

# From perceptions and discourses to policy content

## A mixed method analysis of peatland fire management in Indonesia

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### Key messages

- Tropical peatlands are undergoing rapid and radical land-use changes in which fire is often used in land preparation for agriculture at different scales. Burdens of escaped peat fires, including infringements on quality of life and health, economic losses, diplomatic tensions and environmental damage, cross scales (local to global) and sectors (e.g. economy, environment, public health). They generate considerable concern for diverse stakeholders.
- This brief summarizes findings from three linked research activities in the context of peatland fire management in Indonesia, specifically: (i) media discourse analysis from media sources at provincial to international scales; (ii) policy content analysis of fire management interventions (FMI); and (iii) Q method to understand stakeholder perceptions across scales.
- All media endorse governance-based measures led by the Government of Indonesia (GoI) and the Indonesian media support the role of International Association of Southeast Asian Nations (ASEAN) governance discourses. However, blame and solution discourses differ between scales of media. There is a pervasive misalignment between cause and solution.
- Policy content analysis shows that fire prevention has dominated FMI since 1998 and may provide a basis for contemporary action toward fire prevention. However, policies are limited by a lack of nuance. For example, they are not specific to soil type, landholder type or fire season.
- Evidence suggests that multiple stakeholder types are relevant to the prevalence of peat fires, from policy makers to local elites, and from absentee landholders to small-scale farmers. Fundamental differences in the perceptions of these key groups regarding the solutions to peatland fires represent a significant challenge to policy performance.
- Overall, these analyses suggest a need to better capture and address the multiplicity of actors associated with peat fires. Accounting for stakeholder-specific roles in fire attribution and their differentiated capacity for change would enable more targeted policy measures, and likely improved performance of FMI.

### Context

#### Pervasive peat fires over the past 20 years

Wildfires are increasing globally and expected to worsen (Jolly et al. 2015; Kátia et al. 2017). Due to their scale and

impact, Indonesian peat fires are of particular concern. In 2015, the Indonesian mega-fires were considered a humanitarian and an environmental crisis. Comparing daily averages, the carbon released exceeded that of the entire US economy. Further, the public health impacts and economic and ecosystem service damages were severe (Turetsky et al. 2015; Tacconi 2016; Wijedasa et al. 2016). Indonesian peat fires are now annual events, symptomatic of rapid and radical land-use change in previously forested and flooded peatlands. The fires are predominantly enacted by the diverse stakeholders engaging in oil palm agriculture. Identifying appropriate policy and practical

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steps toward fire-free futures is a complex challenge. This is due particularly to the transboundary and multi-scale nature of the issue (e.g. from global and regional to local) and the diversity of stakeholders involved in peatland use, policy and management.

Multiple jurisdictions from district to international have drafted a suite of fire management interventions (FMI). Yet so far they have failed to meet their targets, and extensive peat fires continue. There is now renewed interest in the sustainable management of peatlands that diverse governance actors are pursuing through a range of intervention types.

Providing research insights into these governance challenges is important to offer new understanding on where to focus future efforts. We use a range of methods, namely (i) media discourse analysis from media sources at local to transnational scales; (ii) policy content analysis of FMI; and (iii) Q method to understand stakeholder perceptions across scales (described below). These aim to provide new knowledge that clarifies divergent positions regarding the governance and institutional landscape of peatland fire management in Indonesia. We provide insights on the way that media frame blame and solutions (from ASEAN to Indonesian national and provincial scales). We also take stock of the FMI drafted to date and identify what has come before. Finally, we analyze the perceptions held by these diverse groups, from ASEAN to local land users, in terms of how they think about the burden of the peatland fires. Collectively these insights will be useful to practitioners and the policy community interested in managing peatlands sustainably.

## Research approaches, methods and results

### Investigating dominant discourses in the media: How blame and solutions are reported

The extensive peat fires of 2015 raised the profile of Indonesian peatlands, including through a proliferation of news coverage in media (including newspapers). News reporting is influential and wide-reaching. Dominant discourses can be mainstreamed and normalized, leaving other accounts silenced. Analyzing the discourses, and silences, in the media can be useful for revealing distinct perspectives and identifying common misconceptions between scales. Such analysis can help define where to target entry points for coordinated and aligned action in pursuit of policy ‘packages’.

### Methods

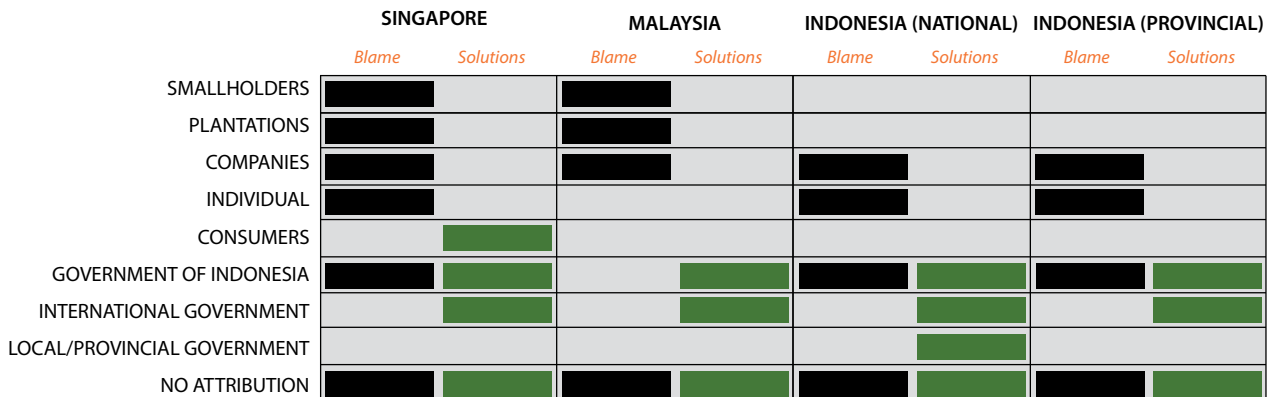
We applied critical media discourse analysis to a random sub-sample of articles (n 100) in leading and representative newspapers that provide a broad geographic, social and political picture of the issue and connect to previous studies (Forsyth 2014). We included newspapers printed in the peak of the 2015 toxic haze event (September – October 2015). We retrieved articles (using electronic Boolean query in Factiva software) if they referred to fire, peatland or haze, and its causes or potential solutions. Four newspapers were included to enable an understanding of dominant discourses across scales: The Straits Times (Singapore) (n 30), New Straits Times (Malaysia) (n 20), The Jakarta Post (Indonesia national) (n 20) and Tribun Pekanbaru (provincial) (n 30). We selected the provincial sample from Riau, a province in Sumatra that has experienced repeated fire events and that is a hot-spot of land-use change. Frame analysis allowed us to examine which actors are being held responsible for the Indonesian peat fires across scales; understand how solutions are portrayed across scales; and assess the extent to which there was discourse congruence across scales.

### Blame-framing in the media: Evasive and over-simplified

Across scales only two consistencies held in accounts of blame. The first was the tendency to avoid clearly articulating fire attribution. This was most prevalent at the Indonesian scales. National and provincial prescription of blame was either evasive (35% and 30% respectively) or did not discuss blame at all (13% and 40% respectively). Evasive framing decouples the drivers (e.g. global market demand, profit seeking and ambiguous land tenure) of fire and toxic haze from the stakeholders or processes that drive it. Despite this, Indonesian reports alone gave progressive accounts attributing fire to actual named individuals (national 13% and provincial 7%). The second consistency across scales focused on plantation activities being part of the complex that drives peat fires. Only ASEAN-level media attributed fire to small-scale farmers and slash-and-burn practices. Expanding these narratives to include the complex range of stakeholders will be important. This will help ensure that policy is appropriately targeted and tailored to stakeholder types, and avoid single one-size-fits-all solutions.

### Solutions to peatland fires: ASEAN to provincial-scale media discourses

All scales of media broadly promote the overarching importance of governance and policy led by the central Gol as part of an effective solution pathway. However, the methods to do so vary between scales, ranging from enforcement of sanctions and legal action against



**Figure 1. Official media reports of blame framing and solution pathways related to the Indonesian peatland fires**

Note: Sources of media are across scales, from ASEAN (Singapore and Malaysia) to Indonesia (national) and provincial level.

fire perpetrators, to regulatory instruments directed at concession holders and landholders. Yet the specific measure promoted within this broad category varies between scales. For example, provincial-scale media focus on the need for improved clarity regarding resource streams and capacity provision for suppression activities (e.g. fire fighting, cloud seeding). For their part, Singapore (SNG) and Malaysia (MLY) emphasize the need for improved enforcement and sanctioning of errant companies found using fire. SNG and MLY recognize their own role in solution framing and Indonesia (national) endorses the role of international governance. Across scales, solutions appear not to focus directly on the role of actors (e.g. companies, consumers, smallholders). Instead, the government level (Gol, SNG, MLY) dominates the solution space. The media may avoid practical, actor-focused solutions because of the sensitivity of these actions. Yet outlining possible practical solutions would enable a better understanding and critique of what these are.

### Linking across blame and solutions discourses in the media

Across scales, the Gol is seen as an important part of the complex, both in terms of blame framing, but looking forward, also in terms of implementing and leading solutions. The provincial government is ascribed a role in the solution pathways, and Indonesia (national) endorses the role of international governance. Solution discourses tend toward preference for policy instruments over specifying how actor groups might need to change their behavior (Figure 1). For example, Gol reviewed Law 32/2009, which had allowed traditional land management practices (e.g. fire) on land plots less than 2 ha. This is a one-size-fits-all policy response that impacts all

landholders, including swidden farmers on mineral soils. Only SNG media cited consumer purchasing behavior as an avenue for change. None cited consumers as involved in driving fires. Yet this group is implicit in driving peatland conversion through market demand, and could contribute to solutions moving forward. Plus, this group is particularly dependent on the media for accounts of the peatland fire management complex.

## Policy content analysis: Taking stock of fire management interventions on Indonesian peatlands

### Creating a catalogue of fire management interventions

The disastrous peat fires of 2015 occurred despite decades of FMI in Indonesia from various jurisdictional levels and societal sectors. It is time to take stock of the suite of interventions, particularly amid a renewed flurry of governance activity in the wake of 2015. This effort is represented in initiatives such as the inauguration of the Peatland Restoration Agency (Indonesia national), the ratification of the Transboundary Haze Act (ASEAN) and the Global Peatlands Initiative (international) (Carmenta et al. forthcoming). Local-level interventions have also been underway, driven by sub-national governments (such as Riau Governor Regulation 11/2014 on the Forest and Land Fire Control Center); nongovernmental organizations (NGOs) such as the local NGO network Jikalauhari; and businesses (e.g. Fire Free Alliance). Here we use policy content analysis to ask: what has been done so far, by whom and how well are the solutions recommended in the scientific literature represented in the body of FMI? In taking stock of the formal structure and content of

FMI by different governance actors, this analysis focuses on the frequent criticism that FMI have failed to “target” policy effectively. In other words, it examines whether FMI have failed to allocate project resources or regulatory energies where they would be most effective: on peat soil, during time frames with heightened fire risk, and to land areas and landholder types most associated with careless burning practices (Nurhidayah 2014; Jelsma and Schoneveld 2016; Tacconi 2016; Varkkey 2016).

## Method

FMI created between January 1999 and December 2016 that impact peat fire management in Riau were included. Our definition of FMI is broad and the full dataset of FMI (n=61) includes: government-led FMI (e.g. Presidential Instruction 1/2016 on the Peat Restoration Agency); NGO-led initiatives (e.g. the canal blocking efforts of local NGO Perkumpulan Elang); and business-driven initiatives (e.g. the various “fire-free village” projects of members of the Fire Free Alliance). Initiatives must have an element of public service to be included as FMI, and the dataset excludes social media interventions and purely academic research initiatives. We compiled the list through analysis of policy documents, scientific and grey literature, and consultations with key stakeholders from a variety of sectors. This analysis categorizes FMI by the societal sector from which their mandate originates: either “government”, “NGO”, “business”, or “mixed”. We then examine patterns between sector and the targeting of interventions. Targeting is indicated by a number of variables. These variables indicate whether the interventions use proximate predictors of haze and escaped fire incidence (e.g. soil type), or fire and haze occurrence itself, as a basis for the selection of targets for intervention resources. Our analysis concentrates on the content of FMI and not the extent to which they have been implemented. Exploration of the dataset is ongoing and will include a comprehensive categorization of the scalar and sectoral characteristics of the institutional framework behind FMI

and their policy targeting performance. Here we give our preliminary results.

## Interventions target smallholders and nuance is lacking

Landholders are the focus of most FMI (81%), though FMI may be delivering punitive measures or support. Within this group, “smallholders” (<25 ha) are the most common target (71% of interventions overall) rather than companies (56%). This has important implications for distributional justice and equity. A quarter of interventions (27%) target landholders, but do not specify which. Few (<5%) FMI differentiate between more than two functional landholder categories, although distinctions among landholder types are significant and will likely be important to consider to mitigate future peat fires (Jelsma and Schoneveld 2016). Nuanced targeting of landholders (indicated by the use of more than two functional categories of landholder) is associated with FMI type (i.e. palm oil certification and extension schemes) rather than sectoral categorization (Table 1).

Around half (52%) of FMI treat peat soil as a distinct policy problem, and half of those (i.e. 27% of all FMI) focus solely on peat. Soil type focus between sectors was not clearly distinguished. The importance of soil type as a predictor of fire escape and haze suggests the need for more effort to address peat systems specifically. Targeting regulatory or project resources to high-risk fire periods (e.g. as defined by weather parameters, or a threshold of fire severity), is an approach to fire management used around the globe, yet rarely (11%) in Indonesian FMI.

## Content for prevention focus already exists

An analysis of the general focus of intervention content shows an encouraging formal emphasis on addressing underlying causes (e.g. fuel load) rather than on short-term solutions (e.g. emergency fire-fighting) (Carmenta et al. forthcoming). Overall, peat FMI emphasize fire

**Table 1. FMI from different sectors and corresponding target groups. One FMI may target many groups.**

Sector mandating FMI	Landholders n (%)	Business n (%)	Smallholders n (%)	Community n (%)	Government n (%)	None n (%)	Total
Government	26 (67)	10 (26)	11 (28)	9 (23)	10 (26)	3 (8)	39
NGO	1 (9)	4 (36)	1 (9)	2 (18)	4 (36)	0 (0)	11
Business	2 (29)	0 (0)	5 (71)	5 (71)	0 (0)	0 (0)	7
Mixed	1 (25)	0 (0)	3 (75)	2 (50)	0 (0)	0 (0)	4
Total	30 (48)	14 (23)	20 (32)	18 (29)	14 (23)	3 (5)	61

Note: As some FMI target more than one group, percentages do not sum to 100%



Large extents of peatlands have been drained, suffered previous fires and are now covered with fire prone ferns, increasing fire risk (Photo: Rachel Carmenta)

prevention (90%) over suppression (58%). The data suggest that FMI have long focused on prevention, at least on paper. However, we may now be seeing a burst of political commitment and concrete action in support of fire prevention.

**Direct targeting methods used by nongovernment interventions**

Differences in the use of direct targeting tools across sectors are apparent. Outcome-based site selection and (dis)incentive disbursement are more common in nongovernment interventions, although they may have the potential for increased public use. Government FMI instead tend to focus on adherence to prescribed codes of conduct in disbursing (dis)incentives (Table 3). Likewise, the majority of business-driven FMI consider fire history in site selection (71%); FMI from other sectors tend not to do so, with a few notable exceptions such as the Peatland Restoration Agency (BRG) (occurrence in non-business and mixed sectors ranges between 25%–33%).

Outcome-based targeting is exemplified in the “fire-free village” model of intervention. This is a targeting tool often associated with nongovernment intervention, but with potential applications in public policy. That said, we should be wary of idealizing interventions due to a lack of

evidence regarding the variable performance of FMI and the accuracy and equity of their targeting (see Table 1).

**Understanding stakeholder perceptions across scales of governance**

**Stakeholder subjectivities and peatland fires**

A key challenge to fire-free futures on peatlands concerns identifying effective strategies to mitigate future events. One such approach concerns identifying the way in which different stakeholders prioritize the benefits and burdens (BB) that accrue from peat fires. Clearly defining diverse stakeholder subjectivities has potential to give voice to marginalized communities, enable transparent mediation of diverse priorities, inform public education campaigns and shape future policy and governance arrangements. Mapping stakeholder perceptions can provide a boundary object (i.e. a tool for negotiation and dialogue between groups) available to boundary organizations that strive to mediate and reconcile perceptions, as well as negotiate significant trade-offs to achieve widespread social acceptability and behavior change. The government has an important role in determining what interventions will be pursued. Growing evidence suggests that acknowledging the diverse interests, knowledge and perceptions of stakeholders is critical in addressing the



Large-scale fires in 2015 raised awareness of the need for sustainable changes to peatland management. Canal blocking to rewet peat and retain water in the system is one such effort (Photo: Rachel Carmenta)

persistent environmental challenges of our time (Bennett 2016; Marshall et al. 2017).

### Method

We used Q method to identify and quantify the distinct perceptions among a range of stakeholders relevant to peatland FMI. Q does not solicit results that are generalizable to the entire population (i.e. applies purposive sampling frames). Rather, it indicates the diversity of perceptions held by a particular set of stakeholders of policy relevance. We selected respondents (n 221) in this study using purposive sampling and included representatives across scales and sectors (from international policy makers in Singapore to farm laborers in Riau). Stakeholder groups (total of 12), and the statements which they ranked (n 40), were identified through field scoping in Dumai, Riau, over six weeks in early 2015; expert consultation (with donor, NGO and scientist representatives); and a literature review (including journal publications and grey literature in Indonesian and English) (Carmenta et al, forthcoming). The analysis was two-step. First, we used factor analysis to distinguish “clusters” (also called Q factors) of shared perceptions. Second, within these distinct clusters of perceptions, we

analyzed the mean value given to each of the 40 BB statements. This allowed us to assess whether clusters think differently about a statement, what BB are perceived as most and least important, and where agreement and disagreement between clusters is evident.

### Diversity of stakeholders and solution options: Moving beyond simplifications

The actor mapping process revealed distinct groups of stakeholders (that could be interrogated and defined further) that push beyond prevailing perceptions of an actor dichotomy (i.e. small vs large landholders). For example, we show that at least 12 groups of distinct stakeholder types exist. Important groups such as absentee landlords and “smallholders” range from very small-scale farmers to small- and even medium-sized landholders with considerably higher assets, capacities and resilience to shocks (Jelsma and Schoneveld, 2016). In relation to oil palm, others have suggested how policy may account for these distinct groups of landholders. However, in the fire management context, such distinctions are lacking. Important land-user groups remain under-addressed (e.g. small- to medium-scale absentee landholders).

### Benefits, burdens and distinct perceptions of the peatland fires

Perceptions varied most distinctly in terms of concern for particular stakeholder groups impacted by fire (e.g. impacts on companies versus small-scale farmers); the geographic scale at which burdens were experienced (e.g. domestic versus international) and the type of impact emphasized (e.g. economic versus quality of life). Notably, only one cluster of perceptions, associated with landholders, recognized that fire has associated benefits (namely as a low-input means of land clearance). The burden of fire on public health and on biodiversity in Riau ranked as the most important statement overall and united diverse groups in their shared concern. Other burdens were also ranked important, but generated considerable disagreement between groups. These included small-scale farmers losing income from fire, and being blamed unfairly for setting fires, again emphasizing the salience of distributional justice and equity related to fire and FMI. The importance of the greenhouse gas emissions generated through fire was also regarded important overall, but contested between groups.

### Evidence-based recommendations

- The long-standing focus of FMI on fire prevention may provide a formal foundation for renewed practical fire management. Our analysis suggests that FMI require more nuance in their formulation and implementation. Specifically, they should be targeted to soil type, stakeholder type and parameters for high-risk time frames, for improved performance.
- Robust impact evaluation of the different FMI is needed. Evaluating their performance and the predictors of their performance would allow for an evidence base to inform future efforts to scale-up best practices and lessons learned.
- The direct targeting methods characteristic of the business community, such as outcome-based site selection and outcome-based (dis)incentive disbursement, may provide an interesting model for government-driven FMI. However, important questions related to equity and distributional justice will need to be addressed. Further, the evidence (and methods for generating such evidence) regarding who is burning will need to be improved (Gaveau et al. 2016).
- Common concerns, notably health and environment, held by otherwise diverse stakeholders could provide a productive entry point to consultations and public communication aimed at behavioral change. Data quantifying health impacts could be used as a cornerstone for communication to convene actors that otherwise have few shared interests. Such a framing

could bring legitimacy to FMI that are targeted to alleviate such burdens.

- There is potential for the media to open space for more nuanced discussion of the drivers of fire. This would enable a presentation of solution options, including the role of key actors, particularly those so far largely omitted (e.g. consumers). In this way, the media may also close the gap between their presentation of cause and solution.
- The evidence from all three studies suggests a real need to be attentive to the nuance that exists in the peat fire complex. This is particularly important in relation to stakeholder types. These stakeholders are likely to demonstrate variable responses to the same FMI instrument due to their socio-economic and political characteristics. We suggest all stakeholders avoid simplified representations of haze, its causes and solutions, as well as one-size-fits-all policy responses.
- Coordination, negotiation and dialogue to reconcile perspectives, policies and actions (both across ASEAN and between stakeholders) will be necessary for improved multi-level collaboration to mitigate peat fires and associated toxic haze.

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