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Published online: 10 Jul 2019.

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The role of information in multilateral governance of environmental health risk: lessons from the Equatorial Asian haze case

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ABSTRACT

A multilateral approach to the governance of environmental health risk could be regarded as a possible response to the complexity of current risk problems. Such multilateral governance is deemed advisable in consideration of the need to achieve an adaptive risk management approach and establish a dialogue among the stakeholders involved in or affected by a specific risk. However, whereas the benefits of multilateral risk governance are clear in theory, in practice – and specifically for the environmental health domain – there seems to be a shortage of successful cases where this multilateral approach has been actually applied. In particular, this article targets the necessity to understand 'multilateral' in a broad sense, thus also including the international community and civil society actors, both organized in collectives (e.g. NGOs) and wider civil society (e.g. on-the-ground citizens). The case of the Equatorial Asian haze is investigated to respond to a theoretical question, namely whether and how processes of *deviating dynamics* can trigger an improvement in risk governance, especially stimulating alternative information production and pushing for the release of key information held by the government. Access to information results in being a necessary step to achieve multilateral risk governance.

1. Introduction

Achieving multilateral governance[1] of environmental health[2] risk[3] is a complex task, as complex as many of the risks currently faced by society. Arguably, complex risks require strong cooperation among the actors involved, rather than sectorial approaches. The societal need for an adaptive risk management may be met through wider stakeholder engagement in risk governance. Such cooperation among stakeholders could be translated, in other words, into a *multilateral approach* to risk governance.

The concept of 'multi-level governance' (MLG), here considered adjoining that of multilateral governance, has been extensively discussed in the literature. Schmitter (2004, 49) observes that "MLG has become the most omnipresent and acceptable label [...]". Piattoni (2010, 1) timely captures the meaning of the concept stating: "It evokes the idea of increasingly complex arrangements for arriving at authoritative decisions in **increasingly** dense networks of public and

private, individual and collective actors" (emphasis added). Piattoni connects the term to the European Union's political scenario, adding that the construct is intended to describe "important features of how binding decisions are arrived at in the European Union" (Piattoni 2010, 1). In the 'narrow' understanding and strong link to EU policy-making, the term is not particularly useful here, considering the focus on a Southeast Asian case. However, Piattoni (2010, 1) also affirms: "Yet, MLG is *not just* a convenient description of political mobilization leading to European policy-making, it also **points to fundamental changes in contemporary rule** [and] prompts reconsideration of **what constitutes legitimate rule** and [under which conditions] binding decisions gain *widespread acceptance and bestow legitimacy*" (emphasis added). Although the author refers to broader (EU) governance, these considerations can well be applied to the *risk governance* focus of the present study. Environmental risks to public health indeed often pose complex, multi-dimensional policy problems that call for the interactions across different actors and spatial/policy levels (Oude Lansink et al. 2018, 780). Multilateral risk governance thus embeds the *essence* of the multilateral governance discourses.

Inspired by ongoing discourses on MLG, this paper inspects how – within this scenario of fundamental change in decision-making – other actors can gain a legitimate status in contributing to the governance of shared issues, framed here as environmental risk to public health. Yet multilateral/MLG seems clearer in theory than in practice. The opportunities of MLG for greater inter-state, inter-institution and inter-stakeholder cooperation have been extensively discussed in theory (Conzelmann and Smith 2008; Fairbrass and Jordan 2004, in relation to environmental policy; Harlow and Rawlings 2007, in relation to accountability; Corfee-Morlot et al. 2011; Oude Lansink et al. 2018, in relation to risk governance). However, there seems to be a shortage of empirical research targeting successful applications of a multilateral approach to *environmental health risk* governance. The present paper minimally contributes to fill this gap by investigating the benefits of a 'multilateral governance outcome' applied to a pressing environmental health risk, worsened by a scarcity of information on the risk situation.

The risk at issue is represented by the phenomenon of the Equatorial Asian haze and its governance failures, which triggered a response from multiple interested stakeholders. The 'multilaterality' of this response – recalling what Piattoni (2010, 1) framed as "increasingly **dense networks** of public and private, individual and collective actors" – is exemplified by the activation of the international community and civil society, either organized in collectives (e.g. NGOs) or wider civil society (e.g. on-the-ground citizens). In this sense, the present research goes beyond a narrow understanding of 'multilateral governance', which would entail only a plurality of countries pursuing a common goal. Multilateral governance is understood as including multiple actors, not necessarily all governmental, that join their efforts for a shared objective. This study indeed inspects two diverse responses from two very different interest groups, with the aim to grasp the true nature and implications of such 'dense networks' and their interventions on the risk arena. The variety of actors entering such an arena evokes questions on acceptance and legitimacy (as pointed out by Piattoni 2010, 1). Both approaches challenged the institutional way of addressing the haze risk and claimed to have a legitimate standpoint in doing so. The question that needs to be answered is which benefits, if any, these challenging interventions bring to institutional risk governance processes.[4] Such possible benefits at the core of the question will be assessed through the lens of information access and information production, which are pivotal stages of multilateral risk governance processes.

The present study targets specifically 'non-traditional' and 'non-institutional' interventions to the haze risk. With 'non-traditional', I refer to dynamics of risk governance that do not fall into standard and pre-planned risk governance models. For 'non-institutional', I mean that the actors entering the risk governance arena are not those traditionally responsible for handling the specific risk problem. It is possible to summarize both meanings with the coined term *deviating dynamics*, indicating variations occurring with respect to standard risk governance patterns. The deviating dynamics analysed in the paper are two: one deriving from the international

community and one deriving from the organized civil society. Their influence on the institutional governance of risk is inspected. In doing so, this study seeks to understand whether and how deviating dynamics internal to environmental risk governance processes can trigger **an improvement** in risk governance, especially stimulating *alternative information production* and pushing for the release of key governmental information. Access to information will be thus discussed as a crucial step in achieving multilateral risk governance.

The analytical lens used to inspect and discuss the two dynamics is based on a combination of two theoretical approaches. The first draws from multilateral governance scholarship and specifically builds on the reflections of Renn, Klinke and van Asselt (2011, 232) on the benefits of an approach to risk governance that relies on an "expanded inclusion of stakeholders". The mobilization of the international community, which urged the Indonesian state to better address the haze risk, is a good example of a risk governance strategy that crosses states' borders and challenges state sovereignty. The second theoretical standpoint is represented by Castells' (2015) analysis of social movements amplified by the Internet. The movements studied by Castells derive from a "culture of autonomy" and are "networked in multiple forms" (Castells 2015, 249, 258), aspects which connect Castells' reflections to a multilateral understanding of risk governance. Castells identifies the essentiality of the reliance on the Internet and on mobile communication networks but also underlines that the movement's networking form is "multimodal", including a *variety of forms of networking*. (Castells 2015, 249). Whereas the first scholarship is functional to analyse both deviating dynamics, the second lens is particularly useful to understand the contribution of critical map-making as a means for diffusion of counter-haze information and for stimulating an alternative discourse on the haze risk. Stasik and Jemielniak (*infra* in this issue) show how Castells' reflection can be linked to risk governance, questioning the extent to which the Internet-mediated public engagement may contribute to a **more responsible risk governance**, compensating the shortcomings of the state system.

The last key element of the analytical frame is that of risk perception in a multilateral context. The multitude of networks through which the risk is *filtered* shapes differently how the risk is perceived by interested actors and how these actors respond to the risk. The research by Stasik and Jemielniak (*infra* in this issue) on how the Internet is affecting the very construction of risks appears extremely timely as it suggests that information freely available on the Internet can multiply responses of actors that would have been otherwise excluded from the risk governance arena. This consideration applies both to the critical map-making discussed in this paper and, to a lesser extent, to the response from the international community. This consideration also has implications that go beyond the scope of this paper, as will be indicated in the conclusion.

The article is structured as follows: the materials and methods are first presented; subsequently, the haze risk problem is briefly introduced and its governance failures illustrated; the two deviating strategies aimed at tackling the haze are presented as responding to such failures; the discussion then focuses on the question of whether and how such deviating approaches can contribute to an improvement in risk governance, stimulating, through alternative information provision, multilateral risk governance; the article concludes with a summary of the key findings and ideas for future research.

2. Materials and method

This study is the result of ongoing research, begun in January 2017 and based on a combination of desk research and empirical qualitative research. The overall research strategy is oriented by the single case study approach. The desk research has been developed through doctrinal review focused on: reports on the effects of the haze on public health; environmental studies on the implications of the haze for the environment; legal texts on haze-related law and case law; reports from international organizations and NGOs on the micro and macro impact of the haze;

theories on (multilateral) risk governance; critical cartography theories and literature on Internet-enabled (or amplified) social movements.[5]

The theoretical reflections have been complemented by qualitative empirical research based on: observations performed at the headquarters of the Legal Unit of Greenpeace International, Amsterdam, between January 2017 and April 2017;[6] intensive observation of two haze mapping platforms, Greenpeace's "Kepo Hutan Map" and "Global Forest Watch Fires Map" (weekly monitoring of the overall evolution of the maps, targeted monitoring of the distribution of data points, search for cross-reference to the maps' data from other sources); written discourse analysis of blog posts, newspaper articles, tweets and other media from or about the stakeholders studied (the approach shaping such an analysis has been inspired by Hymes' Ethnography of Communication, 1974, focused on understanding the social context of linguistic interactions); Skype participation in topical meetings held by Greenpeace Southeast Asia on the haze issue; phone and email correspondence with key stakeholders and organizations involved in haze governance both in the region and from various parts of the world.

The methodology resulted from a triangulation approach: a number of data sources have been consulted in order to improve information validation, especially in consideration of access barriers to the researched context. The first access barrier was geographical as the research has been deployed remotely, away from the Southeast Asian context. Secondly, some information was only available in Bahasa, the official language of Indonesia. Lastly, numerous gatekeeping barriers have been encountered in the attempt to access governmental information. As a way to overcome these barriers, I decided to 'enter' the studied field by researching from an involved organization, Greenpeace, and personally engaging in communications with the researched subjects. Overall, the noted barriers and nature of the research, which aims at grasping a multifaceted reality composed by a multitude of actors, justifies such a triangulation approach, the participatory methods and the reliance on 'unconventional' sources, although constantly contextualized in a solid theoretical grounding.

3. The haze risk

The 'haze' is a serious air pollution issue generated by forest and peatland fires and occurring with a certain regularity. Its peaks have been recorded in the past years, 2015 and 2016, when the phenomenon was repeatedly featuring on local and international public media.[7] In this article, the word 'haze' is used rather than 'smoke' to characterize a phenomenon that differs from 'ordinary' air pollution generated from traffic in cities. The characteristics of the haze are illustrated in this section as they appear particularly crucial to understand the reasons behind the failures of institutional governance and the response of the stakeholders studied.

The first relevant element is that it represents an impelling risk for public health in Equatorial Asia. It is thus a matter of a *shared* risk, rather *systemic* in the sense that it is profoundly embedded in local dynamics and contextual power structures. The haze pollution originates from forest and peatland fires, mostly taking place in Indonesia and in general produced by illegal practices. Such illegality also shows that the risk at issue is caused by a 'deviation' from the standard course of happenings. The fires are mostly associated with illegal land clearing for agricultural use or land acquisition or with illegal ignition of agricultural residue. However, in certain instances, fires can even be the result of vandalism or a mechanism to force inhabitants off the land (Simorangkir 2006; Berti Suman 2017). The conversion or clearing of land by fire is explicitly prohibited by the Indonesian Law No. 32/2009 and Indonesian Government Regulation No. 4/2001.[8] Nonetheless, the law is not deterring the illegal conduct mainly due to enforcement failures – state control and law enforcement are scarce[9] – and prevalence of convenience reasoning – the illegal option is cheaper (Simorangkir 2006; Berti Suman 2017). Another key figure is the *reluctance* on the side of responsible institutions to have the haze problem tackled properly,

which arguably increases the systemic nature of the risk. The scenario is worsened by a number of contextual circumstances, such as unregulated agricultural expansion, heavy deforestation and land conflicts (The World Bank 2015a). In addition, the effects of the haze are reinforced by specific weather conditions, namely the recurring droughts, the advent of El Niño and of the positive Indian Ocean Dipole (IOD)[10] which intensify the haze threat.

What does the risk associated with the haze consist of? When burned, forest and peatland release a noxious agent which causes risk to public health. Specifically, during combustion, the organic material contained in the trees and in the peat discharges polluting fine particulate matter (PM2.5), potentially fatal when inhaled (Koplitz et al. 2016; Crippa et al. 2016; Quah and Johnston 2001). If exposure to the haze creates immediate health consequences for the current generations, ranging from respiratory, to heart and eye-related illnesses (Stephen and Low 2002; Berti Suman 2017), to cancer (Radojevic 2003), the potential effects on future generations also have to be considered. This argument brings forward another characteristic of the risk at issue: it is not located in a specific time, but instead is *longitudinal* to present and future populations of the region. As demonstrated by Betha et al. (2013), long-term exposure to air pollution deriving from the haze could seriously affect the health of the population over time (Berti Suman 2017). When adopting a multilateral risk governance approach, the need to include in the debate the interests of future generations is pressing. Although future generations cannot have a voice in the present discussions over the haze, existing organizations (such as environmental NGOs) play the role of 'spokespeople' for the future generations. A new dimension of the multilateral risk governance approach emerges, pushing for a 'temporal' understanding of risk governance (but also spatial, as discussed below).

In addition to its fatality, the haze can impair visibility, provoking additional adverse effects, for example for transport, trade, tourism, and schools. Among the adverse effects, the loss of biodiversity and of ecosystem services can be enumerated. Considering the sum of all effects, the World Bank (2015b) estimated that, just in 2015 and only for Indonesia, the haze cost around USD 16.1 billion to the country, representing an approximate 1.9% of the country's GDP. This figure, however, does not capture additional costs suffered regionally (e.g. in Singapore) and globally (e.g. fires associated release of greenhouse gas emissions) (Berti Suman 2017). Overall, the risk at issue seems particularly complex also because its effects are difficult to quantify.

Moreover, the haze becomes a *transboundary* risk when considerable levels of it cross another country's air space. This underlines the 'multilaterality' of the haze risk itself: the haze is not a single country's problem as it does not remain over the land where it is produced, but it is pushed by winds to other neighboring areas which often do not contribute to its causation. For example, in 2015 the haze was pushed towards Singapore and Kuala Lumpur, two areas which do not contribute to illegal forest burning (Koplitz et al. 2016). The 'spatial' dimension of the haze, in addition to its temporal dimension, shows the importance of considering the (haze) risk from various temporal/spatial dimensions.

Lastly, it is acknowledged that tackling the haze problem is particularly difficult due to economic interests. In fact, the illegal burning is aimed at replacing pristine forests with commercial species, such a palm oil plantations. The loss of native vegetation and public health concerns have to be balanced with the benefits for the economic growth of the region. However, the World Bank (2015b) underlined that the estimated economic cost of illegal fires in Indonesia was higher than the estimated added value from Indonesia gross palm oil exports and from the country's entire palm oil production for year 2014–2015.[11] Furthermore, the gain from illegal forest burning often benefits only a minority, mostly represented by concessions' owners or controllers, whereas the adverse effects interest a considerably wider segment of the Indonesian population and of neighbouring countries (The Indonesian Center for International Forestry Research 2015). In this scenario of a shared, systemic, longitudinal and transboundary risk entailing a complex balancing between conflicting interests, a multilateral approach to the haze risk seems particularly advisable.

4. Weaknesses of the institutional risk governance

Enforcement of anti-haze policies has been particularly limited in the region due to a series of criticisms, some of which are illustrated as follows: First, a barrier to a proper haze governance derives from what could be called the 'de-ownership' of the problem. The volatile nature of the haze which does not stay over the land where it is produced often opens avenues to the *denial of responsibility* for its causation (Salvo and Tan 2014).

Furthermore, there is a clear vicious cycle originating from the circumstance that the countries mostly suffering from haze, e.g. Singapore, *do not have control* over the areas where the haze originates, namely Indonesia. In addition, the gain of haze-producing activities primarily benefits Indonesia, which is consequently discouraged to adopt measures to halt haze-causing businesses. The affected countries currently can only rely on indirect measures to disincentivize companies from contributing to the haze, such as certification mechanisms and the banning of haze-causing products' importation and shipment to the affected countries. Another mechanism adopted is the imposition of taxes and legal restrictions by the state on haze-causing multinational corporations. However, as rightly pointed out by Taebi and Safari (2017) and Macek (2002), frequently host states are reluctant to adopt such stringent measures and rather acquiesce to corporate interests, even if that means forgiving serious human rights violations (Macek 2002, 104).

On the juridical landscape, law enforcement against the individuals and companies responsible for the haze is still very limited. At present, few cases have been brought to courts in relation to the haze issue, rarely resulting in condemnation of companies or governors. Law enforcement associated with the haze seems hindered primarily by *a lack of evidence* on the allocation of responsibility for causing the haze. Data on land ownership and concessions is currently scattered in a number of registers that are not all stored and available in digital form.[12] Information on occurrence of fires is also rarely provided in real time and in an accessible format (e.g. open access).[13] Consequently, as the chances to be prosecuted for haze-causing activities are low, there is an incentive to violate anti-haze laws and regulations.

The previously mentioned scarcity of information on land ownership and fire locations pushed the local institutions to adopt a series of initiatives aimed at land and fire mapping. A number of cooperation agreements have been established between Indonesia and Singapore (e.g. the Jambi Memorandum of Understanding) and on a broader scale (e.g. the Association of Southeast Asian Nations' (ASEAN) Agreement on Transboundary Haze Pollution signed by all ten ASEAN Member States in June 2002 and ratified also by Indonesia in 2014). In addition, in view of the importance of *information sharing* for tackling the haze problem, Singapore encouraged the creation of the ASEAN Sub-Regional Haze Monitoring System (AHMS).[14] Another noteworthy action was the launch of the 'One Map initiative' by the Indonesian Government, created in collaboration with the Indonesian National Geospatial Agency and supported by the US Agency for International Development and the US Forest Service International Programs. The map was aimed at creating a single database of information on land use, land tenure and other spatial data regarding the Indonesian territory.

Overall, a dominant trend of denial of responsibility, lack of control and scarce information seems to be producing failures in haze risk governance. Despite the numerous initiatives mentioned from the ASEAN countries, the haze risk has not been halted and the expected improvement in transparency has not occurred (Shah 2016). On one side, appropriate measures to halt the haze problem or at least mitigate smoke exposure have not been implemented by the Indonesian government. In addition, law enforcement by the Indonesian state against the actors responsible for haze-causing activities is weak. With a deeply transnational problem at stake, the intervention of the international community discussed hereinafter legitimately demanded information on anti-haze measures and on their enforcement. On the other side, an informational monopoly emerges, characterized by unavailable, outdated or scattered data and by scarce

government-to-government cooperation in sharing haze information. In this sense, the response of civil society through haze counter-mapping seems to be pushing for greater access to strategic haze information, by providing 'alternative' haze data. Both interventions, that from the international community and from civil society, thus strive to remove barriers to information access.

5. A multilateral analysis of 'deviating' governance dynamics in response to the haze risk

5.1. The intervention from the international community

When national and regional interventions in response to a risk problem seem insufficient, international players may intervene to shape the scene, as actors in the multilateral governance arena. The intervention of the international community is here considered as one of the two 'deviating' risk governance dynamics in response to the haze, primarily aimed at increasing availability of information on the haze and on anti-haze measures. Arguably, both dynamics appear to reject unilateral risk governance, especially with regards to the State's control of key information assets on the haze risk, and a centralised information sharing approach, and rather push for the *multilateral* availability of haze information.

Focusing on the first dynamic, in November 2016 in response to the pressing haze threat, a group of UN special Rapporteurs[15] addressed a letter[16] to the Indonesian government urging prompt action to halt the haze. The action, though coming from an institutionalized community, was supported by the advocacy of numerous (also local) grassroots organizations. As a first element of attention, this shows that the deviating dynamic at issue is already symptom of a 'push' towards the inclusion in the haze debate of concerned actors, among which are those coming from civil society.

The second noteworthy element is that, in the opening of the letter, the Rapporteurs state "According to the *information* received: reports allege that there is a systematic and widespread use of fire for land clearing in Indonesia […]; based on *information* received, much of the haze […] is due to fires in South Sumatra Province; […] according to *the information* received, thousands of premature deaths and illnesses are reportedly due to […] hazardous substances in haze" (pp. 2–3, emphasis added). The central role of (proper) information for understanding the seriousness of the haze phenomenon emerges. The term 'information' is found ten times in a relatively short letter. The Rapporteurs also express doubt about the accuracy of this information, affirming "While we do not wish to prejudge the accuracy of these allegations, grave concern is expressed over the severe domestic and transboundary impacts of Indonesian haze" (p. 3). This passage strengthens the argument that scarce access to haze-related information seems to be worsening the problem.

It is also remarkable that the Rapporteurs stressed the possible breach of a number of human rights such as the right to life and physical integrity (as granted by Article 3 of the Universal Declaration of Human Rights and Article 6 of the International Covenant on Civil and Political Rights, ratified by Indonesia in 2006) and to health (as recognized by Article 12 of the International Covenant on Economic, Social and Cultural Rights, ratified by Indonesia in 2006). This reliance on human rights appears as a justification for the impingement into the sphere of *state sovereignty* with regards to the handling of the risk. The Rapporteurs indeed ground their claims in international human rights law, referring to an annex where international human rights instruments and standards relevant to their allegations are cited.

Information sharing comes as a key element again in the nine questions officially addressed in the letter to the Indonesian government. First, the Rapporteur wonders whether Indonesia, as party to the ASEAN Agreement on Transboundary Haze Pollution since 2014, complied with the obligations under this agreement. Furthermore, the Rapporteurs requested clarifications on appropriate measures taken to monitor areas at risk of fire, "all land and/or forest fires, the

environmental conditions conducive to such land and/or forest fires and haze pollution arising from such land and/or forest fires" (p.4) in order to activate prompt interventions. In addition, the Rapporteurs also requested information about policies aimed at mitigating smoke exposure and consequent impacts on human health and at encouraging companies to comply with haze-related obligations. In addition, the government was asked for numerous evidence, such as proofs of early-response efforts to forest fires and of coping strategies. Lastly, the Rapporteurs asked for evidence of studies conducted by competent authorities analysing the health impact of the haze as well as data and plans aimed to ensure the surveillance of the health situation of the local population. Furthermore, the Rapporteurs made a clear reference to the importance of assuring legal accountability avenues for the haze-causing actors, specifically asking for regulatory measures aimed at making companies accountable for illegal burning practices. Lastly, the Rapporteurs demanded proof of judicial, administrative and legislative steps adopted to ensure that victims of the haze can have access to effective remedies.

The States' obligations listed by the Rapporteurs are also derived from supra-national provisions, namely the General Comment 14 of the Committee on Economic, Social and Cultural Rights on Article 12. According to the provision, States have the duty to adopt measures against environmental and occupational health hazards, to be implemented through national policies aimed at reducing and eliminating *pollution of air*, water and soil (para.36, GC 14). The Rapporteurs also made reference to another supra-national provision, i.e. the UN Guiding Principles on Business and Human Rights, as endorsed by the Human Rights Council (Resolution A/HRC/RES/17/31, 2011). Guiding Principle 25 is specifically mentioned as providing for the State's duty to "take appropriate steps to ensure, through judicial, administrative, legislative or other appropriate means" that, in case of business-related human rights violations, "occurring within their territory or jurisdiction, those affected have access to *effective remedy*" (emphasis added).

In the closing of the letter, it is remarkable that the Rapporteurs urge the Indonesian government to take "all necessary interim measures" and, "in the event that the investigations support or suggest the allegations to be correct, to ensure the *accountability* of any person(s) responsible for the alleged violations" (p. 5, emphasis added). The Rapporteurs underlined the urgency of their request allowing the government 60 days to reply, arguing that "the *information* upon which the press release will be based is *sufficiently reliable* to indicate a matter warranting immediate attention" (p.5, emphasis added). It seems that a pressing risk justifies an acceleration in the process of release of information. In addition, beyond the link to accountability, the Rapporteurs also create a connection to the importance of public information, noting that "[…] *the wider public should be alerted* to the potential implications of the above-mentioned allegations" (p. 5, emphasis added).

The international community's intervention seems solidly grounded in international human rights law. It is indeed backed by a number of legal provisions in international texts and enjoys the support of numerous civil society organisations. Nonetheless, to the best of the author's knowledge, the Indonesian government has not yet adopted the requested measures and released the demanded information. Interestingly, a year before a similar strategy was chosen by a number of local environmental NGOs which filed a letter calling for a halt to haze-causing practices. The "Open Letter From Indonesian NGOs to the Government of The Republic of Indonesia, Buyers, Customers, and Banks of Companies Related to Forest Fires in Indonesia"[17] demanded the Indonesian government to stop issuing permits for pulp and palm oil plantations (businesses often associated with the haze) and to convict those companies linked to forest fires. In addition, the NGOs urged buyers and investors to cease businesses with companies involved in forest fires. Similarly to the UN Rapporteurs' letter, this open letter also did not bring a substantial improvement in anti-haze measures. The 'letter approach' seems scarcely effective for the following hypothesized reasons. First, it does not threaten any concrete sanction, apart from raising public opinion on the matter, which creates low incentives to comply with the request. In

addition, the letter may have been perceived as 'extraneous' to the local context, deriving from a dimension, the international level, seen as abstract and far from the Indonesian government's daily business. However, the letter from local NGOs, arguably more linked to the local context, also did not bring about substantial changes.

If the government would have addressed the request from the UN Rapporteurs, a boost in availability of information arguably could have been produced, in terms of information on the haze risk per se, information on the anti-haze measures adopted by the Indonesian government and information on the health implications of the haze. In the current scenario of scattered and inaccessible information, such a detailed and comprehensive answer would have been a first step for the international community to assess the appropriateness of the government's strategy to prevent or cope with the haze. In answering the requests, the Indonesian government – in case of unsatisfactory measures taken – would have been obliged to commit itself to better tackle the haze through concrete actions. Further research is needed to assess whether in any near future the Indonesian government will respond to this letter, and how. If the international community has been labelled as an intervention 'extraneous' and 'too far away' from the local context, it is now worth investigating the effects of responses more rooted in the local contexts.

Timely, also the second response seems revolving around the need to ensure (better) access to information as a key element to improve haze risk governance. Both interventions thus seem aimed at *filling informational gaps*. However, the first response here discussed is more 'indirect' in the sense that aims at *requesting* information from key stakeholders (the Indonesian government), whereas the second intervention *directly takes* the information or even produces it when it is not available/accessible, and make it open to the concerned public. The public, through access to strategic information, becomes able to better orient their conducts and take decisions. Haze information emerges as being essential in haze preparedness and haze risk governance. In a multilateral approach, risk information becomes available through multiple channels and for a variety of actors. The response presented in the following sub-section will be examined exactly under the lens of its potential to increase information availability for the wider civil society.

5.2. The intervention from the organized civil society

> The previous section illustrated how the shortcomings of institutional haze risk governance triggered a first form of deviating dynamics, namely the intervention from the UN Rapporteurs. However, the described action did not lead to the release of the information requested. This section inspects a different form of deviating dynamic, still aimed at achieving greater information availability but this time more rooted in the local reality (though in a way also linked to the global debate). This second intervention is identified in efforts of the – mostly organized – civil society aimed to directly obtain the missing information, by detecting and mapping illegal fires and related haze episodes through its own means.[18] It should be noted that the alternative mapping efforts have been initiated by established NGOs, whereas the wider civil society mostly benefitted from such efforts as 'users'. These organizations played the role of an 'intermediary' between the concerned grassroots and the institutions/global audience (see the concept of Greenpeace as a 'medium-up' organization, Berti Suman forthcoming). These mediating organizations may well be necessary in certain local realities where individuals reporting environmental risks and fighting against the unjust governance of such risks may be silenced or even at risk of life.[19] In addition, NGOs, relying on international networks and attracting global public opinion, may play a crucial role in ensuring that the claims of local affected population are listened to at international and institutional levels.

Local NGOs and associations such as 'Jatam' (the local Mining Advocacy Network),[20] 'Jakarta Legal Aid' (a local organization providing legal aid to disadvantaged people)[21] and the Indonesia Centre for Environmental Law (a local institute dealing with environmental law issues)[22] joined their efforts in order to offer an 'alternative' information source on the haze risk. At a more global level, 'Walhi', the Indonesian branch of 'Friends of the Earth',[23] the World Resources Institute (WRI),[24] a global research organization, and Greenpeace Southeast Asia[25] also cooperated to provide on local and global media a critical representation of the haze problem. They amplified their

voice on the Internet and, keeping their roots in the local context, managed to attract global attention, exemplifying arguments by Van Laer and Van Aelst (2010, 1), i.e. that "the Internet (…) has given social movements *new and improved opportunities* to engage in social and political action" (emphasis added).

An example of these Internet-enabled opportunities to scale-up local claims is represented by the initiative launched in 2014 by the WRI, the 'Global Forest Watch Fires' (GFWF) map.[26] The map is of particular interest for the discussion on a 'multilateral' haze governance because it combines a local system of monitoring illegal fires (based on GFWF's own satellite data and on-the-ground user-fed data) with data derived from official sources (from governmental websites and databases), making this all available to a global audience. On the map's website, it is affirmed that the GFWF map "offers the latest data, technology and tools that empower people *everywhere* to better protect forests" (emphasis added).[27] The possibility for global eyes to watch over fire management seems a key part of the intervention (information access). In addition, the GFWF map has the functionality to add information to the official sources when these are incomplete (information production).

The richness of the map has been enhanced by the creation of the 'Kepo Hutan'[28] platform from Greenpeace Southeast Asia. This map complements the GFWF map with a number of key figures, such as characteristics of the land and details on concessions' borders. In addition, the platform is particularly user-friendly, as it is also aimed at providing to local civil society useful information (remarkably, the Kepo Hutan map is mostly in Bahasa). The map indeed provides individual users with easily digestible data on fire hotspots and concession locations deriving from various sources (e.g. from NASA; from Google Earth Engine, etc.). Users can access and download concessions and fire maps in shapefile format, a format facilitating independent data analysis.[29] In addition, they can feed the map with user-collected information, such as fire pictures and GPS location. Lastly, the described platform can particularly enable civil society's reaction to the haze by sending real-time haze alerts via an app to on-the-ground actors.[30] This resembles what Stasik and Jemielniak (*infra* in this issue) illustrated with regards to air pollution monitoring apps in Poland. The authors argue that, in the case of app-mediated engagement in risk monitoring, the user can be released from the dependence on distant and *unaccountable* experts, becoming able to have *direct access* to the data on which (s)he can base her/his behavior. This ability to access directly the information to orient one's decisions seems particularly crucial in cases of risks made 'invisible' by political actors (Berti Suman 2017; Berti Suman forthcoming) and it appears as a prerequisite to enable a multilateral response to a pressing risk.

The technical strengths of the maps show how this 'alternative' information production is rooted in evidence collected on the ground and not alimented by fabricated claims (see contrarily the anti-vax movement discussed by Stasik and Jemielniak *infra* in this issue). This dissemination and legitimization of unconventional knowledge, amplified by the reliance on collaborative Web 2.0-3.0 (Mrabet 2016), echoes what Stasik and Jemielniak (*infra* in this issue) argue with regards to the anti-fracking movement and air pollution civic monitoring in Poland. Alternative knowledge hierarchies emerge, having science on their side, although disbelieving 'dominant' science. These new information channels challenge the credibility of and trust in prevailing science (Renn and Levine 1991; Stasik and Jemielniak *infra* in this issue) and redefine the role of expertise itself (Jemielniak and Przegalińska 2018). Yet they are not always destructive. As shown for the maps discussed here, they can actually complement expert-produced scientific knowledge, thanks to a "meticulously developed system of crowdsourced quality control, and well-established governance rules assuring the verifiability of sources and credibility of the cited material" (Stasik and Jemielniak *infra* in this issue, 4; Jemielniak 2016). (Dis)trust in institutions seems central in the initiation of the deviating dynamics at issue. As Castell wisely points out (2015, 246), social movements usually derive from a combination of, on one side, "a crisis of living conditions that makes everyday life unbearable for most people", and on the other side, "a deep distrust of the political institutions managing society." Nevertheless, in the case of

Indonesia, it should be noted that the presented initiative does not necessarily reflect an overall trend of distrust towards institutions. The 2018 Edelman Trust Barometer[31] reported Indonesian overall levels of institutional trust for years 2017 and 2018 as being high both from the general public and the informed public. The alternative mapping can thus be viewed as a challenge to the state system, but also as a constructive response from a trusting civil society aimed at *improving* haze governance.

All considered, it can be affirmed that the maps discussed have the potential to call global attention to the haze issue, being freely accessible on the Internet. In addition, they seem able to enhance people's ability to cope with fires and haze events due to their user-oriented approach. Further research in the field would be needed to inspect the actual usage by local populations and the associated benefits. What can be already noted, for example, is that the maps made their way to the courts, enhancing oversight over the institutional response to the haze issue. Walhi indeed managed to have the Indonesian government found negligent in the State Court of Palangkaraya for the management of the 2015 haze crisis. Remarkably, the evidence presented during the trial in part derives from the GFW Fires maps. However, to the author's knowledge, the maps did not succeed in persuading the government to release more haze information. Courts have often supported this position: for example, in 2017, the Indonesian Administrative High Court ruled in favour of the Environment and Forestry Ministry, upholding the government's decision not to disclose forest and concessions maps, upon request of Greenpeace Indonesia. The NGO appealed to the Indonesian Central Information Commission, pursuant to the Indonesian Public Information Disclosure Act of 2008 (Greenpeace International 2016). Again, information emerges as a key gatekeeper for 'opening' the haze debate to a multitude of actors.

From the analysis above, it emerges how alternative information shared through "new communication technologies" stimulates "a diverse array of *organizational forms* in the pursuit of collective interests" (Bimber, Stohl, and Flanagin 2009, 72, emphasis added). Non-institutional players, more or less organized, show that they are able to play a particular epistemic role by complementing knowledge available to risk governors. Maps have been traditionally produced by 'experts' but recently advances in the Web 2.0/3.0 and in geoinformation technologies have enabled new actors to easily acquire, visualize, disseminate and use geographical information (Freitag, Meyer and Whiteman 2016; Boulos et al. 2011; Gutierrez 2019). Such alternative digital maps alimented by data produced by on-the-ground actors and denouncing globally local issues manage to bridge the local and the global levels through a single data visualization tool (Stasik and Jemielniak *infra* in this issue; Gutierrez 2019). The (risk) mapping becomes populated by a multitude of stakeholders, competing with official information sources and operating both at the local and global level. This competition over information can challenge, destabilize, but also improve traditional governance structures, as will be illustrated in the following section.

6. Discussion

This paper has investigated two 'deviating' responses to an alleged institutional failure, both aimed at stimulating greater information access. The critical mapping proved more effective than the letter from the UN Rapporteurs in the sense that it directly provided access to information, publishing official and unofficial data in accessible formats and giving haze-affected people the possibility to be alerted of haze events. Lastly, it provided to governmental agencies responsible for the haze governance a resource that can potentially be used to fill official sources' gaps on land, fire and haze information. Indeed, this grassroots' mapping could eventually facilitate the action of public institutions in assessing causal links between land concessions and fires, and between fires and haze events. The alternative mapping thus appears not just a challenge to the institutional system, but also a way to improve the institutional response to the risk by providing

useful information. However, the institutional players must recognize the alternative maps as valid and reliable for this complementary potential to be released. Otherwise, two parallel and conflicting systems (the institutional and the deviating) will develop, which will likely result in a duplication of efforts, loss of resources and a hindrance to the maps' potential.

Differently, the letter from the UN Rapporteurs asked for information release, rather than directly making it available. This was of course in line with the power of the Rapporteurs. However, the lack of concrete sanctions in case of non-compliance with the request made the letter a weak intervention in terms of improving the release of information. The maps themselves did not stimulate the official release of information either, but somehow bypassed that step by generating competing information and thus succeeding in augmenting information availability both for globally concerned actors and locally affected individuals.

The two discussed examples show how at different governance levels different reactions emerge. Namely, at the international level – the global level – the intervention against the haze was embodied by a letter addressed to the Indonesian government. Conversely, at the civil society level – the local level – the deviating dynamic took the form of a critical mapping. Local actors, in urgent need of accessing information, did not go through institutional channels to request such information, as the UN Rapporteurs did. They 'grabbed' the information and published it online, which shows that – in certain instances – civic actions may be more effective than institutional mechanisms. Yet the UN Rapporteurs' letter has its own role, in terms of globally denouncing the conduct of the Indonesian government and putting a clear burden on the State to provide haze information and tackle the haze risk. Indeed, the alternative map-making may risk eventually relieving the State from an obligation, which inherently belongs to it, namely the duty to protect its citizens against the haze, including through the provision of accurate haze information. Consequently, even if not effective in pushing the government to provide information, the UN Rapporteurs' letter seems necessary in terms of clearly demarcating the State's responsibility in properly governing the haze.

Furthermore, in juxtaposing the global and the local strategies, it also worth noting that the response from the local level is *not that local*. Rather, it appears adjoining the international level when the local information is communicated and disseminated on a global platform, such as a platform powered by international environmental organizations. If the data pool is local, it is undisputed that the diffusion channels and audience are global. In this combination of the local and the global and the bridging of several levels of governance may lay a strength of the initiative. It can indeed be argued that Greenpeace and the WRI gave extra power of influence to the platform by endorsing it, but rooted it in the local context and developed it through local forces. The Rapporteur's letter, differently, targeted a local problem but voicing it through the words of international actors, which – as discussed above – appear somehow detached from the local context and meanings.

The consideration of the two alternative dynamics open up reflections that could inspire future research. First, the present study stresses the importance of taking into account different perceptions of the risk that different actors have. In the case, the risk perception by institutional players does not seem to align with the perception of the risk by civil society. If for the Indonesian government the economic benefits associated with haze-causing businesses were prevalent, the local inhabitants, environmental NGOs and the international community clearly had the protection of health and the environment as primary goal. As stressed by Van Asselt and Renn (2011, 437), multiple values (and interests) creating different and often conflicting perspectives may generate ambiguity in risk perception and increase risk complexity. In view of this complexity, multiple responses to the same risk may be beneficial to improving risk governance, which is ultimately, in its very intrinsic meaning, the collective decision-making of a 'multitude of actors and processes' (Van Asselt and Renn 2011, 431), acting on a *horizontally organized* structure (Wolf 2002).

In addition, ideas for future reflections include the need to go beyond a narrow focus targeting only the governmental response to a risk problem. The researcher/observer/actor may miss a crucial part of the picture, namely the complex web of 'informal arrangements' (Van Asselt and Renn 2011, 432) and 'non-linear' models (Renn, Klinke, and van Asselt 2011, 239) that co-shape risk governance, if only official responses to the risk are considered. Unplanned and non-institutionalized interventions into the system can ultimately result in being particularly beneficial to improve risk governance (Renn, Klinke and van Asselt 2011, 239). The need to rely "on expanded inclusion of stakeholders" (Renn, Klinke, and van Asselt 2011, 232) in information provision to fuel risk governance is conceived here as a tool not only to cope with the failures of current risk governance models (Van Asselt and Renn 2011, 443), but also as a means to actually improve the governance of risks that are complex, made 'invisible' and embedded in power structures.

The implications of the reflections developed in this article could stimulate future reflections on the need to go beyond a state-centric handling of risk information. This argument points to the role played by a multitude of actors competing as information sources with the government and organized in *multi-actor networks*, amplified on and channelled by the Internet. Such new actors shall be considered legitimate partners in the process of producing risk information (Stasik and Jemielniak *infra* in this issue).

The deviating dynamics discussed may improve informational diversity in risk handling, raising constructive criticisms and bringing complementary views. As Renn, Klinke and van Asselt argue (2011, 1), despite the possible fragmentation of multi-actors participatory models of risk governance, institutional diversity – here illustrated as a multitude of actors providing risk information – brings the promise of improved risk governance and ultimately contributing to societal resiliency. Future research should inspect the benefits of such participatory models where non-state actors, as the Indonesian citizens affected by the haze, play a crucial role as holders of decisive advantages of information and resources unavailable to institutional actors (Kern and Bulkeley 2009). The challenge for risk governors is how to properly receive and benefit from this 'competing' information.

A future research agenda that aims at understanding the full potential of multilateral risk governance should search for further cases of these deviating interventions which have the potential to, first, destabilize institutional risk governance and, eventually, improve it by challenging its methods, practices and assumptions. This study contributed to show that deeper empirical insights are needed to assess and understand the real benefits that the reliance on an expanded inclusion of stakeholders (Renn, Klinke, and van Asselt 2011, 232), often mobilized through the Internet, brings to risk governance, specifically in cases of complex environmental risks to public health.

Notes

1. The notion of *governance* primarily belongs to the political sciences and aims at describing "the multitude of actors and processes that lead to collective binding decisions" (Van Asselt and Renn 2011, 431). Van Asselt and Renn (2011, 431) also defined *risk governance*, characterizing it as "the translation of the substance and core principles of governance to the context of risk-related decision-making". Risk governance would encompass "both the institutional structure and the policy process that guide and restrain collective activities of a group, society or international community to regulate, reduce or control risk problems" (Renn, Klinke and van Asselt 2011, 231).
2. *Environmental health* has been defined by the U.S. Agency for Toxic Substances and Disease Registry (1997) as follows: "Environmental health is the branch of public health that protects against the effects of environmental hazards that can adversely affect health or the ecological balances essential to human health and environmental quality". See https://health.gov/environment/DefinitionsofEnvHealth/ehdef2.htm#7. Accessed 10 February 2018.
3. *Risk* has been defined by Van Asselt and Renn (2011, 437) as a happening that can entail damage to a recognized material or immaterial good, for example public health or environmental integrity.

4. A similar question has been discussed in the article: Berti Suman, A. 2018. "Challenging risk governance patterns through citizen sensing: the Schiphol Airport case". *International Review of Law, Computers & Technology* 32(1). doi:10.1080/13600869.2018.1429186, in relation to citizens' responses to airport-induced noise (see also Berti Suman and Van Geenhuizen forthcoming).

5. Particularly inspiring for the draft of the present article has been the participation at the Lorentz Center Workshop 'Multilateral Governance of Technological Risk' organized by van Asselt, Taebi and van de Poel. The workshop aimed at discussing the key challenges and opportunities of multilateral risk governance, understood in its ontological, epistemological, methodological and ethical dimensions. Experts from sociology, philosophy and ethics, Science and Technology Studies, anthropology, history, law, political science and the engineering sciences were confronted with questions of common interest with the aim of drafting together a future research agenda.

6. The empirical research conducted at Greenpeace International, Amsterdam, was covered by a collaboration agreement signed between the author and Greenpeace International. The present research findings have been disclosed to the organization. Nonetheless, this piece represents exclusively the author's view and opinion and in no way should be regarded as expressing Greenpeace's position.

7. For example, see "Why is South-East Asia's annual haze so hard to deal with?". The Economist. https://www.economist.com/the-economist-explains/2013/07/07/why-is-south-east-asias-annual-haze-so-hard-to-deal-with. Accessed 17 August 2018; "Haze in Singapore: A problem dating back 40 years". The Straits Times. https://web.archive.org/web/20151002155636/http://www.straitstimes.com/singapore/environment/haze-in-singapore-a-problem-dating-back-40-years-ago. Accessed 17 August 2018; "Minister blasts execs of firm that denied burning forest". The Straits Times.

   https://web.archive.org/web/20151013022700/http://www.straitstimes.com/asia/se-asia/minister-blasts-execs-of-firm-that-denied-burning-forest. Accessed 17 August 2018; "What causes South East Asia's haze?". BBC News. https://web.archive.org/web/20151003010304/http://www.bbc.com/news/world-asia-34265922. Accessed 17 August 2018; "Southeast Asia's haze: what's behind the annual outbreaks?". Agence France-Presse. https://web.archive.org/web/20150927032422/http://news.asiaone.com/news/singapore/southeast-asias-haze-whats-behind-annual-outbreaks. Accessed 17 August 2018.

8. In particular, forest clearing by fire is prohibited under Indonesian Law No. 32/2009 on the Protection and Management of Environment and Indonesian Government Regulation No. 4/2001 on Management of Environmental Degradation and/or Pollution linked to Forest or Land Fires (Berti Suman 2017).

9. Skype interview performed with Walhi spokespeople (Indonesia) from Greenpeace International premises (Amsterdam).

10. The Indian Ocean Dipole (IOD), also known as the Indian Niño, is an irregular oscillation of sea-surface temperatures that produces an increase and decrease in the temperature of the Western part of the Indian Ocean, with respect to the Eastern part (Berti Suman 2017).

11. The first amounted to USD 16.1 billion, as indicated above, while the second to USD 8 billion and the third to USD 12 billion.

12. Interview performed with a Greenpeace Southeast Asia expert from Greenpeace International premises (Amsterdam).

13. Ibid.

14. See http://haze.asean.org/. Accessed 14 February 2018.

15. In particular, the group was formed by: the Mandates of the Working Group on the issue of human rights and transnational corporations and other business enterprises; the Special Rapporteur on the issue of human rights obligations relating to the enjoyment of a safe, clean, healthy and sustainable environment; the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes; and the Special Rapporteur on the right of everyone to the enjoyment of the highest attainable standard of physical and mental health (Berti Suman 2017).

16. Text of the letter available at https://spcommreports.ohchr.org/TMResultsBase/DownLoadPublicCommunicationFile?gId=22840. Accessed 12 March 2018.

17. See https://environmentalpaper.org/2015/10/open-letter-from-indonesian-ngos-to-the-government-of-the-republic- of-indonesia-buyers-customers-and-banks-of-companies-related-to-forest-fires-in-indonesia-2/. Accessed 9 December 2018.

18. For a more extensive analysis of specific characteristics of civil society's interventions against the haze see Berti Suman (2017) and Berti Suman (forthcoming).

19. In 2017, a rate of four land and environmental activists killed each week was reported by Global Witness, making that year 'the deadliest year' for this type of murders. The report was published in 2018 and it is available on Global Witness' website: https://www.globalwitness.org/en/campaigns/environmental-activists/defenders-annual-report/. Accessed 9 August 2018.

20. See http://english.jatam.org/. Accessed 3 June 2018.

21. See http://en.bantuanhukum.or.id/. Accessed 3 June 2018.

22. See https://icel.or.id/en/. Accessed 3 June 2018.
23. See http://www.foei.org/member-groups/asia-pacific/indonesia. Accessed 24 March 2017.
24. See https://www.wri.org/. Accessed 3 June 2018.
25. See http://www.greenpeace.org/seasia/. Accessed 3 June 2018.
26. See http://fires.globalforestwatch.org/home/, and http://www.wri-indonesia.org/en/resources/maps. Accessed 15 March 2017.
27. See http://fires.globalforestwatch.org/home/. Accessed 15 March 2017.
28. See http://www.greenpeace.org/seasia/id/Global/seasia/Indonesia/Code/Forest-Map/index.html (only Indonesian). Accessed 15 March 2017.
29. Interview performed with a haze expert from Greenpeace International (Amsterdam).
30. For additional information visit https://earthdata.nasa.gov/earth-observation-data/near-real-time/firms. Accessed 15 March 2017.
31. See https://cms.edelman.com/sites/default/files/2018-01/2018%20Edelman%20Trust%20Barometer%20Global%20Report.pdf. Accessed 17 August 2018.

Acknowledgments

Disclosure statement

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