aux alentours de 90 %. La production d'électricité renouvelable et d'énergie thermique, la réduction des émissions des gaz à effet de serre, jusqu'à 1 tonne de CO_2 par tonne de *'municipal solid waste'* allant à *'waste-to-energy'*, et la récupération des métaux et minéraux des cendres après traitement d'une unité *'waste-to-energy'*.

Donc, une étude de Columbia, en fait, démontre que la majorité des unités de valorisation des déchets se trouve à proximité des centres-villes. Et selon l'étude, la moyenne, la distance moyenne, est aux alentours de cinq kilomètres. Donc, les pointillés représentent des unités de *'waste-to-energy'*.

Donc, réduire la distance entre le générateur des matières résiduelles et le centre de traitement est important afin de réduire le transport. Donc, selon l'étude de Columbia sur la ville de New York, si la ville devait construire une usine *'waste-to-energy'*, l'étude a fait montrer que la ville pourrait économiser 11 millions de *'miles'* de transport des matières résiduelles, qui permettra de réduire, bien sûr, les effets des GES, la réduction des accidents, et, bien sûr, la réduction de consommation du carburant. Éventuellement -- il est important de décarboniser, éventuellement, dans le futur, les transports des matières résiduelles, soit par les camions électriques, ou bien à travers d'autres énergies, comme l'hydrogène.

Donc, si le *'waste-to-energy'* est de loin préférable aux sites d'enfouissement, pourquoi plus de 80 % des déchets urbains mondiaux sont toujours enfouis dans les décharges? La première raison est donc que la mise en décharge des déchets ne coûte pratiquement rien. C'est un coût aux alentours de 30 à 40 $, selon la capture, éventuellement, du biogaz, et aussi en raison de l'investissement en capital initial élevé du *'waste-to-energy'*, qui nécessite des frais d'entrée de 60 $ la tonne, lorsque le prix de l'électricité au réseau est de 60 $ le mégawattheure, et de 40 $ la tonne lorsque le prix d'électricité est de 100 $ ou plus.

Les coûts ci-dessus, bien sûr, ne comprennent pas les coûts environnementaux externes de la mise en décharge.

La deuxième raison étant qu'il y a une désinformation continue du grand public sur les coûts environnementaux externes de la mise en décharge. Il y a des pertes de terrains estimées à environ 200 millions de dollars -- 400 000 mètres carrés par an aux États-Unis.

Les émissions de gaz à effet de serre des décharges estimées par Docteurs Bourtsalas et Themelis à 342 millions de tonnes métriques de CO_2 pour les États-Unis. Les émissions de dioxines et de mercure lors d'incendies involontaires de sites d'enfouissement. Il y a à peu près 1 000 feux de sites d'enfouissement par an aux États-Unis. La mise en décharge sanitaire est une industrie très rentable, avec une capacité de conception restante, aux États-Unis, qui représente 12 milliards de tonnes, avec un potentiel de 600 milliards de dollars.

Il y a énormément de progrès réalisés par l'Union européenne. Donc, l'Union européenne a mis en place les directives qui devraient éliminer progressivement la mise en décharge dans la première moitié de ce siècle. Certains pays ont déjà éliminé la mise en décharge -- par exemple, la Suède et la Suisse. Donc, ce graphe démontre, au fait, le taux, par exemple, des sites d'enfouissement, de 64 %, jusqu'à 25, l'augmentation du *'waste-to-energy'*, 14 % à 28 %, d'une durée de 1995 jusqu'à 2004. Et, bien sûr, une augmentation du recyclage et du compostage.

Au cours des 15 dernières années, la Chine est devenue un acteur majeur de l'industrie mondiale des *'waste-to-energy'*. La Chine a démontré qu'il était possible de réduire le coût en capital des installations, grâce à la recherche et développement industrielle et académique, grâce à la croissance rapide de l'industrie, parce qu'ils construisent plusieurs usines par an, aux alentours de 30, au lieu d'en construire une à la fois, avec aussi une fabrication à la chaîne d'assemblage d'équipement *'waste-to-energy'*, et une politique nationale favorable, avec un crédit de 30 $ le mégawattheure au *'waste-to-energy'*.

Aussi selon une étude de Columbia, les usines récentes construites en Chine ont un CAPEX beaucoup plus bas et compétitif. C'est une étude de 25 unités en Europe et aux États-Unis. Le CAPEX des unités coûte environ 880 $ la tonne, alors qu'en moyenne, en Chine, donc, sur une étude de 21 unités, coûte environ 230 $ la tonne.

Donc, ce graphe représente la ville de Pékin, auquel un photographe chinois, Wang Juliang, a fait un reportage concernant que la -- il a photographié des décharges aux alentours de la ville de Pékin, et il a fait les pointillés en jaune pour -- sur le lieu, il a constaté que la ville de Pékin est assiégée par les décharges. Et il a dit -- il représente à peu près 500 décharges qui sont aux alentours de la ville de Pékin. Et, de ce fait, la croissance de l'industrie *'waste-to-energy'* en Chine représente 470 usines actuelles, et 100 usines sont en cours de construction. Et de ce fait, la Chine dépasse les unités qui se trouvent en Europe et aux États-Unis en ensemble.

La baisse du CAPEX offerte par les entreprises chinoises rend la technologie *'waste-to-energy'* plus compétitive par rapport aux décharges. À mesure que l'utilisation du *'waste-to-energy'* se développe en Asie, il obligera les pays développés -- par exemple, les États-Unis, le Canada et l'Australie -- à réévaluer le *'waste-to-energy'* par rapport à la mise en décharge sanitaire, en particulier en ce qui concerne les émissions des gaz à effet de serre.

Les villes des pays en développement peuvent sauter l'étape de mise en décharge sanitaire et passer directement au *'waste-to-energy'* -- à titre d'exemple, le Kazakhstan, l'Éthiopie, le Maroc, ou le Vietnam.

Par exemple, la ville d'Addis-Abeba en Éthiopie est équipée par une unité *'waste-to-energy'*, grâce à la technologie chinoise, qui est devenue, bien sûr, comme j'ai précisé auparavant, compétitive, et que la ville a pu réussir à passer d'une décharge sauvage à une prouesse technologique très importante pour la rec.

LE PRÉSIDENT :

Docteur Themelis *[sic]*, il vous reste trois minutes.

M. REDA KABBAJ :

OK. Donc, *'waste-to-energy'* -- waste to energy, it's not incineration. So, the term *"incineration"* is misleading, and should not be used for WTE, *"waste-to-energy,"* a very specific...

Dr. NICKOLAS J. THEMELIS :

Reda, okay, I'll take over now. With English, it's a bit easier for me. Yes. So, we like the term *"récupération d'énergie et matériaux,"* REM, for *'waste-to-energy'* is -- plus français.

M. REDA KABBAJ :

Okay. It's fine. So, waste-to-energy is not incineration. So, the term *"incineration"* is misleading and should not be used for *"waste-to-energy,"* a very sophisticated technology for energy and metal recovery for municipal solid waste. It misleads the public that it consists of burning waste only.

En français, on suggère éventuellement de remplacer le terme *« incinération »*, ou *« incinérateur »*, à travers une dénomination qui est *« récupération d'énergie et matériaux »*, REM.

Donc -- waste-to-energy -- et REM -- consists of several processes that transform waste into electricity/heat, and recover metals and minerals for civil works.

Donc, c'est pareil qu'on a déjà fait la même chose avec l'EPA, l'agence américaine, qui utilisait, auparavant, *« incineration »*. Et ils ont changé le terme *« incineration »* vers le *« waste-to-energy »*.

Donc -- waste-to-energy is better for climate than landfills. So, since 2004, Columbia University has carried out a bi-annual survey of waste management in the 50 states in the US. The results of this study, you know, have been used by the EPA, the Environmental Protection Agency, in computing the greenhouse effects of managing municipal solid waste in the US. So, basically, the EPA uses our data for their own studies.

And also -- en 2011, la Banque interaméricaine de développement a engagé le Earth Engineering Center pour élaborer un guide sur la gestion durable des déchets qui guide les villes d'Amérique latine et des Caraïbes sur la manière de sélectionner les meilleures technologies de gestion des déchets. Et ce guide est disponible sur Google, libre d'accès et qui peut être téléchargé gratuitement, et il est maintenant traduit en portugais, espagnol et grec. Une version de chinois et -- du mandarin et en français est en cours de traduction.

LE PRÉSIDENT :

Votre conclusion, Monsieur Kabbaj?

M. REDA KABBAJ :

Je vous remercie. Donc -- I am going to now let -- Dr. Themelis, if you want to respond to any questions from the Commission.

LE PRÉSIDENT :

Thank you.

Dr. NICKOLAS J. THEMELIS :

Thank you very much, Reda.

LE PRÉSIDENT :

Mrs. Forget.

LA COMMISSAIRE :

Thank you for the presentation. Do you have any data on the GHG savings between a landfill, or a set of landfills, versus a set of waste-to-energy infrastructure?

Dr. NICKOLAS J. THEMELIS :

Yes. We can send you this. We've made, recently, a detailed study of the landfills in the US. There are over 1,000 landfills, and they landfill something like 320 million tons. So, it's very easy to calculate the methane emissions that escape the landfills. They try to collect some, and they collect about 40% of the methane gas. The rest is going to the atmosphere. And methane has a potency 25 times that of carbon dioxide. So, if you let that and you compare with the carbon dioxide that is emitted from the power plants that use waste as a fuel, the difference is about, for the US, if all the materials that go to landfills were going to waste-to-energy, they would save something like 300 million tons of CO_2, and about 5% of the US energy-related CO_2. That's documented. I can send you the exact numbers.

LA COMMISSAIRE :

It would be nice to have the study. So, you can email with Mr. Perreault.

Second question, just -- the difference in price between the Chinese and the European installation, so, what's the main reason? Is it like the design itself, or the cost of labour? So, why is it so different?

Dr. NICKOLAS J. THEMELIS :

Yes. A large part of that is the cost of labour. Another part is, if you build only one plant at a time, like, for instance, for Durham County in Ontario, Covanta built one plant, and it took years and years of studies and changes, and so on. That increases the cost a lot. The Chinese have been able to build many plants, so they can do that as a mass -- mass manufacture. Like, for instance, Ford made cars, it was easier to make many cars than to make one. So, within...

LA COMMISSAIRE :

Yes. Economies of scale.

Dr. NICKOLAS J. THEMELIS :

Yes. It is the matter -- also, they have fabrication plants to make the equipment for waste-to-energy plants. And if they were to build in Canada, of course, it would not be the same as in China, but there would be about -- we estimate about two-thirds of the American or European costs so far. And this has been shown when they went and they did it in India, for instance, in some plants, and Ethiopia was mentioned by Mr. Reda. So, it's not going to be the price in China, but it's going to be something between the Chinese price and the European and American prices.

LA COMMISSAIRE :

And a small but maybe difficult-to-answer questions -- I just want to see if the Earth Institute got interested into this -- is how about waste exportation? So, what's this – because, if they are producing waste-to-energy, are they importing waste like we can see in some other areas where they do that, and is Canada a waste exporter to China? Is US a waste exporter to China, or other places where they have incinerators? So, is it creating a demand for waste that could have been diverted otherwise?

Dr. NICKOLAS J. THEMELIS :

There is no export of US or Canadian municipal solid waste, but a lot of recyclables ended up in China because they thought they were going to make plastics, and so on, and it has not worked out. And China has now prohibited the importation of plastic waste. But solid waste, no, there is no

exportation at all. In Europe, there is a bit between Holland and England, and so on. There was capacity in one country, and there was a need for capacity in another country. But the best is to avoid long-term transportation of waste.

LA COMMISSAIRE :

So, there is no market, really, for exporting -- like apart from China, is there any other markets where people are sending their waste outside their country, just not to handle it?

Dr. NICKOLAS J. THEMELIS :

No. The only municipal solid waste is exchanged in the European Union. Some. There is no importation of waste in China either. Not municipal solid waste. They stopped even the plastic recyclables. They were called *"recyclables,"* but a lot of them were not recyclables. So China stopped that.

LA COMMISSAIRE :

Thank you.

LE PRÉSIDENT :

Dans une de vos planches, Monsieur Kabbaj, vous avez, à partir de la recherche réalisée à Milan, vous proposez de réduire la distance entre le générateur de matières résiduelles et le centre de traitement, dans une optique de réduction du transport, et par la force des choses, dans la réduction des coûts. Qu'est-ce qu'il en est de la cohabitation entre des personnes -- ou des difficultés de cohabitation qui ont été souvent soulevées, entre les personnes qui résident proche des centres de traitement ou des lieux d'enfouissement, alors que là, on irait vers une approche qui réduirait la distance entre les deux?

Dr. NICKOLAS J. THEMELIS :

Okay, Reda, if I may answer this...

M. REDA KABBAJ :

Yes. Parce que Docteur Themelis a été présent à la ville, et il a vu par lui-même, en fait, l'étude. Donc, je lui laisse la parole.

LE PRÉSIDENT :

Do you want me to translate, or did you understand?

Dr. NICKOLAS J. THEMELIS :

No, no. I understood that. I understood. My French is good to understand, but not to speak so well. I need more practice.

So, anyway, no, there is no problem in locating these plants as close to the source as practically possible. If you go to Vienna, for instance, one of the sightseeing places is a waste-to-energy plant. It's right in the city. People go, and actually, they pay 10 euro to go to the top of the stack. So, there is no problem to locate them, and you should locate them as close as you can, because, when you use landfills, the landfills have to go out of the city, and then you need to change from the small trucks to big long-distance trucks, the waste. You need transfer stations. That has to be avoided, because that's a problem -- creates more emissions, more -- more trouble. It's better for the collection trucks -- I'm talking about the small trucks that collect the waste in Québec and in Montréal -- to go directly to the waste-to-energy plant.

LE PRÉSIDENT :

Thank you. Mr. Renaud?

LE COMMISSAIRE :

I have only one small question. You are probably aware that, in Québec, we produce electricity with hydropower. Considering that fact, would a waste-to-energy plant in Québec be economically logical, or be environmentally logical, even if we don't need the electricity, or we don't want to produce electricity from waste?

Dr. NICKOLAS J. THEMELIS :

Thank you. Environmentally, it would be better. Economically, the benefit is less, because the cost of power in Québec is lower. It's better to have such plants where the power is more expensive. But from an environmental problem, they are better than landfilling. So, you know, which means that somebody has to pay some extra more money for the landfill, instead of -- let's say this: If you go to a landfill, it costs $40. You may have to pay $60, because the environmental benefits.

LE COMMISSAIRE :

From a greenhouse-gas point of view, the calculations you've made for greenhouse gas, would that hold true if we were to build a waste-to-energy plant in Québec?

Dr. NICKOLAS J. THEMELIS :

Yes, it would be, because the comparison there is not made between waste-to-energy plants and hydroelectric plants, which are, of course, superior, but between waste-to-energy plants and landfills. It would eliminate landfill, minimize the landfilling. And that's the problem. Thank you.

LE COMMISSAIRE :

Thank you.

LE PRÉSIDENT :

Alors, merci beaucoup, Docteur Themelis et Monsieur Kabbaj.

Mme SOKO MADE
VILLE DE SAN FRANCISCO

LE PRÉSIDENT :

J'invite maintenant notre dernière conférencière, Madame Soko Made. Alors, elle a plus de 15 ans d'expérience dans le domaine du zéro-déchet. Elle est la coordonnatrice principale du gouvernement municipal pour le zéro-déchet au ministère de l'Environnement de San Francisco, où elle joue un rôle dans le secteur des administrations municipales pour accroître la sensibilisation et la conformité aux ordonnances et réglementations environnementales de la Ville. Madame Made participe à plusieurs programmes zéro-déchets, notamment la promotion de la réutilisation des matériaux excédentaires appartenant à la Ville, via son système d'échange en ligne, la mise en oeuvre de programmes de recyclage et de compostage pour les services municipaux, et l'élaboration des spécifications de contrats qui soutiennent la production et la consommation responsable.

So, it's a very brief introduce *[sic]* for your presentation. So, we are listening to you.

Mme SOKO MADE :

Merci beaucoup, et bonjour. Again, I am Soko Made, and I am the City Government Zero-Waste Senior Coordinator at the Department of the Environment. And I am going to share my presentation. So, one second, please. Okay.

I am very honoured to be here with you all today to share our zero-waste journey with you. A little bit about San Francisco. We are located in Northern California. It is just 47 square miles, about 122 square kilometres, has a population of over 820,000. It is one of the densest cities in the United States. It is also a very diverse city, where almost half of the population speaks another language, other than English, and has an environmentally-aware population, and progressive policymakers.

So, like I said, I work at the Department of the Environment, and our mission is to provide solutions that advance climate protection and enhance the quality of life for all San Franciscans.

I want to put zero waste in the context of San Francisco's climate action strategy. San Francisco is meeting the challenge of climate change with leading policies, programs, and partnerships. Our strategy is using 0, 80, 100, and roots, and this formula is for us to reach our

greenhouse-gas emission reduction goals by 2025. So, zero waste, 80% sustainable trips, 100% renewable energy, roots, through the application of compost, resulting in healthy soils, plant roots, and carbon sequestration.

In terms of zero waste, we adopted this goal in 2003. It was an aspirational nation-leading goal. It recognized environmental urgency and catalyzed action. Zero waste is often characterized as sending no material to landfill or incineration. But we know that it's much more than that. It is rooted in the principle of highest and best use.

We have a long history of resource recovery, dating back to over a century ago, where immigrant communities called scavengers collected and resold materials such as glass bottles and wood for reuse, and then, materials such as textiles, metal and paper were recycled. Today, we only have one hauler, called Recology, that is permitted to collect and transport residential and commercial refuse in the City. We also have a system pay-as-you-throw, where residences and businesses are charged for the collection of the material, based on the volume of materials that they are discarding.

So, our zero-waste strategy is to establish convenient source-separation programs, conduct extensive outreach and education, provide incentives, and adopt policies and enforce.

So, our program started back in 1999, where we piloted a series of recycling and composting collection programs with Recology. These pilots resulted in rolling out, citywide, our signature three-stream collection, also known as the Fantastic Three: Blue for all recyclables, green for all compostables, and then, black for just a few residual trash items. And, again, this program is available citywide, so, all businesses, apartments, single-family homes, city facilities, and even at events, they have all three bins.

So, what is recyclable in San Francisco? We have a Kurman Gunt *(phonetic)* system, where we collect paper, bottles, metal, including plastic, and then, actually some soft plastic, although we have stopped collecting it for the time being.

And then, the material is taken to Recycle Central, where it is separated by both people and machines into separate commodities. Then, these materials are either baled and shipped off to different markets both nationally and internationally.

And as the previous presenter said, we know that the "*National Sword"* came out and banned plastics, particularly -- they banned certain bales because there was a higher percentage of contamination, and because of that, our facility went through an $11 million upgrade and expansion, and this resulted in additional recovery of material for us. So, cleaner material, and separated our plastics from our paper lines.

And then, moving on to compost, so, all food scraps, yard waste, paper, food containers and certified compostable products are accepted. Actually, having compostable plastics in our stream has increased participation from all of our sectors, especially the food service industry and multi-family dwellings.

So, I just want to show that, particularly for like our apartments, we provide them with kitchen pails to collect their food scraps and other types of compostables. Now, they don't have to use compostable plastics. They can use paper -- either paper bags or newspaper, but those who want to use a liner, we are -- not on -- well, yes, it's in force, but they actually have to use compostable plastics, and it has to be third-party certified. So, the certification we use in North America is BPI certification, because it meets scientific composting standards.

So, this is a picture of one of our composting facilities. And after about 45 to 60 days, this is the finished product. So, everything that goes in our green bin goes to the composting facility, and this is the finished product, which is actually used on vineyards and applied to crops. And, as you know, composting reduces the use of nitrogen fertilizers, it helps to retain water, and helps prevent erosion. The soils can store the carbon captured by the plants from the atmosphere or by building up soil organic matter, which also has benefits for crop production.

And then, we have a few residual items that are still collected in our trash stream. And because we are covering, you know, more recyclables and compostables, really, the black bin is the smaller bin. So, these items are taken to a transfer station, and then transferred to the landfill.

So, the keys to our success can be attributed to five factors: convenience, partnerships, incentives, education, and policy. I'll start with convenience.

Again, we have a simple-to-understand, three-stream collection citywide, blue for recycling, green for composting, and black for trash.

The next is partnerships. We have really good working relationships with all of our partners, including department heads, refuse haulers, consultants, property managers, policymakers and community leaders.

Third is incentives. As I mentioned earlier, we have a pay-as-you-throw system, and through our rate mechanism, we are actually now able to provide savings for properties that do more recycling and composting. For example, a property that has more recycling and composting service will see bigger savings than a property that just has landfill service. And, of course, there are environmental incentives. Many people are motivated to participate in our programs knowing they will help protect nature by doing so.

Next is education. As I said, we have a diverse population, so, as much as we can, we do in-person, and then, in-language education. Now, because of COVID, we don't go out as much, but we have pivoted to virtual presentations, and again, we try to have them be in-language as much as possible.

We have done, in the past, door-to-door outreach. We actually have a program called Environment Now, and there are grassroots teams that go out into communities to educate people about our zero-waste program.

We're also in schools. We have a school education program that goes out to all the schools in San Francisco, to teach them about zero waste, and then we have outreach materials such as this. The one on the left is actually on our bus shelters. We were trying to do a friendly competition between the different neighbourhoods. Or we have stickers and flyers. What we've done with our outreach material, we've tried to move more towards images rather than having words on them, because it's more helpful, and we don't do as much translations. But we do have some of our material translated, right now, in English, Cantonese, and Spanish.

Then, we monitor compliance. We conduct audits of the bins to see what people are still throwing away. We also partner with city departments, primarily the Department of Public Health and Public Works, because refuse falls under their scope of work, and these are the entities that can issue liens or citations to residences and businesses that don't have adequate refuse. And we also provide feedback to the different property managers.

However, if there are some businesses that do not want to comply, we do have tools that we can use once we've exhausted all of our outreach efforts. So, our mandatory recycling and composting ordinance that I will talk about a little bit, has penalties of up to $100 per violation. We have introduced contamination charge of up to 100% on the trash bill for having recyclables and compostables in the trash. We can also remove recovery discounts or credits if there is contamination in the recycling and/or composting bins.

And then, policies. As I mentioned, San Francisco has a number -- we're a progressive city and we have progressive policies. And over the past 20 years, our goal of zero waste has really driven the progress that we have made. So, the first ordinance that we -- you know, there is the goal of zero waste in 2003, and then, one of the biggest ordinances that came out was our construction and demolition debris recovery ordinance, and this came out in 2006. This is the largest solid-waste sector for us, and we require buildings or construction and demolition projects to recover at least 65%. We've actually increased that to 75% recovery.

And then we passed the nation's toughest mandatory recycling and composting ordinance in 2009, which has actually been the most foundational policy for driving increased recovery of recyclables and compostables, and reducing landfill.

Next, we have started restricting some of the most problematic products, such as single-use plastic bags and food ware. And then, these efforts have actually allowed our refuse hauler to start rolling out smaller trash bins throughout the city. And we started doing that in 2017.

I do want to highlight more Mandatory Recycling and Composting Ordinance. This law significantly increased our composting collection within a month of implementation, and we've achieved compliance with pretty much everyone, from the residential sector to commercial and institutional properties. Now, I know this graph has a lot of material on it, but what I would like you to focus on is when mandatory came out, which is in 2009, once that ordinance was signed, we conducted outreach and education to the public, and just letting people know that this was a requirement that dramatically increased the amount of organics, primarily food, that was being put in the green bins. Our collection increased from about 400 tons per day to 600 tons per day in a month, and now, we are currently collecting about 700 tons per day.

So, due to all of our policies and programs, we actually cut San Francisco's disposal in half, to the lowest amount on record in 2012, and our recycling and composting tonnages continue to

increase. Unfortunately, after 12 years of decline in disposal, San Francisco has been sending more material to landfill, and we are currently disposing over 600,000 tons citywide a year. But, you know, we are still recovering more material.

The reversal in disposal really has been driven by a construction boom, by population growth, and changing patterns, with more single-use packaging, which means a lot of like materials that are -- that could be recycled and composted are not being properly separated out, and they're just ending up in our trash stream.

So, just to give you a sense of what is still being landfilled in San Francisco, you can see 60% of what's going in the landfill could have been recycled and composted. And this is helping us understand where we are challenged and where there is opportunities for greater recovery.

So, what are we doing now? Well, we all recognize that we need to shift from the linear to circular economy. In 2018, we hosted the Global Climate Action Summit, and we coauthored two challenges which we've issued to other cities, and, you know, they have stepped up, the C40, and they're joining us in our pursuit of zero waste.

We have two pledges to help us move to the next level The first pledge is reduce municipal solid waste generation by 15% by 2030. Basically, we see this as reducing consumption. And the second is to reduce disposal to landfill and incineration by 50% by 2030, so, cutting down what we're sending to landfill. We've done this before, so we know that we can do it again.

So, where are we seeing the challenges? The first, again, is construction and demolition debris. Since 2010, there has been a 30% increase in construction and demolition permits issued in San Francisco, resulting in greater generation of construction and demolition debris. And even though our recovery is high, and we have an ordinance that requires this, we recognize that there are still some bad actors who are bypassing our facilities, and taking the material straight to landfill.

The second challenge is large generators. While we know all sectors could improve, larger generators have a bigger impact and a greater return on our compliance efforts. And the ones that are most problematic would be large multi-family, multi-tenant, commercial, or mixed-use properties with roll-off refuse compactors. These include hospitals, universities, office buildings, hotels, and shopping centres. Most of the material is not properly separated and often creates higher contamination rates.

And then, finally, consumption. As I mentioned, you know, generation of discarded materials has increased due to increased consumption, and we are also seeing consumption patterns changing due to the growing hyper-convenience culture. So, we're seeing an increase in single-use disposable food ware and beverageware, and these items are actually creating more waste and litter. In fact, two-thirds of the litter in the Bay Area is attributed to food service ware like cups and straws.

So, what are we doing to address these challenges? Well, first, you know, in terms of construction and demolition, we're actually trying to see if we can reduce or donate surplus material, design our buildings for disassembly, deconstruction, so that we can reuse those materials. So, one of my colleagues has been working very hard for the last four years to start looking at having a deconstruction ordinance in place, and that way, we would be able to recover the materials and reuse them.

In terms of addressing large refuse generators, we are expanding our outreach and technical assistance, and also increasing compliance through audits. So, we had another ordinance come out in 2019, called the *Refuse Separation Compliance Ordinance*, and essentially, all the large generators in San Francisco are going to be audited every three years, and if they do not pass an audit, they will actually be required to work with what we call zero-waste facilitators, people who would go in and help them actually ensure proper separation occurs at these locations.

In terms of addressing single-use consumption, the first thing we're looking at is reusables. So, we recently passed the *Single-Use Food Ware, Plastics, Toxics and Litter Reduction Ordinance*. We are also conducting effective consumption reduction campaigns, and this actual campaign that you see on the screen was launched during our Global Climate Action Summit.

And, of course, we're looking at food waste prevention and donations. So, currently, we're working with up to 20 institutional kitchens to implement technologies that will help increase food waste prevention, and also food donation. The ultimate goal is to expand this to more businesses throughout San Francisco, and possibly create new legislation to support this. We actually have a state legislation that has come out that is actually requiring us to increase food recovery from landfill and donation, but in San Francisco, we want to go a step further and look at prevention, because that's always the goal.

We also know that composting is still important, but should be seen as the last resort, after we have we recovered what we can. Composting has now been turned into a best practice for cities to draw down on carbon and reduce carbon emission -- reduce greenhouse gas emissions.

So, this picture that you are seeing on the screen is of a study that was done, where compost was placed on a rangeland. And they put half an inch of compost on the soil, and then they left it for a year and went back and tested the soil. And that half-inch resulted in having like one ton of carbon sequestered from the atmosphere, back into the ground. And so, they went back each year to test the soil. They didn't put any more compost on it, but they recognized that more carbon was being sequestered in the ground just by putting that half-inch, just eight years ago, one time, more carbon is being sequestered. Some models suggest that this will persist for 30 to 100 years. Yes?

LE PRÉSIDENT :

Mrs. Made, three minutes left.

Mme SOKO MADE :

Okay. Thank you. I'm almost done. And then, we're also testing different machines to process materials and separate out recyclables and compostables from the trash. The materials that we process will come from facilities where we have exhausted all of our source-separation efforts, and it will be significantly more expensive. So, really, we're trying to get people to think about reducing their consumption as much as they can, reusing as much as possible, and then recycling and composting what is left over.

So, that's an overview of San Francisco's program. We view this as a long-term process and a solution that is always evolving.

And that's it. Thank you for your time.

LE PRÉSIDENT :

Thank you for this very nice presentation, Mrs. Made. Mr. Renaud?

LE COMMISSAIRE :

Thank you, Mrs. Made. Have I understood well that all the collection is San Francisco is municipal, domestic, and ICI, also?

Mme SOKO MADE :

Citywide, yes. So, it's throughout the whole city. So, it's city facilities, it's the residential -- so, single-family or multi-family -- and then, commercial businesses.

LE COMMISSAIRE :

You've shown a picture of a big composting site. Do you have more than one composting site in the area?

Mme SOKO MADE :

So, it is about 70 miles outside of San Francisco -- so, San Francisco doesn't actually have the composting facility. Our hauler, Recology, owns the composting facilities, and it's outside of the city. So, it's about 70 miles outside of the city.

LE COMMISSAIRE :

Seventy miles. Okay. So, it's not near an inhabited area?

Mme SOKO MADE :

No. No.

LE COMMISSAIRE :

In San Francisco, you have chosen landfill over incineration; why is that? Or is that a choice that's been made knowingly, or...

Mme SOKO MADE :

Yes.

LE COMMISSAIRE :

... did it just happen like that?

Mme SOKO MADE :

No. It was a choice that was made knowingly. I think, you know, like most places, we used to incinerate. We do not anymore, because we recognize that material that's being incinerated has a higher value. If you take paper, for instance, you can actually recycle that paper, and you will get more use out of it. The same with metal cans, like if you --- you can recycle that to make something else. If you burn it, that's the end of that. So, for most materials, you can recycle it and reuse it over, and then you get its highest and best use. So, for us, we believe in recovery being highest and best use, and honestly, like incineration would be a last resort.

LE COMMISSAIRE :

The landfill sites that you subcontract for receiving your waste, where are they located? Are they located near San Francisco, or...?

Mme SOKO MADE :

It is located -- I'm trying to -- I would have to email you and let you know, but it's not within San Francisco, and it actually -- it is contracted out, and it belongs to our current hauler. So, yes, material is hauled from San Francisco to the landfill.

LE COMMISSAIRE :

How far is it from San Francisco, let's say?

Mme SOKO MADE :

I'm going to say about -- yes, 70 miles as well.

LE COMMISSAIRE :

Okay. Did you have any problem with finding takers for the compost? You produce a huge amount of compost and you're competing with other sources of compost from cattle manure, and -- do you find it hard to, I would say, get rid of your compost, or…?

Mme SOKO MADE :

No. So, again, Recology owns the composting facility that our material is taken to, and they actually sell it to surrounding vineyards and farmers, so they don't -- they don't have -- no, they do not have a problem selling the compost. And now, because we have the state law called 1383, it's really around climate pollutants, but it's basically saying that everyone in California now is required to compost; right? Not everyone in California. San Francisco has been doing it, and other jurisdictions have, but this state law now is requiring more composting, which will then have more composting facilities, and I think what is difficult right now is that we don't have that many composting facilities, and this is now driving the market for it.

LE COMMISSAIRE :

And is the quality of the compost an issue for your facility -- or not your facility, but the facility that composts your waste?

Mme SOKO MADE :

I mean, there's trouble with contamination, so that's why we have the contamination charges now. So, when we first started composting, you know, it's a lot of outreach and education to ensure that people are putting the right thing in the right bins, and then -- and we had mandatory from 2009 to now. It came out in 2009. A lot of the work that we've done is outreach and education. We have only started enforcing now.

But for the most part, our composting is actually pretty clean. But, again, we've been doing this since 2009, so -- it's a lot of work to do it, and telling people what can go in there. It was more challenging to get people to put things from the black bin into the green bin.

LE COMMISSAIRE :

Thank you very much.

Mme SOKO MADE :

You're welcome.

LE PRÉSIDENT :

Mrs. Forget?

LA COMMISSAIRE :

Thank you for your presentation. I understand you have only one collector? So, only one company for all the -- I mean, all the residential or ICIs. So, how did you price it, you know, to start with, and if it's not satisfying services, like is there an alternative? Is that company having other cities as clients? Like, you know, what is the company profile, just so we know what you started with, and what you have now, and how -- what's the advantages and disadvantages, let say?

Mme SOKO MADE :

So -- let me think how to say this. San Francisco is unique in the sense that we only have one permitted hauler. So, it's not based on like a contract or a franchise agreement, it was based on an ordinance that came out in 1932, that basically said whoever holds the permits to haul material in San Francisco -- yes, whoever holds the permits is allowed to haul material in San Francisco, which is very unique.

And, over time, Recology has -- they brought up all of these companies to make Recology San Francisco. So, it ended up being like two companies, Recology Golden Gate and Sunset Scavenger, they are like one -- under one company now. Recology itself is based on the West Coast,

so they are in other cities throughout California, but -- and then, there's other companies like Waste Management and Republic, but because they don't hold the permits, they cannot, technically -- yes, they cannot haul refuse in San Francisco. We do have...

LA COMMISSAIRE :

And so, it wasn't a choice for efficient -- I mean, it wasn't a recent choice for efficiency purposes, it was just the way it was to start with?

Mme SOKO MADE :

This is how it was, yes. And so, the only way to overturn that would be to go to the voters. And so, that ordinance has come up, I want to say at least five times throughout -- you know, since 1932, to amend the ordinance, or to overturn the ordinance, and it hasn't happened yet, so I guess people are still happy with Recology overall. We don't know. We'll see what happens. But they are held accountable too. So, we have what's called a rate process. When they want to increase their rates, they come in with their rate application. It's a year process. We have a rate board that like looks at the rates, so we look at a lot of things, and they project like how long -- you know, what the rates would be, how they would increase, and then you have set rates for a certain amount of time. And they're going to increase over time.

We also have -- what I didn't say is that we also have hauler incentives that are built in. So, they also have to -- you know, they'll get a certain amount of money if they meet zero-waste incentives. So, if they don't meet that, then, they don't get that money, so to speak, it goes into a special reserve.

LA COMMISSAIRE :

And it's a for-profit organization?

Mme SOKO MADE :

Yes. They are employee-owned. So, actually, the other thing I do want to say is that they -- I showed you the picture of the Recycle Central which is in the southeast area of San Francisco, and they actually hire people from the neighbourhood, and, yes, for profit, but it's employee owned.

LA COMMISSAIRE :

Okay. And do you have -- did you or do you have problems having recyclables all together? Like we see, in Europe, there is a tendency to separate glass, and metal, or, you know, different -- so that it's pure at the end. So, are you facing that issue of quality with rejection rates?

Mme SOKO MADE :

No. I think we went -- we did actually used to have source-separated. We started with like, you know, clean paper, bottles, cans. We decided to go with comingled for efficiency, because San Francisco is so dense, it made more sense for us to collect it comingled, and for the most part, actually, our recycling is clean. I mean, we still have to do outreach and education and tell people, you know, *"Rinse it out,"* or *"Empty your food out,"* but for the most part, we're doing good. And as I said, you know, when the "*National Sword"* came out, we did a lot of upgrades to our facility as well, to help us improve the recovery of the materials, so we would have like less contamination.

LA COMMISSAIRE :

And why did you stop collecting soft plastic for recycling?

Mme SOKO MADE :

There is not a market for it right now. So we sort of -- kind of stopped, is the word, but it's -- we've put it on pause. So, hopefully, markets open up again, but that's one of the biggest things that people were excited about, is collecting soft -- yes, plastic bags, like *"Where do I recycle my plastic bag?"*

What we're really trying to get at is not having it altogether, so, banning it. So, we had the bag ban, the first iteration came out in 2006, and this is like shopping bags, and then, we expanded that to retailers, and we put a charge of $0.10, and now, it's $0.25 for a bag.

LA COMMISSAIRE :

Thank you.

LE PRÉSIDENT :

Thank you very much, Mrs. Made.

MOT DE LA FIN

LE PRÉSIDENT :

Alors, ceci complète la deuxième journée d'atelier. Je tiens donc à remercier tous les experts et conférenciers, tant nationaux qu'internationaux. En fait, nous avons eu 23 conférences *[sic]* en deux jours.

Je voudrais également remercier mes collègues commissaires, toute l'équipe de la commission d'enquête, et toute l'équipe technique qui l'a supportée tout au long de ces deux journées de travaux.

Merci également à tous les auditeurs. Je vous souhaite donc une bonne fin de journée. La commission poursuivra avec d'autres ateliers dès mardi prochain. Merci, et bonne fin de journée.

SÉANCE AJOURNÉE AU 20 AVRIL 2021 À 9 h

Je soussignée, LOUISE ANNE CEGELSKI, sténographe officielle bilingue, certifie sous mon serment d'office que les pages qui précèdent sont et contiennent la transcription exacte et fidèle de l'audience entendue via webdiffusion vidéo, le tout conformément à la loi.

I, the undersigned, LOUISE ANNE CEGELSKI, bilingual official court reporter, hereby certify that the foregoing pages are and contain a true and accurate transcript of the session heard via video webcast, the whole in accordance with the law.

ET J'AI SIGNÉ / AND I HAVE SIGNED :

(s) Louise Anne Cegelski

Louise Anne Cegelski, s.o. / O.C.R.