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SUMMARY REPORT

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Lancet countdown's 2020 report launch event in France

Seminar co-organized by:
Centre des Politiques de la Terre,
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Lancet countdown's 2020 report launch event in France

December 9th 2020 - online

This event is organized as part of the café webinar series of the Centre Politiques de la Terre (Sciences Po & Université de Paris). It was co-organized by the Centre Virchow-Villermé for Public Health Paris-Berlin (Université de Paris) and the Sciences Po LIEPP[1] research group on environmental policies, in partnership with the Lancet Countdown and the Conseil national de l'Ordre des médecins (CNOM).

The **Lancet Countdown: Tracking Progress on Health and Climate Change** is an initiative started in 2016 by the Lancet, one of the oldest medical journals, to develop the idea that tackling climate change is the biggest health opportunity of the 21st Century. The reports track the very diverse impacts of climate change for human health, from a pluridisciplinary perspective. The Lancet Countdown report initiative emphasizes the need for a global monitoring system, focused on key areas of health and climate change, capable of engaging policy makers and supporting health professionals.

This event marked the launching of the 2020 Lancet Countdown report, spotlighting the relations between cities and human health. It brought together professionals and researchers to offer different and complementary disciplinary perspectives on this subject: **Samantha Coleman** (Lancet Countdown Research fellow), Pr. **Robert Barouki** (Biochemist at University of Paris), Dr. **Martin Hendel** (engineering scientist at ESIEE Paris and University of Paris) and **Yann Françoise** (urban engineer, city of Paris), and it was followed by a Q&A session. This event was hosted by Dr. **Charlotte Halpern** (CEE/ LIEPP Sciences Po) and Dr. **Anneliese Depoux** (Centre Virchow-Villermé, Université de Paris).

The event started with a presentation focused on the Lancet report results given by **Samantha Coleman**[2]. She begins by stressing how important the timing of the 2020's report launch is. The devastating impacts of the pandemic has made clearer the health risks we face collectively, and that are specially felt by the vulnerable population. This is all the more critical in the context of the Paris Agreement (UNFCCC) fifth year anniversary. In this context, the 2020 Lancet Report focuses its message on the converging crisis of climate change and COVID-19[3].

Prepared by the Lancet together with 38 partner institutions working on several disciplines, the report tracks the relationship between health and climate change across five key domains

[1] Laboratory for interdisciplinary evaluation of public policies. About the environmental policies research group, see: https://www.sciencespo.fr/liepp/en/content/environmental-policies-research-group.html

[2] Health adaptation Research fellow Lancet Countdown working on developing indicators to track both localized and global adaptation to climate change for health.

[3] The full report is available here: https://www.lancetcountdown.org/2020-report/

and over 40 indicators. The 2020 Lancet report's edition includes updated data sets and methods, a broader geographical and time spam, and also new indicators to tackle rising issues, namely: heat-related mortality, migration and population displacement, access to urban green space, the health benefits of low-carbon diets, the economic cost of extremes of heat and of labor capacity loss, net carbon pricing and the extent to which the UNFCCC nationally determined contributions (NDCs) engage with public health.

There are **three key messages** from this year's report, which reviews the **worst outlook for public health** since its inception. The **first**, is that the 2020 edition emphasizes that **no country – rich or poor – is immune** from the health effects of climate change. People around the world are facing several risks such as extremes of heat, food and water insecurity and changing patterns of infectious diseases at an accelerated pace.
The **second,** is that climate change and the COVID-19 represent **converging crises.** Disasters such as wildfires and tropical storms in 2020 happening during the COVID-19 crisis raised the challenge of evacuating, protecting and providing shelter to communities while at the same time complying with social distancing measures. These events have tragically shown that crises have to be tackled simultaneously. Furthermore, as governments formulate economic recovery plans in response to these converging crises, it is vital that they respond to the climate change challenge stopping the promotion of fossil fuels and meeting the Paris agreement.
The **third** message concerns the benefits of **aligning the global recovery from COVID-19 with the proposed response to climate change,** that offers a triple win. It will improve public health, foster a sustainable economy and protect the environment. However, it is important to highlight that **our time to act is now**!

The presentation follows with a discussion of some selected headline findings and indicators that are particularly relevant to the French context[4].

The first is the **extreme heat effect over health.** This is a subject of increasing concern in Europe. According to the report, Europe is the most vulnerable region regarding heat exposure that causes several health problems affecting particularly its elderly population. To address this concern one of the new indicators of the 2020 report, concerns deaths attributed to heat exposure. The year 2018 observed a record of 296,000 deaths occurring especially in Japan, eastern China, northern India and Central Europe. In France, the study shows an average of 5,838 deaths per year between 2014- 2018 which represents a 30% increase from the 2000-2014 average. During the 2019's summer, dozens of *départements* were placed on red alert for extreme heat risk. It is important to note that it is also the ability to work that is

[4] Country level policy briefs are available on the Lancet Countdown website aimed at identifying local issues that are important to policy makers and decision makers in the national level to make changes. The Policy Brief from France is available here:
https://www.dropbox.com/s/5rhx42c7wzi9u7r/Lancet%20Countdown%20Policy%20Brief%20France_FRA.pdf?dl=0

touched by heat, especially in the sectors of agriculture, industry, service and construction. To address this issue, an indicator of hours of work lost during extreme heat events was also included.

Another issue concerns the spreading of **infectious diseases**. Changing climate conditions are increasing the transmission of infectious diseases beyond their typical geographic distribution. One example relevant to France is the dengue disease, a mosquito-borne tropical disease caused by the dengue virus. From 1950 to 2018 the global climate suitability for mosquitos that transmit this disease, mainly *Aedes aegypti*, increased. France was historically not a host to this mosquito, but climate conditions are rapidly changing that.

Concerning **sustainable and healthy transport systems**, data shows that fossil fuel based transports continue to dominate, but sustainable options are increasing worldwide. France lags behind on this issue, but there is room for improvement. As such transport systems should encourage sustainable options such as cycling and the use of cleaner fuels. Those options are not only beneficial for the environment, but also for the health of the population with the opportunity of a decrease in air pollution and noise and an increase in physical activities.

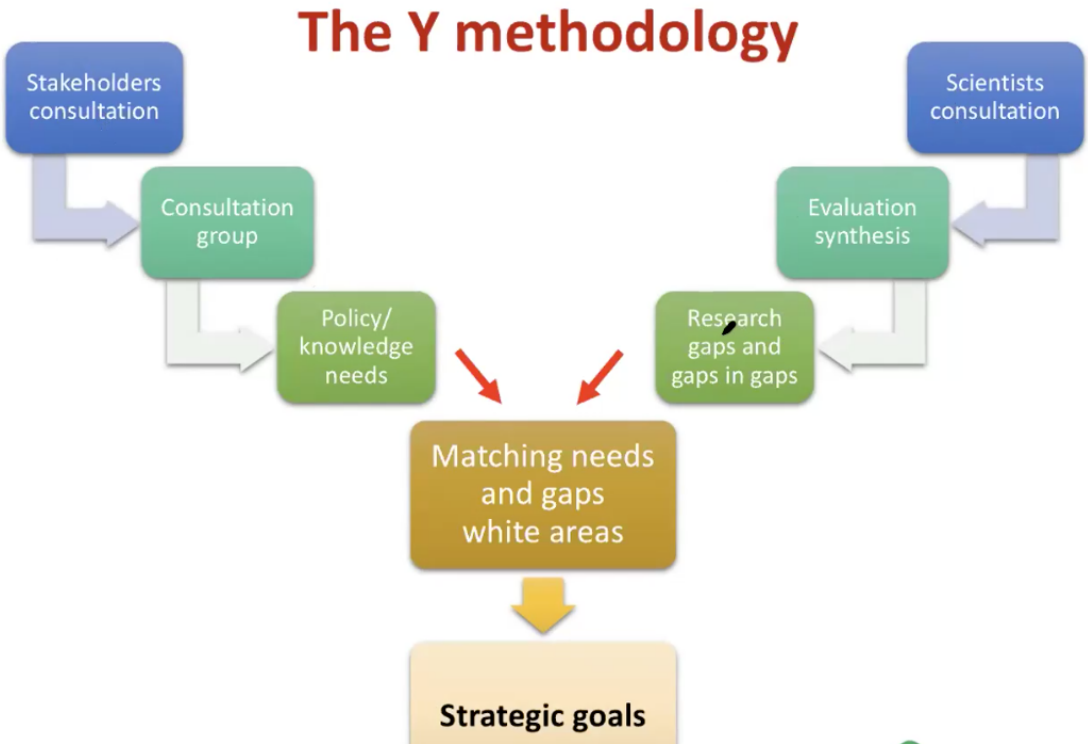
Lastly, the report examines what responses are currently being given to different risks and what should we do. The response to these questions depends largely on regional hazards and local population's needs. For this, it is important to highlight the need for localized strategies. This is notable on the city level, where the report observes an emergence of local assessments, as cities appear as the first administrative scale facing the risks. In France as 4 in 5 people live in urban areas, this is an important issue. According to a survey carried out in the scope of the report, the cities of Nice, Paris and Le Havre carried out such risk assessments in 2019. The issue of extreme heat appears as a particular challenge, especially due to the urban heat island phenomenon, which exacerbates health risks to vulnerable populations. The introduction of green space is both a mitigation and an adaptation measure in this sense, with potential benefits including local temperature reductions of up to 3°C among others. For this reason, the measuring of urban green space appears as a new indicator of the 2020 report.

Samantha Coleman concludes her presentation with the key messages from the report. First, that no country is immune. Unless urgent action is taken, the health impacts of climate change will increasingly threaten lives and livelihoods and compromise the hospitals and clinics we depend on. Second, that the COVID-19 pandemic and climate change represent converging crises. As such, we don't have the luxury of tackling one crisis at a time. Finally, that aligning a clinical recovery from COVID -19 with a response to climate change offers a triple win: improve public health, create a sustainable economy and protect the environment.

The next presentation by Pr. **Robert Barouki**[5] focused on how the **health impacts of climate change and other environmental stressors as a new challenge for physicians.** It drew on the work achieved as part of the HERA Project - Health Environment Research Agenda for Europe[6].

The HERA project aims to provide the EU Commission with an agenda for research and innovation on environment, climate and health. A further objective is to address research that is relevant to a green deal initiative. The strategic goals of the project are:
1) Health impacts, mitigation and adaptation to climate change
2) Diminish negative environment exposure (and promote positive exposure)
3) Promote healthy living
4) Improve assessment of health, social and economic impacts
5) Support transformative approaches for healthy lives
6) Develop infrastructures and new technologies for integrated assessment

The HERA project developed a methodology aimed at identifying key sectors and policy areas for action; the engagement with stakeholders and scientists to increase coordination and cross fertilization of ideas; and the development of an agenda for research and innovation. The methodology adopted for the HERA project is declined in the following chart:



Pr. Barouki presented some results of surveys carried out with the scientific community, that is "scientists' consultation" in the methodological chart above, regarding respondents' main

[5] Professor of Biochemistry, head of T3S laboratory, Université de Paris
[6] Funded by the European Commission under the H2020 programme, https://www.heraresearcheu.eu/

concerns related to environmental exposures, problem-based approach and a holistic approach. He stressed how some specific issues have been frequently raised[7] across subjects, namely: climate, chemicals, and cities (3Cs), that in 2020 became the **4Cs,** including COVID-19.

As the 4Cs are connected, they need a combined approach to be tackled. The proposed **exposome approach** is a holistic approach aimed at better evaluating vulnerabilities and outcomes, to analyze from the health perspective the several different stressors that are at play in the 4Cs. This concept was developed by Dr. Christopher Wild and concerns all exposure from prenatal period onwards, including internal body process, external exposures and lifestyle factors.

There are complex and different factors that lead to health risk from different exposures. In an urban setting the **exposome** is particularly complex and includes for example air quality, water quality, noise, infectious disease, transport system, social stress, and many more. Furthermore, climate change will impact most urban stressors. From the health perspective the effects of climate change are numerous and diverse and many of those effects are also targeted by other environmental stressors.

Because the causes are complex, complex solutions are needed. The exposome concept can be useful from a medical point of view to tackle this complex issue because it aims at integrating the effects of all exposures on human health, including social, economic and physical factors. The attention on the interaction of factors through a holistic approach is also important because several pathologies such as respiratory and cardiovascular disease and cancer depend on the same factors. And each factor itself, such as for instance air quality, depends on its turn on other complex factors such as pollution but also climate change (that concern ozone, particles, pollutants, etc.). Another example of these complex interactions is allergies that are influenced by pollens and mold, but also contaminants such as air quality and pollution.

As far as **public action on health** is concerned, it is highly relevant to study interactions between different stressors. Another key issue that should be considered are past and present socio-economic and health status, as well as vulnerabilities. Finally, public actions have to address the balance of risks *versus* benefits, taking into consideration the full exposure landscape.

The next presentation by **Dr. Martin Hendel[8]**, focused on the specific issue of **urban heat islands and heat waves on cities to reflect upon their climate resilience.** This research is developed by the team "urban climate and energy" of the LIED laboratory (UP) working on

[7] It is important to recognize that a bias might be present because of the respondent's profiles.
[8] Assistant professor at ESIEE Paris, LIED, Université de Paris.

urban cooling at different scales (from the laboratory to the city), as a part of different research projects with several institutional partners.

The presentation begins by reflecting on the concept of **urban heat islands (UHI)** and its scope. The textbook definition of UHI is the local heating effect that is observed in cities, that is the difference in temperature between an urban center and the surrounding non (or less) urbanized scapes. For Paris this difference is 3°C, a value close to what we can find in similar cities across the globe. Although in winter this phenomenon might be beneficial, as it implies fewer heating efforts, it is very inconvenient during heatwaves. During the 2003 heatwave, mortality more than doubled in France, and in Paris there was a 10°C difference in temperatures observed outside its urban area. Since then, this kind of temperature difference has become frequent during heatwaves.

There are mainly four causes to the UHI phenomenon. Radiative trapping in the streets, the lack of evapotranspiration (which means a lack of vegetation), wind obstruction (because of buildings) and anthropogenic heat (as all energy used for lighting, heating, cooling, driving, becomes heat, population density becomes a significant contributor to air temperature). In order to respond to the UHI phenomenon, it is necessary to address its causes. In this way, the response to radiative trapping is to develop reflective cities, that are very present in vernacular architecture of South of Europe. The lack of evapotranspiration can be addressed by urban greening and non-permeable soils, but there are other solutions such as pavement watering. Wind obstruction is tackled by wind permeability to assure airflow between buildings. As for anthropogenic heat the main response is energy efficiency.

Dr. Hendel and his colleagues have been working on several of these responses[9], including:

- Urban materials performance in the laboratory,
- Pavement watering technique,
- Measuring pedestrian heat stress that have health implications,
- Cool school yards (OASIS project[10])

It should also be noted that an important field of action is how to support decision-makers' choices in a context of uncertainty. The approach consists of assisting the prioritization of action areas is to put forward choices based on scientific knowledge that implicate a low risk and no regrets.

In his presentation, **Yann Françoise**[11] focused on UHI to address the issue of health and climate change in the City of Paris. He highlighted how important it is for the city of Paris to

[9] More on their work can be found here: http://www.lied-pieri.univ-paris-diderot.fr/?page_id=529
[10] https://www.paris.fr/pages/les-cours-oasis-7389
[11] Head of the "climate, energy and circular economy" division of the Urban Ecology Agency of the City of Paris.

have information and work together with scientists, sharing practices and coordinating actions.

The City of Paris has been developing climate change initiatives for the past 15 years - from emissions mitigation to a holistic adaptation strategy. One important step in this direction was the study adopted in 2014 by the City Council that lead to the Paris Adaptation Strategy[12]. This study was conducted together with several partners and stakeholders to understand the city's vulnerabilities to climate change now and in the future. This study was central to help build a holistic adaptation strategy in contrast with before where the focus was on tackling issues one by one.

Cities are taking charge of their adaptation strategy because several issues emerging with climate change - such as heatwaves - are not contemplated by law (unlike flooding that has a framework for action in the legislation), so cities have to come up with their own plan. Today Paris has its own climate action plan[13].

Concerning more precisely the urban heat islands effect, the City of Paris carried out a study in 2007 to understand the different factors that contribute to the phenomenon, as well its consequences and main vulnerabilities. After this, today's motto for the city's action is how to develop cool islands, rather than avoiding heat islands. This means that Paris is working with different researchers and other actors to design places where people can rest for some time in an environment that will be surely cooler than their own homes. This is mainly achieved in public gardens with shadows and lawns, but there is a lot of dialogue to be carried out with citizens about the uses of these spaces.

Today there are around 1,000 cool islands in Paris, and the city is developing more public space gardens and rethinking the role of cities as sponges (permeable cities), instead of water-proof cities (which was dominant in the past). But we also have to think about long term solutions, because if we plant trees, it takes a long time for a good shadow to grow. For such dense cities like Paris, we have to multiply solutions. To protect citizens, a new way of thinking is needed. As temperature will rise 3°C until 2030, this is a very important issue.

In the **Q&A session**, the following points were raised:

- How to build a coalition to support and make pressure for more programs and funding addressing urban heat islands?

The issue of funding for urban heat islands has to do with how to correctly allocate money to have good results in mitigation and adaptation, multiplying strategies and paying attention to

[12] https://api-site.paris.fr/images/76270
[13] https://www.paris.fr/pages/nouveau-plan-climat-500-mesures-pour-la-ville-de-paris-5252

how they are implemented. Another issue is the role of private initiative in this field, the public sector alone cannot finance all solutions, the private sector has a role to play.
Several strategies can be explored to create momentum and pressure for actions towards UHI measures. The Lancet decided to draw on public trust in medical professionals and institutions to foster the acceptance and support of those issues in the general population, even though today there is a problem of belief in science.

- What is the impact of solutions for car traffic? How can these solutions impact mobility and reduce traffic?

The urban climate that is relevant to pedestrians is the urban microclimate - when it's very hot and you cross the street to the shade you feel better. This is a micro scale and it's counted in meters. This is also true for car traffic, so actions are very specific to the area targeted, time also matters (during the day, night…), as well as goals and target population. Because of this, car traffic is not exactly a priority target for action. To decide priorities, a no regrets approach is important but also to understand that there's no single solution that fits all. It's useful to get familiar with the local level.

- Is the exposome really relevant for complex and collective hazard? The extension of the risk factor epidemiologic notion extends through culture (representations, mistakes, self-deception, etc.). People exposed to climate change are also minded persons and have capabilities.

This concept was meant to integrate complex issues, but we should be pragmatic in its application. Exposome it's a direction towards which we should go. For example, in particle exposure we usually have data on an average value, but if you have a particle detector at home you can see different variations - if you dust, cook, smoke… the values change a lot. This leads us to think about the need to measure different exposures.

- Evidence shows that in cities the poorest people and communities tend to live in the most polluted environments (no green spaces, high air pollution) and are therefore much more vulnerable to negative health outcomes. Do you have concrete examples of the application of the exposome approach combining socioeconomic and environmental factors in cities? What implications for policy making?

Environmental justice is a major issue. There is a study comparing different areas in Paris with heavy traffic but very different socioeconomic characteristics (the *périphérique*, the Champs Elysée avenue, ...). It shows that mortality is higher where socio-economic levels are low, there are plenty of reasons for it: people don't eat, exercise, and have access to health services in the same way. Studies about the impacts of COVID-19 also show results in this direction. It is important to think and integrate these issues

- What could be concrete actions for physicians in their daily practices?

As a physician a challenge is to be able to interrogate more the patients and not think about one factor that leads to one disease. It is important doctors ask more questions and try to give advice for prevention is a more holistic way since exposures interact.

- All the presentations commented on issues related to cities, data, and a complex and interdisciplinary phenomenon. How do we think about this heat island phenomenon at the urban scale? How do we bring together research on health and the territorial scale?

The Lancet report is global, but adaptation is a local problem: it depends on resources available, the capability to cope, opportunities to act, etc. When talking about prioritizing in the health community, we try to identify who are the most vulnerable. Covid and climate change shows that they are the most affected. Vulnerability from the health perspective is very important. The same approach can be taken with adaptation and mitigation. How can the information we have address the problem for those that are the most affected by climate change? Addressing these underlying vulnerabilities first. Furthermore, behavioral and social issues are important for public action, as well as public acceptability. On the territorial scale, it is important for cities to exchange and network with other cities, to understand about their mutual experience, share success and failures.

Summary report prepared by Dr. Nathalia Capellini