



Water and Waste Water Workshop Report

Session 1: Water Resource Preservation and Management

Chairs:

- Charles Kiely, Assistant Manager, DC Water
- Eric Piolle, Mayor of Grenoble, France

Speakers:

- David Rouse, Director of Research, American Planning Association
- Yann Wehring, City Council Member, City of Paris (France)

Moderator: David Alexandre, Vice President, Tilia

Topics to be discussed

- How to balance between resource protection and water treatment
- How to develop smarter water grids, water data, etc.
- Finance, infrastructure

Purpose of session

- Highlight roadblocks and challenges from an operational or city perspective and what are the solutions to those roadblocks
- Will develop a few recommendations that they will like to communicate for the Paris conference

Two Chairs of the Session

- Eric Piolle, Mayor of Grenoble
 - Grenoble is on the cutting edge of water management, sustainability, etc.
- Charles Kelly, Assistant General Manager of DC Water
 - Major utility taking care of water and wastewater in DC

Presentation 1: Eric Piolle, Mayor of Grenoble

- Goal of presentation is to share the Grenoble experience around water
- Water has been considered a common community asset in Grenoble for over 100 years
 - This has led to public purchase of lands containing water resources, beginning in 1982
 - Land purchased outside of the city
 - Protect the watershed health in those areas
- In the 80's and 90's the water was sold to a private sector actor, but there was a lot of corruption. Green activists litigated, corrupt managers were put in jail
 - Sparked a public debate on what to do with the water
 - At the end of the 90's they decided to bring water ownership back to the public sector
- Return of water management to public sector decreased water prices



- Nearly the cheapest water tariff in France
- It also tripled investment in the network – due to the long-term vision of the public sector, invest in the network for 100 years, focus on infrastructure and not just a 30 year contract agreement
- Public management success story
 - Grenoble does not need to treat the water, uses watershed management to maintain high quality water
 - The only water in France without chemical treatment
- Water as a community asset – fostered through public debate
 - Center point is that water management benefits from public involvement
- Core Policies/Themes in Grenoble
 - “Water pays for water” – a system on its own, doesn’t receive funding from taxes, etc. Independent financial system that does not provide municipal profits, just reinvests into the water system
 - Relates to the long term investment view
 - The user committee is a unique democratic process
 - Manages and has strong input into water management
 - Investment, leakage, consumption
 - We are seeing a plateau and slight fall in consumption in Grenoble
 - Reinforce the fact that water is a community asset and a fundamental human need – in the next few months Grenoble will have a basic level of WATER free for all, and then progressive incremental tariffs after that
 - The more you consume, the more you pay per unit
 - They are doing studies to make sure they find the right balance
 - Overall system of free cubic meters and then a progressive price
 - Will make sure that this does not negatively affect the economy

Presentation 2, Charles Kiely, DC Water

- DC Water is the water supplier of the Nation’s capital,
 - DCW also provides wastewater services for DC, MD and VA
- DCW provides water from the Potomac river to DC
 - 200 million gallons a day withdrawn from Potomac
 - Treated in two different water treatment systems run by US Army Corps of Engineers (USACE)
 - Only relationship in the USA where the Army Corps is treating the water of a local utility, DC Water pays USACE operating costs
 - Very unique relationship, federal employees working
 - Once water is treated it goes through distribution system
 - 1,400 miles of pipes underground
 - DC Water is a combination utility so they also manage wastewater
 - 340 MGD of wastewater treated a day
 - Blue Plains is the largest facility in the world that does Advanced Wastewater Treatment
 - Water put back into Potomac is cleaner than what was withdrawn
- Challenges
 - 40% of sewers in DC are CSS (Combined storm water and wastewater systems)



- Once pipes reach capacity, excess wastewater overflows into the rivers
- Diluted wastewater flows into the river
- Not unusual for many large cities to have this problem with CSS
- Enhanced nitrogen removal: \$1.1 Billion total
 - DCW is considered a point-source polluter
 - The real problem is non-point source polluters (like farmers) but it is hard to regulate them
 - DCW will reduce nitrogen by about 10%
 - This is funded through rate payers and regional entities
 - DCW is under a Consent Decree to do this
- Clean Rivers Project: \$2.6 Billion
 - Goal is to stop the combined sewer overflows (CSOs)
 - Also under a Consent Decree, constructing new tunnels around the city
 - Mostly funded by the rate payers with little outside subsidies, some money from the Federal government (\$17 million)
 - When the project is finished they will stop most of the overflows into the system
 - There will be a total of 6 large tunnels through the district
 - Tunnels are enormous
- Linear Assessment Replacement and Rehab
 - \$38 million/year water distribution – Median age of water system is 79 years old
 - \$45 million/year collection system - Sewer system median age is 87 years old
 - They're on a 2% replacement cycle every year
 - Temporary repairs: \$15 to \$20 million
- Biosolids processing: \$460 million
 - Reduce landfill applications
 - Blue Plains is the largest facility in the world, the only facility in the USA that does Biosolids processing
 - The processing came online a few months ago and will be at full capacity at the end of 2015
 - Methane byproduct – will produce 13MW of power over time (waste to power)
- Debt Service
 - Most is funded through Bonds
- Challenges as a utility
 - Lack of investment in infrastructure in the past
 - Low tariffs meant no investment went back into the system

Presentation 3, Yann Wehring, City of Paris

- Two general points of Paris
 - A difference between water problems and other problems
 - “Water is Life”



- We can't survive without water; it is core for multiple systems, agriculture, energy, etc.
- We can live without energy but we can't live without water, it is the most basic necessity
- Water touches multiple sectors
 - Link with climate
 - Adaptation to climate change is a debate over the world
 - Link with Agriculture
 - France is having agricultural problems, groundwater mining and overdrawing
 - Agriculture cannot be considered without water resources
 - Agriculture must adapt to system of climate change – must create a new system of agriculture that adapts to climate change
 - Water an
- Water also is a problem of biodiversity
 - We always think about human problems but we forget that biodiversity is a human problem too
 - Without aquatic ecosystem preservation, we will have many resulting problems
 - Not just water for food, energy, etc.
- About Paris
 - Something that is not often said in big cities is that the water is under degradation
 - Today in Paris, the water is increasing in salinity
 - They cannot control for this because treatment is increasingly expensive
 - New initiative: make a compact with farmers all over Paris in the management of groundwater
 - Goal is to increase contracts with farmers to change to biological (organic) agriculture
 - This will decrease cost of treating water because there will not be fertilizer runoff into waterways that we must treat for
 - This is happening already in Vittel, Paris (bottled water company and the city)
 - Vittel did a financial analysis and found that it would cost less in organic agriculture than to invest in water treatment – economic model – makes economic sense to go organic and stop pesticide use

Presentation 4, David Rouse, APA (American Planning Association)

- 38,000 members in the US and abroad
- Will discuss Green infrastructure and Water Resource Management
- What is Green Infrastructure? 2 definitions
 - Regional Open Space
 - Natural values functions
 - Green Storm water Infrastructure
 - More recent definition deals with storm water management



- Work with nature to manage water
- Few examples:
 - Regional Scale
 - Regional parks, nature preserves
 - River corridors and greenways
 - Working farms and urban forest canopies
 - Smaller scales
 - Storm water planters
 - Rain gardens
 - Green roofs
 - Semipermeable surfaces (“Green Streets”)
- Idea of **co-benefits**
 - A range of benefits that Green Infrastructure can provide
 - Improved public health
 - Economic returns
 - Reduced urban heat island
 - Hurricane Sandy Rebuilding Strategy – Presidential Taskforce rebuilding strategy is based in large part on green infrastructure
- Case Study: Philadelphia Green Infrastructure
 - Green Infrastructure is considered a city-wide open space network and also storm water management
 - Similar to DC, Philadelphia has a very old sewer system with CSS systems
 - With heavy rains, there are combined sewage overflows
 - In contrast to DC, Philadelphia said that they cannot afford to drill new tunnels, convinced EPA to go along with green storm water infrastructure as the basis to treat their approach of storm water problem
 - Did a cost-benefit analysis and quantified the co-benefits of the green infrastructure projects
 - The old paradigm are large storm water tunnel management – the new paradigm is natural means of handling and treating the storm water
 - Constructed wetlands
 - Community gardens
 - Green roofs
 - Green streets
 - Pervious pavements
 - Storm water utility fees are based on the amount of impervious surfaces you have
 - The less you better
- Green infrastructure as an integrated “one water” approach to managing wastewater
 - A lot of work needs to be done to monetize the benefits of Green infrastructure because they are not calculated in the normal CB analysis
 - Love the idea of a Smart Water Grid – can a green infrastructure network be part of a smart water grid?
 - drouse@planning.org
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Question and Answer Period

- Question to DC Water: there are many campaigns in MD to put the pressure on the farmers but the problem is not being fully addressed
 - Nutrient management plans have exempted animal feeding organizations
 - Turf Grass is a large pollutant in Chesapeake Bay Watershed – landscape industry is not being regulated, this is a real battle
 - 85% of Anacostia is in MD
 - Maryland isn't doing enough to manage its water
- Response (DCW): it's easier from the regulatory access to go to point source pollution
 - DC Water has 150,000 paying customers
 - Biggest charge on the bill is part of the impervious area surface charge, that is for paying for the storm water
 - The problem is a combined problem, many industries to blame
- Question: Green Bond movement: is that something working well with what you are trying to finance with your cities or is there still not enough of downstream variables that you can use to ensure the money is properly used in the cities
- Response (Grenoble): we had banking loans and did not subsidize the water network
 - Citizen bonds go one step further because you translate the financial system into something that makes more sense
- Response (DCW): we're looking at a diverse portfolio of a number of investments
 - We're trying to align our finances to have less increases to the customers
 - Century Bonds, issued to lower costs of green rivers projects
 - DC is looking at green infrastructure to try and counteract the last tunnel that they would have to build
 - Makes more sense to Green DC because then you bring business, investment improve the city
- Response (APA): don't know a lot about Green Bonds, but finding a way to monetize the benefits of green infrastructure across a triple bottom line
 - Economic return, social return, environmental return
 - Green Bonds are a promising area to move forward in the future because they can capture the
- Question: What are we doing for the future to make sure that water is kept as a public good, community managed tool? With shortages the private sector is trying to take advantage and buy up different areas
 - Moderator: Grenoble is a great example of community involvement and governance
 - Decentralization, green infrastructure
 - Complex, local solutions
- Response (Grenoble): want to make sure that basic needs and community assets are part of the political debate
 - Make sure that people do not consider water just a magical, guaranteed need. They must understand the value
 - In Grenoble, one of our selling points is the concerted public effort to manage water



- We always remind the citizens the history of the water management movement
- Public ownership benefitted Grenoble
 - Lower prices, higher investment in the public sector than private sector
- Each election, claim that water is a community network and it needs to stay there
- Water is key in local politics
 - Transport, Water, Education – very important issues
- Response (DCW): We do not have Federal subsidies; we issue our own revenue bonds as an entity. We are an agency of DC but not a DC agency. We do not fall under the revenue bond of DC, no guarantees to DCW. Everything in city services is funded through revenue bonds except DCW
 - Mostly large institutions buy the DCW bonds
 - Some citizens buy those bonds too
- Question how did you get the price on water down when it was public again?
- Response (Grenoble):
 - First there is no profit margin anymore,
 - You also don't have short-term mindset relative to your investment (30 year contract),
 - Not as much of a motivation to manage consumption,
 - Less corruption,
 - Reduced leakage and bigger investments in infrastructure
- Question: can you treat wastewater and reuse it for drinking water?
- DCW Response
 - Yes, but it is difficult
 - We need alternative solutions such as this
 - This is especially popular in the Arid West
 - Not as much of a need to do wastewater reuse in the East Coast
 - West Coast: water recycling is inevitable
 - If there were a market for recycled water then it would pick up here too
 - Las Vegas has a great graywater infrastructure system
- APA
 - West Coast looking at a decentralized water supply model
 - This is also done in Australia – use the natural system to reintroduce water into the cycle
 - The most powerful woman in Las Vegas is the head of the Water Authority
 - FL, GA, AL all fighting over the Chattahoochee river
 - We need metrics to measure, based on return of investment, that can measure across factors and pick up social, community returns and you aren't just measuring based on the old single purpose, single use model
- Member of the Audience
 - Must also consider how you integrate agriculture into the debate – treatment AND distribution of water through infrastructure is very expensive



- Once you treat it, what do you do with it? Agricultural is a key user and they must be involved
- Infrastructure is often the
- Moderator
 - Example in Netherlands: greenhouses for water treatment and reuse
- Member of Audience
 - There is a problem of water rights in the Western US – based on prior appropriation (first in time, first in right)
 - For storm water detention, you need an adjudicated water right in Colorado, that's crazy
 - Rainwater collection is technically illegal in some places
 - Suburb of Denver: want to do green infrastructure, but legally they cannot reuse the water
- Moderator: how do we prioritize water management?
 - You can be regional, gray infrastructure, large scale
 - Or you can be decentralized, green infrastructure, small scale
 - Which direction do we go in?
- Audience Member: very different economic models depending if you are resource rich or resource scarce
 - In the US, overall we are still mandated to follow certain water management concepts and that sort of large-scale mandate might increase
 - Large-scale, Federal mandates are not locally sensitive
- DCW: the biggest challenge is unexpected regulations that we can't prepare for
 - In the US we act like one size fits all but that is not the case
 - Every city in the US (almost) is seeing fall in consumption
 - We don't look at water as a national strategic interest, but it is
- Grenoble
 - User committees are key to making water management locally adaptive

Concluding Thoughts

- DCW: These challenges can be turned into opportunities to better manage water resources
- Grenoble: There is a business model war between large corporations that look at water as a business and not a community asset, and an emerging water-based democracy that looks at water as a community asset and finds ways to finance sustainable water networks without large corporations.



Session 2: Waste Management: A Zero-Waste City?

Chairs:

- Karen Holman, Mayor of Palo Alto CA
- Elisabeth Toutut-Picard, Deputy Mayor of Toulouse (France)

Speakers:

- Eric Lesueur, CEO, Innove and 2Ei Veolia
- Debbie Raphael, Director, SF Environment
- Yann Wehring, City Council Member, City of Paris (France)

Moderator: David Alexandre, Vice President, Tilia

About the Moderator

- David Alexandre: Moderator, works at TDR
 - Works to improve water and wastewater utilities in large cities
 - Hague, Paris
 - TDR provides advice to public sector utilities to improve operational efficiency, go through investments, strategy

Presentation 1, Karen Holman, Mayor of Palo Alto

- About Palo Alto
 - Palo Alto is half way between San Francisco and San Jose
 - 66,029 residents
 - Employment center on the peninsula, heart of Silicon Valley, heart of innovation
 - Allows Palo Alto to work to reduce waste and become a Zero Waste City
 - Neighbor to Stanford University
- Palo Alto is looking to increase the manufacturer's responsibility for the goods that they produce (i.e. packaging)
- Palo Alto implemented a zero-waste plan in 2007 looking to change the rules and shifting subsidies
 - Right now there is too much emphasis on the traditional model and not a zero waste system
 - Empowered consumer is a huge influencer – consumer must push back against suppliers
 - There first is resistance to new ordinances like bag taxes, but there is largely acceptance, especially amongst the young people
- Zero Waste Program in Palo Alto Timeline
 - 2004 and 2005 Taskforce, goal is 90% diversion of landfill by 2021
 - 2007: comprehensive operational plan
 - Palo Alto is an early adopter, highly educated community
 - Early Adoption Culture exists: educated, liberal, innovation, association with Stanford
 - 2009: 100% Construction and Demolition Diversion Requirement
 - We must focus on both recycling and reuse/salvage



- Zero Waste Program
 - Palo Alto has their own utilities and independent hauler contracts
 - Had to change the old model – the more garbage you haul, the lower your rate
 - Had to change this because the incentives were perverse
 - Palo Alto one of the first cities in the US to have curbside recycling – around 1978
 - Compost is a major issue in the community – try to balance the solution of regional partnership vs. local control and responsibility
 - Composting will likely have a local solution
 - Household hazardous waste program expanded to 3 days a week of collection
- Community Education is Key
 - Schools have been highly engaged in the Zero-Waste Program
 - Community gardens on school sites
 - Community block leaders that facilitate Zero Waste in their neighborhood
 - City has provided incentives – home composting classes
- Challenge recently is there's a lot of demolition and not enough salvage
- There is still "good stuff in the garbage"
 - Compostable items, recyclable items
- What's next
 - Residential food scrap collection
 - Mandatory commercial recycling and composting ordinance
 - Restaurants do food scrap collection – Food Waste Reduction Program
 - New programs will bring up diversion from landfill rate to 82%

Presentation 2, Deborah O. Raphael - Director of San Francisco Environment, Zero Waste: A Path to Highest and Best Use

- SF likes to think of itself as a member-state of the EU and looks to EU for inspiration
- Emphasis on pictures, so you have a sense of what this looks like when you reuse and collect
- Idea of what we call "highest and best use" – prevention is central to what we do but we won't speak on that today
- The link between Climate Change and Zero Waste
 - We hear a lot about GHG reduction goals and this type of thinking is uninspiring to the general public, they don't know what we are trying to do
 - "Xx% below 1990 levels" doesn't resonate with people
 - Take climate goals and make them look more appealing, talk about it in simple terms
 - 0 waste
 - 50% trips in sustainable sources
 - 100% renewable energy
 - Roots – protect and grow carbon sink
- Ways of doing this
 - Programs
 - Recycling program, strong relationship with their recycling entity
 - Key to programs is convenience and consistency



- It must be easy and convenient to have behavior change
- Blue bins (recycling), green bins (compost), black (trash)
- Europeans are way ahead on redesigning products to make them recyclable
- Curbside collection, commercial collection, public events
- Outreach
 - Incredibly important
 - Education
 - School program for composting waste
 - Neighborhood campaigns
 - Training of restaurants, custodians
 - Audits – go through black bins and tell them
- Incentives
 - “Pay as you throw” – composting and recycling is cheaper than using your black bins
- Mandates
 - Mandatory composting and recycling
 - 99% of locations have both recycling and composting service
 - Construction and Demolition Waste
 - Minimum reuse levels of 65%
 - This is a big problem in the US because there are huge, heavy amounts of waste
 - Bans on problematic waste streams
 - Styrofoam, plastic bans, water bottles are all BANNED for city use in projects
- Enforcement
- How are we doing?
 - Over 80% diversion
 - When you look at tons to landfill we have reduced it by half since 1999 even with a huge increase in population, but there was an increase in 2013 because of all the construction
 - Big challenge is the construction weight, it weighs a lot. Big problem in California
- The future
 - Programs with the black bin
 - Making black bins smaller than the blue and green
 - Or only collect black bin every other week
 - How do we process the trash? Black bin?
 - Anaerobic digestion
 - Enzymatic digestion
 - Want to avoid burning the trash, we do not believe that this is a renewable energy source and it is not good for the environment due to GHGs
 - There is a higher and best use for this – methane and biogas is better



Presentation 3, Elisabeth Tout-Picard, Deputy Mayor of Toulouse

- Waste Management: the engagement of Toulouse Municipality in the Reduction of Waste
- Situating Toulouse in France
 - In the southwest of France
 - 4th largest city in France
- Palo Alto story was very impressive, we are still pretty far from that reality in Toulouse
- We have seen a quadrupling of the production of waste over 40 years, and in the past 10 years it doubled
- There are several regulatory measures to reduce this production of waste
 - There are a set of laws that were put in place between 2008-2009
 - This regulatory arsenal has both qualitative and quantitative goals to reduce waste and enhance the quality of life
- The municipal collective has a goal of reducing household waste by 7%
 - Also eliminate by 15% the quantity of waste that is incinerated
- The first question: what is the prevention of waste?
 - It is the group of actions that we enact before the abandonment of a product or before the product is taken to a landfill
 - Reduce the quantity of waste and the waste management
 - The objective is not just environmental but also a socioeconomic objective because it creates new employment opportunities
- The second question: Definition of a local program of waste prevention (PLPD)
 - Initiatives designed by each territory
 - Include multiple stakeholders, not just the primary municipality
 - The objective is to reduce household waste by 7% in 5 years
 - At the end of 2013, there were 375 local programs of prevention put in place by the collectives. It is not much but it is a start
- The new function of waste in the economy
 - Waste can become a principal actor in the circular economy – a systematic approach to the production systems
 - We introduce waste in the economic system on several scales
 - Work top to bottom to reduce waste
 - We must recreate the modes of conception of products
 - From the conception stage, what are the environmental impacts in the life cycle of the product?
 - We must reorganize the collective logic of use and exchange between economic operators to better manage the economies of resources
 - Economy of use
 - Privileged usages
 - Insist on the reuse of products
 - Repair products for a second life
 - Recycle
 - A closed loop system to modify the image of waste and give waste a second life
 - Waste becomes a resource, a social value, an object to share, and that overall creates the reduction of waste



- What do we do in Toulouse?
 - We have several objectives set on 23 June 2011
 - Reduce by 7% household waste
 - Limit gas emissions
 - Optimize the collection of waste
 - Reinforce social and economic links
 - Several actions
 - Manage of compostables
 - 40 kg of waste per habitant per year
 - 3 approaches:
 - 1. Individual composting
 - 2. Shared composting (buildings, public gardens)
 - 3. School composting
 - Used Textiles
 - 9 kg of waste per habitant per year
 - We have to create value around textile reuse
 - Fight against food waste
 - 72 kg of waste per habitant per year
 - 2 targets
 - 1. Greater public
 - 2. School cafeterias
 - New Jobs
 - Must create value and respect those who work in waste recuperation and give products a second life
 - Costs of prevention
 - We want to be down 7% in 5 years and it has been 2 years and we are down 1.8%
 - This isn't a huge success, but we still have 3 years left
 - We avoided 4,600 tons of waste in 2014
 - The target is really a change in public mentality and looks towards the long term
 - Change community mentality and their approach to waste
 - Bring a better image of waste and those who work in the waste industry
 - Appreciate the Environment

Presentation 4, Yann Wehring, City of Paris

- Will discuss the collective management of waste, local plans for waste prevention
- A new approach to circular economies
- Think about the waste of tomorrow
 - 2 reasons
 - 1. Ecological: waste pollutes in both visible and less visible ways, like ocean pollution
 - 2. Global resources: primary materials, limits of resources, shortages of metals, even sand
 - The real goal is to stop thinking of waste as something that is lost and thrown away, but something that is valuable and should be reused



- Imagine what we can accomplish if we value waste
 - Better fabrication of products
 - Longer lives of products
 - Better end of life management of products
 - Products can re-become resources for new products
 - The path is there, we are at the beginning
- The focus of the presentation is the management of waste
 - Several community-level prevention plans
 - The less you produce, the less you pay
 - Revise waste tariffs
 - Recuperation of reusable waste (30%)
 - Food waste in restaurants
 - Household waste
 - Example in Lille where waste is turned into methane, transformed into biogas, and the buses in Lille run on that biogas
 - Turn waste into primary materials
 - Product lifecycle
 - Important aspects of the vision of projects
 - Instead of owning products, renting products instead
 - This happens already with electric cars, bicycles (Vélib)
 - A system where individuals can rent cooking equipment like to fry foods
 - Producers can then produce a product that is more durable and lasts longer – change in incentive structure
 - This is rather revolutionary as an idea, but it is the future
 -

Panelist 5: Eric Lesueur – VEOLIA VP Innovation and Markets

- Focus on recycling, giving some example of how we can use technology to improve recycling
- Veolia Waste Services
 - Focus on municipal waste, commercial industrial waste, hazardous waste
 - 3 services:
 - Developing services
 - Developing logistics for collection
 - Waste treatment
- Waste Management Stakes
 - Environmental improvement
 - Quality of life and service efficiency
 - Cleanness of a city is a matter of quality of life
 - A good service is an efficient one
 - Empowerment of citizens
 - Move from “business to business” to “business to business to citizen” – citizen is more and more part of the results
 - Citizen power and responsibility is at stake
- Examples of smart solutions for recycling



- Customer Portal for Smart Waste
 - Allows municipalities and companies with non-hazardous waste access to a portal that allows improved reporting and implementation
- Smart collection – embedded computing for waste collection trucks
 - Real time monitoring of waste collection for better customer information
 - Reduce the waste collection path, improve service, increase efficiency
- Smart collection of voluntary drop points
 - Wireless sensing that tells you if the drop points are full or not
 - Reduces CO2 emitted by waste collection trucks
- Smart street cleaning
 - Develop services to get information from citizens and operators to solve problems on the street
- Interactivity with citizens
 - Mobile phone services to make citizens better informed
 - Inform citizens about municipal policies, arrivals
- Incentive fees
 - “Pay as you throw” – you pay for the amount of waste that you generate
 - The more you sort, the less you pay
- This is just the beginning, working on the business models but the technology is very excited
 - Logistics, new products, less waste
- Movie: digital solutions for sorting facilities
 - Right now waste is being sorted manually, a lot of contact between operator and waste
 - That can cause health problems
 - The idea is to automate the process and sort it electronically
 - Capture images of waste when it arrives and then the sorter would select the waste to be taken out on the screen and then the computer takes them out
 - This is being implemented in Aigniens, a town in Northern France
 - That reduces contact between operator and the waste
 - This was launched 6 months ago

Question and Answer/Discussion Period

- Question: Veolia, is this technology only in France and what do you do with contaminated recyclables? And how do other communities deal with combining their recyclables, like glass and paper?
- Answer: mixing recyclables can be risky. The system is based on image recognition of the operator.
 - If the waste is contaminated, we are working on that right now
 - This is an industrial prototype from 6 months ago
 - Look at efficiency depending on the quality of waste



- Question: Management of SF Black Bins – people are often in houses or in buildings. How do you tax and charge people in buildings, you do not know who is doing what
- Answer: What we don't have is the technology to see how full your bin is, so you pay for the size of your black bin (3 options). That only works for business and single family.
 - Multi-Family has a split incentive. A problem because the landlord pays the build but the tenants contribute. We hope a motivation for the owners to do the right thing and reduce waste. We offer education and will go to units and leave materials, we do fun competitions, etc.

- Question: Fat, Soil, and Grease Recycling?
- Answer
 - SF collects it from restaurants and households who ask and turn it into biogas
 - Palo Alto does this but just for restaurants, not houses yet
 - Europe does this for restaurants and programs related with wastewater treatment plants

- Question to EU Colleagues: EU is very far ahead of the US. In the US we talk about producer responsibility, but in Europe you go further upstream and limit the inputs to products that are then also reused.
- Answer (Mayor of Toulouse): I have the impression that you idealize Europe. Palo Alto is almost at 0 waste, looking at Toulouse we only reduced 1.5%. We shouldn't idealize Europe.
 - Targeted initiatives on certain wastes, like cars work very well
 - We have organized at the scale of our urban community, community recycling
 - Big bits of waste that are very polluting, we have established figures to try and contain this production
 - We are pretty far from achieving our goals
 - We have had some good results, but nothing that extraordinary. It's better than nothing but we still have a lot of investment to do. Hope that in 5 years we will have a return on our investment.
 - The most difficult is to begin the project, and get people to change their habits. It is a deep psychological exercise to create reflexes to recycle
 - We are not quite there yet
 - We have some worries in systems of recycling
 - Where can we put all of these bins?
 - We can't have big trucks go down in old cities, there just isn't space in old cities of Europe
 - We can't resolve a lot of these problems in the center city because we do not have the space
 - Right now it's just voluntary and you have to go far from your home to recycle – that demands an effort on part of the citizen and not all want to do this
 - Underline that the dynamic has been launched, but we have not yet solved all problems
 - What is very positive in France is that we have a regulation system that has a lot of rules, and sometimes it overwhelms society. But on the side of waste



treatment, it was very profitable because the territorial committees were obligated to undergo campaigns

- That is a positive side of the French administration
- It was very obligatory
- Answer (moderator): consider the difference between different EU countries. Like in Germany, it is SUPER advanced. They do the differentiated recycling all over the country, in offices, etc.
 - Most innovation comes out of Scandinavia and Germany
 - France is very much into this dynamic but not at the cutting edge
 - It depends on the way that you work. In the US the State has an authority to start and test something on its own. The Federal system allows that. In Europe we don't have a federal system and we can't take as much action at the local level.
- Answer (member of crowd): there is a much more top-down approach in Europe than in the US where it is more decentralized. Europe in General is a greener continent than the US because there are stronger, generalized regulations with a longer-term perspective than in the US. US has a lot more space than Europe, too. US has much more of a bottom-up approach than in Europe
- Answer (City of Paris): it is a different approach. Europe takes a legislative, regulative approach. US focuses more on local experiments. We have a bit to learn from each other. Local experiments can prove that it works and then you can generalize an approach from there.
- Answer (Veolia): we focus on top-down, and then each state takes on the responsibility. Local authorities also have autonomy and can do their own initiatives. In the US you are more community based, empowerment of citizens is very important. This is a huge source of inspiration for Europe. Big positive.
 - Also in Europe the market is there, there is a market for recyclables and it is a regulated economy
 - We do not have a market for recyclables in the US
- Question: how do you recover your funds? Where does the money come from? Rather than charging for services, why not just charge a basic tax? Remove the concept of garbage collection and just add it into the tax system?
- Answer (mayor of SF): this is a big problem for many sectors. As people generate less and less trash or waste less and less energy, then where is the economic model? You can't bankrupt the system. In SF we will raise the cost for the blue and green bins as a charge for handling the waste.
 - In the US we do not like the word "tax"
 - We have to say fee for service
 - We want people to say this is what we do and this is how much it costs to do it all
 - We charge people who are bad at sorting their waste 50% more
- Answer (Palo Alto): To incentivize, first you make recycling and compost really cheap, but after a while you have to raise the prices so that the economy doesn't collapse. You have to slowly increase rates over time.



- Answer (Toulouse): in France we have a system of tax credits. The implement of service fees is a very good idea but we do not have the logistical administrative resources to do this. We can't keep track of the production of each citizen.
 - Veolia: automatic sensing data when we pass by, it is possible
- Question: The "Circular Economy" and "Eco-Design" is fantastic. How does this end up? I envision companies could do a good job at producing multi-use products. In the US, we are used to variety, and I fear that we may lose variety of products. Will design be driven to the ultimate one product? This could be a barrier to moving forward.
- Answer (audience): there is a lot of research being done and we usually find more diversity of products after these green measures. Innovation cycle can be a lot faster when you do rentals than when people buy products and keep them for a long time. Xerox is a great example, now everyone rents the machines and at the end of the cycle they take back the machines and use materials. The market can buy on a regular basis with rentals and increase diversity. There are many models that push forward the model of using less and producing more.
- Answer (Paris): example in France is Michelin. They proposed to road transports to not sell tires but to rent them. Transporters make a service contract with Michelin, and Michelin gives, manages, and recuperates tires. They recycle them themselves. A Virtuous, anti-waste cycle. Michelin tires now last longer too.
 - In France we have eco-packaging rules where they have to pay for the recycling of the packaging or take back the packaging themselves
- Answer (Mayor of SF): in CA we have taken back rules for certain products like paint, batteries, and tires. We don't have any packaging rules yet in the US, very envious of in EU. There is A LOT of resistance in the US to packaging rules
 - SF and Santa Clara County: asking pharmaceutical companies to take back drugs, we are getting sued all the way to the Supreme Court
 - It is politically difficult in the US to do a lot of these measures. Preemption: if pro-environment policies negatively affect industry, industry goes to legislators to ask for laws that say local municipalities do not have authority to make changes. Talk about uniformity of laws, and preempt local decisions.
- Question (Mayor of Toulouse): We have laws on energy transition that includes measures that prohibit the use of plastic bags starting in 2017, including the plastic bags used for fruits and vegetables in the supermarkets. That automatically impacts industry; they have to reimagine their modes of distribution. But this could have an important impact on the use of plastic.
 - Energy Transition law is trying to give a lot more decentralized power, a bit more bottom-up. Goal is to make decisions, responsibilities, and dynamics in terms of energy more decentralized and within the power of the territories.
- Answer (audience): The problem is in the US we have a bunch of Green decisions but they are bottom-up and they can easily be challenged at a higher level. In EU there is a general lack of citizen involvement and not a lot of fighting in the top-down approach. In the US we have great citizen engagement but that is because we see a lack of top-down decisions and we have to make demands.
 - Civil Society is hugely important



- Question: have you had any success in stopping trash in waterways?
- Answer (Mayor of Palo Alto): this is an issue; we have reduced the amount of garbage in our creeks. But this is solvable by a culture of recycling. It is so important to vote, especially in local elections.
 - We are losing local control but a lot of the times things start at the local level. Local governments face a lot of opposition in the state legislators. A vicious circle. People have to vote and be informed!
- Answer (crowd) In the US, money talks. That is a big problem. Conservative governments are very receptive to business interests. A lot of frustration in the United States with the inability of our State and Federal government to get anything of substance done.

- Question: In France we observed that businesses were very reticent on the environmental objectives in Europe because they thought that they were just extra charges on their budget and it wouldn't really help the environment. There was an evolution in mentality where companies mobilized to try and see how they could participate in sustainable development and see it as an opportunity rather than a burden. We call that "corporate social responsibility". Now when companies make their annual reports, they also make sustainable development annual reports. This was a law imposed that is pretty well respected. There is a type of acculturation in the companies in sustainable development. French companies realized that being green is good for their image. There is a risk of "green machine" and green washing. But even so, there is a well-developed dynamic. There are carbon audits now and those are translated into action plans to reduce general pollution. That had a real impact on the French enterprise. There was a true change in the way entrepreneurs viewed environmental problems and the stakes of sustainable development. This happened 10-15 years ago.
 - The problem with Climate Change is that there is a lot of questions and resistance still. In business, they were more sensitive to environmental impacts than GHG emissions. In France they have the "Polluter Pays Principle" but I am not at all sure that business owners are climate skeptics.
 - The Nike scandal, when we discovered the workshop conditions in Asia, child labor, etc. There was a big media circus and the brand was scandalized. They had to reconsider their process. Media has an important role to play in brand management and public relations.
- Answer (Mayor SF): what is disappointing is that industries are very receptive and proud of the work they do in Europe, and the same industries in Europe fight tooth and nail against this type of thing in the USA. This is very strange. If it's good enough for Europe it is good enough in the US!

- Question: Citizen involvement with municipalities. If you have citizen involvement, consumers can also be further involved. This can push against corporate interests.
 - Behavioral change common denominator is the empowered citizen. Decentralization, localization, focus on citizen and communities, education is key.



- Digital technology can help scale up grassroots citizen response and connect concerned citizens and activists together
- Answer (Mayor of Palo Alto): citizens feel empowered over very local items that they have control of. Citizens don't realize their power to enact change on broader levels by their own behavior.

Note takers:

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