

Mitigating methane emissions: From science to innovative solutions
Antoine Frérot – Institut Veolia – November 9, 2015, Paris

Ladies and gentlemen, distinguished guests

When we think of greenhouse gases, we immediately think of carbon dioxide. However, we must not forget other atmospheric pollutants, such as soot, fluorinated gases and, above all, methane. Although only minute quantities of these pollutants are present in the atmosphere, they can be very harmful due to their high global warming potential. The length of time they remain in the atmosphere is very variable, which can either dilute or—on the contrary—concentrate their impact on climate over time. To establish comparisons with the length of life of a CO₂ molecule in the atmosphere, the scientific community has selected the timeframe of a century as the basis over which to spread **all** greenhouse gases. **But this choice camouflages the real influence of methane**, because its 12-year length of life is well below that of CO₂. Calculated over a century, the contribution of methane to greenhouse gases is 14%, but calculated over 20 years, it reaches nearly 40%—**in other words, nearly as high as CO₂**.

In this respect, climate specialists find themselves caught up in a debate that is well known to economists. **“Science is organized knowledge”¹, but over what timescale should this knowledge be organized?** When making the choice, a parameter to take into account is the timescale most likely to make us take action. **One hundred years is a long way off—too far ahead for decision-makers and for those who give them their mandate for action.** It is far easier for them to understand, and therefore take action on, a timescale of one or two decades.

If we want to achieve rapid results in mitigating greenhouse gas emissions—and we know we have to act fast—we should start tackling methane **without delay**. All the more so given that this **silent, invisible pollution is easier and cheaper to deal with than CO₂**. Combating methane would have a **big impact in the short term**, and give us more time to solve the very complex issue of carbon dioxide.

Methane is the theme of this conference, the tenth organized by the Institut Veolia. It is organized in partnership with AFD, the French Development Agency, and the Prince Albert II of Monaco Foundation, whose teams I want to thank heartily. My thanks also go to Mr. Jean-Paul Delevoye, our host here at the Economic, Social and Environmental Council, which is a forum for debate that brings together the worlds of politics, science, economics and non-profit organizations; the Council’s cross-disciplinary, forward-thinking approach is very much in tune with the approach of the Institut Veolia.

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How can we combat methane, this gas that we hear little about but that makes such a significant contribution to climate change? Around the world, the three main sources of methane are agriculture (more specifically, livestock farming and irrigated rice farming), the oil & gas sector, and household waste. Not to mention the enormous quantities of methane trapped in the permafrost of the polar regions that will be released into the atmosphere if ever this protective layer should melt...

¹ Herbert Spencer

A variety of solutions have already been tried and tested to transform the methane produced by waste into biogas, electricity or heat, and they can rapidly produce results. These solutions form the core of our partnerships with municipalities and industrial companies. In some places we collect the biogas emitted by waste landfills and use it to heat housing units; in other places, our anaerobic digestion plants for agricultural waste supply electricity to cities and compost to farmers. These technologies are in widespread use in developed countries, thanks to strict regulations and public financing mechanisms, but are made little use of in emerging economies.

You will have noticed that these examples fall within the circular economy, in which waste is systematically transformed into resources. This is not a coincidence, because the circular economy is one of the main levers for mitigating CO₂ emissions. Apart from the massive use of fossil energies, climate change is the result of a linear-economy logic of the “Take, Make, Dispose” kind, in which increasing amounts of energy and raw materials are extracted from nature. As a consequence, the combat against greenhouse gases requires the implementation of a different model for the use of natural resources, one that consumes less and more efficiently and is based on widespread recycling. When temperatures are rising, when extreme events become the norm and the unusual becomes the usual—the economy has to become circular.

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The solutions available to reduce methane and carbon emissions come at a cost, which is not—or not sufficiently—factored into economic activities. To spread the use of these solutions and win the climate battle, it is vital to set a robust, predictable carbon price that will be high enough to steer investments in the direction of low-carbon processes. It simply means **at last** applying the Polluter Pays Principle to greenhouse gases, as has already long been the case for wastewater and waste, to great effect.

At the moment, it costs nothing to pollute, whereas it costs a great deal to treat the resulting pollution. Without an emissions ceiling fixed by a standard or a carbon price that charges for the use of the atmosphere as a “greenhouse dump,” all and sundry are free to release **as much CO₂** as they like. **An economic system that encourages the emission of greenhouse gases cannot hope to reduce them!** That is the reason why none of the numerous solutions that exist to reduce carbon emissions will be deployed on a sufficient scale unless a carbon price is set that will be dissuasive to polluters and offer incentives to deal with pollution.

A price of €30 or €40 per metric ton of CO₂ would offer a strong financial incentive and trigger a movement toward low-carbon solutions. For a car, by way of an example, a price of €40 per ton works out to an annual expense of €80, which is affordable for private-vehicle owners. In reality, there is no clash between energy transition and economic growth. **And to those who would argue that it is costly to protect the atmosphere, my question is: how much will it cost to let it go on deteriorating?**

So what shape and form should the financial valuation of carbon take? Organizing a global market for emission permits in the short run is illusory, as this solution requires global governance. What’s more, experience has shown that it is not easy to make this kind of system work: the mechanism put in place in Europe delivers derisory pricing signals that provide no incentive to businesses to reduce their carbon emissions.

In the short term, it is simpler to introduce a **charge** for greenhouse gas emissions on the scale of a large area such as the European Union. It would work on the two-fold principle of “the polluter pays” and “whoever cleans up receives help”; in other words “punishing vice” and “rewarding virtue,” as Montesquieu recommended several centuries back.

To avoid distortion of competition, it would be necessary to create, at the entry point of areas that want to do more against carbon emissions, a tax that hits products made in countries that make less effort. Economic theory condemns this type of border tax. My apologies to the purists, but **the urgency of climate change is such that it permits us to liberate ourselves from mainstream thinking.**

A great many local government authorities and companies have committed to low-carbon strategies, but to see those strategies through, they need governments to set a stable, fair and incentivizing financial framework that will offer security to the anti-carbon investments they program. **However, much remains to be done to apply the Polluter Pays Principle to carbon emissions.** Two figures say more than a long speech about the distance that remains to be covered:

- 1) At this point in time, almost 90% of global CO₂ emissions are not subject to any kind of pricing
- 2) The world grants \$650 billion in subsidies and tax exemptions to oil, gas and coal, amounting to average aid of \$35 per metric ton of CO₂ for fossil fuels². **Rather than a penalty of €30 per metric ton of carbon emissions, we in fact have a €30 subsidy.**

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The sad mathematics of CO₂ should not make us sigh and give up. The defeat of humankind by the climate is not unavoidable. Pragmatism and ambition are the two principles that must guide us in inventing a low-carbon future and protecting the atmosphere, **in a reflection of all our contradictions and mutual dependence.**

- *We need pragmatism* because when we put the COP21 negotiators in the position of choosing between “a legally binding and universal agreement or nothing,” we are condemning them to failure. What is important is not so much to “drag” a signature out of the 196 members of the United Nations as to arrive at a treaty that is acceptable to the countries that emit 80% of the world’s carbon emissions. A realistic solution consists in creating groups of countries brought together around efficient formulas for cooperation. Around 40 countries and 20 regions have already put in place carbon-pricing mechanisms. Despite the imperfections of these “climate clubs,” it is better to reinforce them and then organize their convergence in the future.
- *We need ambition* because **it is simply not possible to conduct strong environmental policy with weak regulatory mechanisms.** Without financial incentives and a far-reaching regulatory framework, winning the climate battle will remain a pipe dream; with the right conditions in place, we can still ward off climate disaster.

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² Given that human activities emit an annual 35 billion metric tons of CO₂ and that around half those emissions are due to the use of fossil fuels.

Record temperatures, more and more cyclones, melting ice sheets, thawing permafrost—once a far-off abstract notion, the climate crisis is already upon us. Human activities have reached a magnitude comparable to that of major natural events that affect the entire planet. Man’s action is now more harmful to the climate and biodiversity than the major glaciations of the Quaternary Period or the giant asteroid that hit the Earth 65 million years ago, producing some of the worst species extinctions that the world has ever seen.

The change in scale of our actions and their impacts is leading to a change in scale of our responsibilities. **Humankind now has to “manage” the climate, taking our place alongside nature.** The planet accomplishes some of the work of dealing with CO₂ and it is up to us to do the rest.

We do not have much time left to stabilize the temperature rise at 2 °C. **But is the low-carbon society a utopia, given that hydrocarbons still account for 80% of the global energy mix? I don’t think so.** Despite the extent of the task to be completed, it is possible to achieve a low-carbon economy, as long as the political will is there and that we take into account on-the-ground realities and truly persevere. We cannot, of course, control the climate, but we can decarbonize growth, we can produce differently and we can consume less oil.

Even so, we will not overcome the difficult climate hurdle that is looming without continuing to innovate. How can the economy, high on carbon, be detoxed without new manufacturing methods? If we had to build the future with the same old technology, the war on climate change would be lost in advance. **A low-carbon economy will necessarily be an economy of innovation.**

It is too early to know what will come out of COP21. Will it be an ambitious agreement or one reduced to the lowest common denominator? But whatever the outcome, we have it in our power to take action. **Yes, there are remedies for our climate woes! And no, there is nothing inevitable about greenhouse gas emissions!** Humankind may be the climate’s worst enemy, but when he wants to be and when he decides to give himself the means, he can also be its best friend.