Decolonising Fire Science: Critical Conversations

Workshop Report

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[Workshop Recording (for internal members only)](#)

Decolonising Fire Science: Critical Conversations was the **second workshop in the Leverhulme Centre's Decolonising Fire Science series**, hosted by the [Equality, Diversity, and Inclusivity (EDI) Working Group.](#) The first workshop in the series, Decolonising Fire Science: An Introduction ([link to full workshop report](#)) took place at Imperial College London on April 5th, 2022, welcoming external speakers Siseko Kumalo and Mireille Kouyo to introduce critical decolonial conversations and their importance in scientific research, and internal speakers Professor Jay Mistry, Dr. Cathy Smith, and Kapil Yadav to share their practical experiences of decolonisation in fire science. Following the success of this workshop and interest of Centre members to start **exploring ways in which we can develop a strategic, flexible, and transdisciplinary decolonial strategy** in both our physical and social scientific research inquiries worldwide, Decolonising Fire Science: Critical Conversations provided a space for members to openly discuss how this can be achieved.

This workshop was guided by four main questions to encourage Centre members to think critically about how we can decolonise ourselves, our fire-related scientific research inquiries, and the ways in which we communicate knowledge: how can researchers apply decolonial approaches in their studies? How can the Centre support and promote decoloniality? How can both researchers and the Centre foster an inclusive global research community? And how can knowledge be co-created, and research communicated in open-minded journals? Through such open discussions, **we aim to develop a Centre tool-kit for decolonising our fire sciences which acknowledges both physical and social scientific research, and the numerous different types and stages of research that Centre members are at when entering this conversation.** As an international team of fire scientists who often transcend multiple disciplinary boundaries, the development and meaningful adoption of decolonisation strategies in our research can have far-reaching implications on the systems, environments, and peoples we are studying. Therefore, **the tool-kit we iteratively develop aims to foster an equitable, diverse, and inclusive global research community and ethos where all voices are heard, all knowledges represented, and all research co-created.**

Part 1: Constructing Scientific Knowledge

"The math-powered applications powering the data economy were based on choices made by fallible human beings. [...] many of these models encoded human prejudice, misunderstanding,

and bias into the software systems that increasingly managed our lives. Like gods, these mathematical models were opaque, their workings invisible to all but the highest priests in their domain: mathematicians and data scientists. Their verdicts, even when wrong or harmful, were beyond dispute or appeal. […] Life domains are increasingly controlled by secret models wielding arbitrary punishments. Welcome to the dark side of Big Data." (Cathy O'Neil, 2016).

To initiate discussions, we played a short clip of Dr Awino Okech's (SOAS) keynote speech from the [Decolonising the Researcher](#) event organised by King's College London in April, 2021. Dr Okech's speech addresses emerging scholars and researchers to emphasise the value of decolonising theory in shaping our research futures, reminding us that there is a tendency to focus on the outcomes of research, rather than the political processes influencing how we collect, organise, and analyse information. As scientific researchers we possess the power to actively construct and develop knowledge, knowledge that we strive to be centered on objective criteria for validity and approval amongst the scientific community. Yet, all knowledge is subjective. Theory-free knowledge does not exist. The research we pursue and choices we make in collecting, organising, and analysing our data are shaped by our backgrounds, experiences, beliefs, and systems of education and supervisory teams, creating an environment that actively constructs conveyors of knowledge and defines what is valid knowledge. Dr Okech reminds us that the importance of decolonising research applies just as much to physical data scientists as it does to social scientists, such as those modelling fire in Earth systems or simulating the dynamics between peoples, vegetation, and fire.

In 'Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy', Cathy O'Neil (2016) raises concerns over the technological algorithms that govern our lives, calling upon modelers to take responsibility for their algorithms and the impacts that the truths used to construct them have on individuals and society. We know that without knowledge of history, we would have no knowledge of the present and future. Yet, it is important for us, as researchers, to remember that histories are selective interpretations of the past, shaped by the viewpoint of the conveyor of this knowledge. Secondly, Dr Okech emphasises the urgency to confront scholarship that views the Global North as the epicentre of scientific knowledge and the Majority world as the margins. Instead, we need to act subversively in a world where the Global North holds power over knowledge. We need to centralise the Majority World as a source of intellectual and theoretical insight to help unearth critical questions of our time. Specifically, we need to reframe our scholarship and the methodologies we select to consider the specific contexts that help us understand the broader issues under inquiry.

Part 2: Centre Conversations

This workshop invited Centre members to consider their positionality as researchers and developers of knowledge. We reflected upon the questions guiding our decolonising conversation and the key messages from [Decolonising Fire Science: An Introduction (Box 1 and 2)](#) to openly discuss the opportunities for, benefits of, and practical challenges of decolonising our fire sciences. Questions regarding the construction of 'community', how we define 'community', who the communities are that we speak of, the implications of localising communities, and the meaning of participation to communities, are of the essence of all our decolonising conversations.

Five broad and interlinked themes emerged from our conversations: the **accessibility** of research and how it is **communicated**, the multi-scalar disparities between research and **policy**-making agenda, the absent biases and conceptualisations embedded in Earth system **models**, and the **co-**

development of research projects. We also discussed the **adoption** of strategies for decolonising our fire sciences with regards to the point of entry in which an individual or research team enter this conversation, such as pre-, during- (including early, middle, and late stages), and post-PhD project. The same applies to postdoctoral and senior researchers.

The Leverhulme Centre for Wildfires, Environment and Society aims to radically transform the scientific and practical understanding of wildfire as an intersection of coupled social, ecological, and physical processes to *"live better with fire in the future"* (Centre Member – Management Team, working across social and physical fire sciences). The discussions had during this workshop have laid some of the foundations for developing a **Centre tool-kit on decolonising our fire sciences**. It is important to note that these conversations and recommendations being developed for the Centre tool-kit are applicable to all research-based and academic institutions and organisations, particularly those working across the environmental sciences and sustainability frontier.

Accessibility and Communication

Centre members identified the accessibility and communication of research as being two of the main components contributing to the decolonisation of science across the world, linking the challenges and geographical discontinuities of access and communication to matters of justice.

Though both the accessibility and communication of research possess distinct characteristics, such as that access can be attributed to the availability of research and how it can be used, whilst communication with how it is shared, they are inextricably interlinked. Centre members identified communication as an integral component of accessibility since it determines how research is created, constructed, and the inclusivity of knowledges, where and how research is shared, who possesses and is granted entry to research, and its relevance and use at multiple organisational levels (e.g., local, regional, national, international, global).

> **Box 1. Questions of Accessibility & Communications**
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> - Who is researching?
> - Who are we researching for?
> - Whose voices are heard in our research and are these voices hard in its communications?
> - Who benefits from our research?
> - How and where are we communicating our research?
> - Is our research accessible to those we are researching for?
> - Can our research be used by those we are researching for?
> - What can our research provide and how can it be provided to those we are researching?
> - What are the implications of our research?
> - Can our research serve justice?

"Colonisation has crippled our ability to create new knowledges and share our knowledges with colonised communities. Can we provide the tools for these communities to produce their own knowledge and share their own knowledge among themselves?" (Centre Member – Postdoctoral Researcher, working on global wildfire and Earth systems modelling).

Three central themes evolved during our discussions over the accessibility of research and its importance in decolonising our fire science: (I) the extent to which resources are available to local communities to facilitate capacity building in developing local research projects and creating new knowledges in scientific disciplines. For example, Earth system modellers in the Centre noted how many communities do not have access to the technologies required for environmental modelling

and are, therefore, excluded from producing this knowledge; (II) the ability for local communities to access research, such as the publications and results from studies where they are participants, subjects, system components, or recipients of recommendations for change. Centre members linked the disconnection between studied communities and research results to the dichotomisation of peoples and nature in Western environmental scholarship, such as removing or externalising the social component from the ecological system; and (III) the accessibility of research in relation to how and where it is being communicated, such as the language used, who is communicating the research and who is it being shared with, and where it is published. Social scientists within the Centre reflected upon the role of etymology in decolonisation, questioning the extent to which the language used in communicating research reflects diverse knowledge systems, local meanings, and relational epistemologies, rather than the prescribed social and ecological categorisations that fix human geographies in space and, therefore, reproduce colonial power over knowledge. For example, what is a fire versus wildfire in different local contexts? However, the physical scientists raised concern over their ability to challenge the languages, or the voices speaking these languages, that are encrypted into global models. Centre members mentioned how they were expected to use these languages in their research, and how this repetition reproduces a certain narrative:

> *"In such an established field [hard sciences], there's an established vocabulary. There is an underlying assumption that hard sciences are objective, so having these conversations enters a realm of history and subjectivity which are more threatening to physical scientists who feel that this conversation does not apply to their domain"* (Centre Member – PhD Student, working on global wildfire and Earth systems modelling).

> *"When you start challenging mathematics, you might appear to be challenging the universal language of science, so people become defensive."* […] *"But it is not the language we are challenging; it is the voices speaking this language and how it is being used—how it is being built into algorithms. We are challenging the blind spots and biases"* (Centre Members – PhD Students, working on community-based approaches and global wildfire and Earth systems modelling).

There are multiple accessibility and communication challenges embedded within research scholarship which continues to reinforce coloniality in scientific knowledge production. Research is required to go through peer-review to be granted acceptance for publication. This process is regulated by strict international guidelines underpinned by what is considered robust, technical, and acceptable scientific research, and riddled with external reviewer biases, of whom are predominantly situated in the Global North and lack knowledge of specific local contexts. This knowledge evaluation process often forces researchers from the Majority World to conform with prescribed requirements, or Western way of knowing, thus suppressing entry into research or opportunities for new knowledge development in scientific scholarship. This continues to reinforce the domination of scientific knowledge produced in the Global North which is ill-equipped to address the contextual challenges faced by those living in the Majority World. Research produced in Europe, the USA, and China comprise most publications across climate and environmental disciplines, whilst papers sourced from the Majority World are comparatively and proportionately, in terms of peoples and researched sites, under-represented.

There are also ingrained publication biases which prevent local community members and researchers from the Majority World to create their own knowledge or access research publications and results. Journals are often biased towards publications that support statistically significant results, omitting studies that reflect upon the non-quantitative aspects of social-ecological relationships which are central to local environmental systems. Throughout the conversation, Centre

members repeatedly challenged the openness of "open-access" scientific journals, highlighting how access to existing knowledge and access to create new knowledge is determined in-part by the ability to pay heavy subscription fees, article submission fees, and publication fees. Though some illegal searchable databases exist that make research articles openly available, they only compile articles from existing scholarly publishers and, therefore, do not provide a platform for actively creating knowledge.

Decolonisation involves deconstructing the accessibility and communications barriers that prevent local knowledge development and the creation of new research. The creation of new research has the power to challenge dominant research frameworks and legitimise local knowledges in global scientific dialogue and policy development. To begin this process, we discussed the importance of **research exchanges** through collaborating with local communities, institutions, and researchers to **co-create knowledge and co-author research publications**. Such exchanges not only promote publication diversity but enrich our understandings, research inquiries, and have the potential to unearth new transdisciplinary areas of exploration. Centre members also highlighted the value of working with locally based institutions and organisations who work directly with local communities and are able to communicate with them on a regular basis. Such partnerships can increase the flow of knowledge between researchers situated in the Global North and studied or recipient communities in the Majority World. Identifying the 'gatekeepers' and 'spreaders' in the research network, referring to those who are considered key intermediaries between groups and those who spread information most easily across the network, respectively, can aid in effective and time-efficient knowledge sharing:

> *"Linking with institutions that have positioned themselves where they are able to lobby at the national level and engage with policymakers, at the same time as having an impact at the local level. You need to strategically position yourself to push the agenda of decolonisation"* (Centre Member – PhD Student, working on local fire governance).

However, members also noted that the role, motivation, and agenda of these organisations must be considered before assuming they can aid in achieving the decolonisation of scientific knowledge production. Lastly, several Centre members identified their research as being linked to matters of justice, such as exploring issues related to land politics - governance and management systems, tenure, and rights. In such cases, the deconstruction of accessibility and communications barriers is not just about making our research useful to communities, but to serve matters of justice; promoting equity in the recognition peoples, procedures, and distribution of knowledge co-creation to increase local power.

> *"We need to invest more of our time and effort in translating our research and giving back to communities at the organisational and community level."* (Centre Member – Leadership Team, working on indigenous geographies and knowledge systems).

Policymaking

Scientific research is carried out to address a certain challenge, issue, or knowledge gap, often with the intent to influence or inform policy development and practice. Where we engage in such advocacy research, we need to focus on co-creating knowledge with the local communities who are impacted by formal policies established by those in positions of power. **Research is a political act**, so we must constantly remind ourselves of the purpose of our inquiry, who our inquiry is for and whose voices are heard, and the potential political implications of our inquiry on local communities. Centre

members reflected upon the impacts of research on policymaking, discussing its limitations where political cycles are short-term in comparison to research projects, or the time required to influence change. Where elected politicians and parties change regularly, your research might be of interest during one cycle, but deemed unimportant or not a priority during the next. This is often the case where the newly elected party does not want to align themselves with the previous parties' objectives or agenda.

A senior member in the Centre mentioned how the conversion of research into policy in most environmental fields is slow, or not translated at all. So, in the interest of decolonising our research, we need to think about the asymmetries between local environmental management systems and the political-economic economy, and where our research has the potential to influence management or policy plans in the context we are working. It is also important to **constantly remind ourselves of the purpose of our research when engaging in advocacy**, particularly where research to influence policy is often biased towards institutional goals rather than the empowerment of local communities in policymaking:

> *"Research must be conducted to understand communities and their views and perspectives in order to empower them and their existing knowledges and practices. These views should shape policy to legitimise their knowledges and practices, rather than social scientific research being carried out to see how best policy can shape their views"* (Centre Member – PhD Student, working on risk modelling and policy).

If our mission is to **"live better with fire in the future",** we need to seriously consider the structural level at which we focus our research to achieve this. For example, whether this is through global, regional, or local predictive tools, management plans, or policymaking.

Box 2. Questions of Policymaking

- What are the asymmetries between the importance of objectives at local, national, and international levels, and how does this impact policy?
- What structural level do we focus our research?
- Who are we advocating with and for?
- What research do local peoples need and how do we carry this out?
- Where projects aimed at the local level are externally constructed (e.g., multi-lateral institutions), how can the knowledges and practices of local peoples shape project development and policy outcomes?

Centre members linked the temporal dimension of policymaking to the timeframe in which we must carry out research, particularly for PhD students, Postdoctoral researchers, or research projects with grant funding. This invited us to think about **our positionality as researchers**, not just in relation to the current political and social context that shapes our identity and worldviews, but in relation to histories, past experiences, and future processes:

> *"A general principle is not to assume you are the first person entering a place. You need to understand yourself as part of a bigger process, thinking about what has come before in a way that you can build on the works of others and the relationships that have been built in a place between peoples. You also need to think about the future of the process, and how you can pave the way for others to pick up the work you have been doing. To do this, you need to set aside*

your identity as an independent researcher." (Centre Member – Postdoctoral Researcher, working on a global analysis of local sociological case-studies).

The importance of continuity in our research projects emerged as a central theme throughout this discussion, with Centre members agreeing that to meaningfully achieve principles of decolonisation whilst informing policy development, we must **take time to build trust** with local communities. The time required to do this is often beyond the scope of our research projects, thus we need to encourage longer-term outlooks and continuity when designing our projects, and situate our aims and objectivities within the context of historical and future systems:

"You need to ensure your project is continuous or tied into a longer-term programme to make any difference. You see yourself as part of a process, supporting local organisations to the point in which they can lobby by themselves for policy change from their level." (Centre Member – PhD Researcher, working on indigenous fire management).

Modelling

Decolonisation is often viewed as belonging to the social scientific domain, limited to research studies that directly work with local communities in the Majority World. However, decolonisation is equally important in the physical scientific domain, and the implications of research output from this domain can have equally, or even larger influences over global knowledge production. Many of the Centre members working on developing regional and global fire databases and fire systems models expressed the need for a holistic decolonisation tool-kit that spans both scientific domains, particularly to increase understanding and awareness over the implications of research on local communities.

"I enjoy my work because I find it academically interesting, but I have no idea how to make it useful to peoples" (Centre Member – Postdoctoral Researcher, working on global wildfire and Earth systems modelling).

This workshop sparked an interesting and varied discussion into the opportunities for decolonising our physical fire scientific research and the challenges that we are likely to be confronted with in the process. Centre members discussed how modelling-based projects can be decolonised at different stages depending on point of entry to the conversation and the existing establishment of the model being used and developed, such as during the initial conceptualisation of the model, when selecting parameters and calibrating the model, when interpreting and communicating the generated results, and lastly when reconfiguring or expanding upon the model.

Identifying model biases is a critical component in the decolonisation of our fire sciences. There are numerous biases in the models that we use, such as satellite and remote sensing data. One researcher noted how this data is far more *"Global North accurate"* with much less calibration over the Majority World, estimating more than a forty-fold increase in satellites over the Global North

Box 3. Questions of Systems Modelling

- What are we modelling?
- Who are we modelling for?
- What are built-in biases in data?
- What and where are the absent biases?
- Can we acknowledge the blind-spots and absent biases to encourage calibration in these areas through inviting 'other' knowledges to contribute?
- How do the absent biases that feed into our models impact policy?

compared to sub-Saharan Africa used for calibration (Centre Member – PhD Student, working on global wildfire and Earth systems modelling). This embeds biases in our systems models, generating results that are both inaccurate, and irrelevant and potentially damaging at local scales across much of the Majority World.

> *"There are all kinds of different biases. The disciplines that write about certain parts of the world differ. In Europe, there are more GIS-based approaches rather than anthropological approaches to fire research, and there are not many detailed studies on peoples and fire use. Whereas there are many more people studying communities in the Global South and their behaviour. I guess this reflects the historical evolution of anthropology – going somewhere else to study peoples."* (Centre Member – Postdoctoral Researcher, working on a global analysis of local sociological case-studies).

There are a lot of uncertainties and gaps in the models that we use to simulate climate, vegetation, fire, and anthropogenic relationships. During the initial stages of model development, when we conceptualise the model and the processes it will simulate, we need to acknowledge these gaps and areas of inaccuracy and invite 'other' knowledges to contribute. This involves holistically conceptualising the ecosystem prior to mathematically coding the algorithm, accounting for the different ways diverse communities conceptualise their environment and their relationships with nature – where they are part of the system. Centre members discussed how divergent worldviews are not only divided along Global North-South lines, but across urban and rural landscapes, with Centre members who have lived in rural areas having an increased awareness of the importance of decolonising systems models to represent inextricable social-ecological relationships:

> *"If we acknowledge gaps and areas of inaccuracy in out models, we can invite diverse knowledges to build more equitable, accurate, and relevant models"* (Centre Member – PhD Student, working on global wildfire and Earth systems modelling).

Centre members also discussed the need to democratise technological resources, such as that local communities have access to the resources to develop their own models and generate their own knowledge and solutions.

> *"'We are rediscovering 'new' climate solutions and technologies that were developed by communities in the Global South thousands of years ago but were deliberately erased due to colonialism. Now, we are rediscovering and claiming them"* (Centre Member – Postdoctoral Researcher, working on global wildfire and Earth systems modelling).

The challenges of communicating modelling process and results to local communities received a lot of attention, particularly among Centre members modelling Earth systems at regional and global scales who often work with low resolution data. We discussed ways in which we could make Earth systems modelling transparent to local communities where ecosystem components are used as input variables. For example, by visiting locations that are modelled in the system and communicating the modelling process and results. If the model is in its initial conceptualisation and development phase, we discussed the benefits of engaging communities in co-creating input data, rather than extracting data and externalising the system. This early "buy-in" stage can aid in decolonising physical scientific research by providing access opportunities to local communities to co-create research. The co-development of models can facilitate knowledge diversification and exploration into new transdisciplinary research areas, as well as provide contextually relevant results and equitable management futures.

We identified several practical challenges in decolonising research projects where modelling is a dominant component: (I) the scope of modelling projects. Where researchers are modelling global systems, it is impossible to actively visit all the locations represented in the model and gain local insights – *"where would you start?"* (Centre Member – Management Team, working across social and physical fire sciences); (II) a lack of funding and resources for all Earth system modellers to engage with communities in geographically distant locations. There is not funding allocated for such research trips in modelling-based PhD or Postdoctoral projects; (III) the existing establishment of the model and data sets. We often enter projects where models are already well established, and datasets confirmed. We cannot simply change the framework and should not reject the works our scientific colleagues and those who have preceded us. However, across all these challenges, we have the power and knowledge to **question the blind-spots, address the absent and built-in biases, and increase the accessibility and equitable communication of our research.**

> *"We need to encourage lateral thinking – thinking outside the box, to connect modellers with communities"* (Centre Member – Management Team, working across social and physical fire sciences).

Centre members also discussed the possibilities for organising fieldtrips to connect lab-based researchers to practical fire management activities, suggesting that such tangible experiences can increase our understanding of the social-ecological dynamics of fire. In-turn, this can increase our awareness over the human dimension of fire regimes and environmental systems, of which is often omitted in Earth system models.

This conversation highlighted the challenges of applying decolonising principles in our research projects. However, it also reminded us that *"we cannot, or are expected to apply every aspect of decolonisation in our work. But we can take steps."* […] *"Step-by-step we can begin to deconstruct the coloniality of scientific knowledge. This takes time. The first step is engaging in this conversation"* (Centre Members – PhD Students, working on risk modelling and policy and community-based approaches).

Co-development of Research Projects

Centre members agreed that the co-development of research projects with local peoples would be a critical step in decolonising our fire sciences. Rather than having a priori defined research projects and knowledge independent from experience, future PhD and Postdoctoral research projects could be actively developed with local peoples, asking them about the local challenges, what research is required, and how this research could be designed, conducted, and shared to address these local challenges. This applies to the pre-project phase and requires forward planning so that the project questions, aims, and scope come directly from the local communities - *"letting the field speak to us"* (Mireille Kuoyo, Workshop 1).

It is important to note, however, that the co-development of research projects does not automatically contribute to the decolonisation of our fire sciences. This process requires a lot of time and resources, from both the research institution and local communities. Research often demands "free labour" from the communities we are working with, or what we refer to as the "invisible costs of research", such as those related to travelling, access to internet, accommodation, sustenance, and practical research supplies.

> *"As academics, we often take for granted the invisible costs of research. We need to make visible these hidden costs to communities and find funds for this. If we are to take seriously the co-design of research projects with communities, we must be serious about resourcing communities"* (Centre Member – Leadership Team, working on indigenous geographies and knowledge systems).

To address these challenges, the co-development of research needs to be adequately planned and resourced, so that the local communities we are collaborating with are meaningfully engaged in all aspects of the research and at no personal cost. Of course, this process takes time, pre-planning, and institutional costs, such as repeatedly travelling to collaborating communities. To overcome some of these institutional costs, Centre members suggested that we partner with local academics and researchers and look for co-supervision from those working in countries where we are researching. This can aid in the decolonisation process through embedding local knowledges and diverse perspectives in our research, as well as connecting us to local actor networks to build long-term relationships within the regions we work. Additionally, a mid-stage PhD student at the Centre highlighted the influence of his supervisory team and the way in which the project was initially described on his exploration into critical decolonial theory. Supervisory teams that bridge the gap between scientific fields, such as being co-supervised by academics whose knowledge and expertise spans the physical and social sciences, can aid in introducing diverse perspectives that challenge the status quo of each discipline. This can increase researchers' exposure to emerging conversations and promote exploration into wider transdisciplinary discourse and ethical research approaches.

Adoption

There are both great opportunities for and large challenges facing the decolonisation of our fire sciences. As a research centre, we recognise that to embrace the opportunities, both discussed and yet to be realised, we must respectfully address the challenges that currently limit our ability to decolonise. These challenges will vary for every individual researcher depending on several factors, including their self-recognition of positionality, the scientific discipline within which their research is situated, their point of entry to this conversation, existing rules, frameworks, and expectations for research projects, the salience of this conversation and attitudes of supervisors and research colleagues, and the researcher's institutional affiliations.

> *"In the scientific realm that we live in today, and if you want to succeed and have a career, we can never be fully decolonialised. It is part of our history. But we need to acknowledge these histories and begin deconstructing the coloniality of knowledge in science, championing indigenous and local perspectives and knowledges worldwide"* (Centre Member – PhD Student, working on community-based approaches).

It is important that we acknowledge the limits within which we are working and the resources available to us. For example, Centre members highlighted how decolonising fire science is likely to be easier in a social-scientific setting where the aim of the research is to explore local fire regimes and diverse knowledges. In this context, it is easier to communicate with communities and co-create knowledge. However, caution was issued over the way we approach such explorations, such as the underlying theories, assumptions, and biases we possess that might influence the way in which we interact with local peoples and judge situations. Processes of decolonisation involve questioning our received theories, assumptions, and biases, **studying with communities** rather than studying them. Decolonising fire science in a physical-scientific setting is likely to be more difficult, partly due to the

human-oriented nature of this conversation and its evolution within a social scientific domain. However, we can use the models and existing methodologies to explore processes of decolonisation, asking questions about blind-spots, absent and built-in biases, and opportunities for local input, to seek more inclusive solutions.

Centre members who have engaged with critical decolonial theory acknowledged how difficult it can be in terms of questioning every methodology, theory, dataset, and journal article they read and doubting every research approach they might consider applying in their projects. Learning from this experience, they recognise the importance of decolonising our sciences through existing frameworks and methodologies – seeking opportunities for decolonisation, rather than getting caught up in criticising and doubting the knowledge system we have inherited.

> *"Engaging deeply in decolonial theory can be paralysing. You can become pessimistic, angry, or extremely disengaged with particular theories and methodologies because they originate from a certain place or drive a certain narrative. Rather than engaging in this, there is a level to which we can engage in critical decolonial theory and work with decolonisation without paralysing our research progress and compromising our output"* (Centre Member – PhD Student, working on multi-level fire governance).

Though we accept the limitations within which we work, we should not remain complacent. Decolonisation requires challenging the status quo to facilitate transformative change across scientific disciplines and promote ethical research approaches. It is important we develop the tools and confidence to take on this challenge.

> *"We should be learning from local communities who have governed their landscapes for millennia. But we need the conceptual tools and confidence to take a decolonising position in this process"* (Centre Member – Postdoctoral Researcher, working on global wildfire and Earth systems modelling).

Box 4. Key Points for Adopting Decolonising Principles

- We need to consider the point of entry in which we are entering this conversation.
- We need to promote decolonisation in our fire sciences without paralyzing ourselves and our research.
- We need to acknowledge the limits within which we are working and adopt principles of decolonisation in our research where we are able to.
- We need to acknowledge the different roles and responsibilities of individuals in the process of decolonisation.

In an academic setting, it is important to acknowledge the different roles and responsibilities of individuals within the centre or institution to facilitate decolonisation. For example, PhD students are limited in terms of project scope, timeframe, and resources, as well as needing to hit milestones and satisfy the degree requirements to achieve their PhD. Those in senior leadership and management positions possess greater ability to facilitate decolonisation through the careful planning of PhD and Postdoctoral research projects, expanding upon their existing network of academics and researchers to engage local peoples in project co-development and knowledge co-creation. At a broader level, there are expectations over how we present and communicate our work, carry out our research, write project proposals and funding applications, and apply for ethics

clearance. Therefore, it is our responsibility as researchers to investigate these procedures, why these expectations exist, who is setting them, and their impacts on knowledge production. We need to challenge the status-quo and explore the opportunities for bringing new knowledges and perspectives to address the issues we are researching worldwide.

Decolonisation is not a linear or prescribed process. Individuals, research teams, and Centres can adopt principles of decolonisation in multiple ways across scientific disciplines. The most important aspect that we share in our journey of decolonisation is the "***need to bring everyone along with us***" (Centre Member – Management Team, working across social and physical fire sciences).

Part 3 – Current and future activities

Art-Science Interface

In 2021, the Leverhulme Centre for Wildfires, Environment and Society partnered with Arts Cabinet to launch a multi-layered project explore Wildfires at the Art-Science Interface. The first phase of the project brought together artists, researchers from the Centre, practitioners, external researchers, students, and the public to explore wildfires creatively and critically through art. The coloniality of wildfire science and communications emerged as a common theme across collaborations as both scientists and artists began exploring 'other' ways of knowing. The next phase of the project explores the intersection of Fire, Climate and Colonialism, focusing on how art and creative research approaches can foster and communicate indigenous knowledges and perspectives over fire. Recently, KCL funded a commissioned artwork piece from an Aboriginal artist in Australia, titled "Stolen Climate", which will soon be exhibited in London.

Decolonising Fire Science: Fire Management Across Contested Landscapes

In December 2022, we will be holding the third workshop in our Decolonising Fire Science series in collaboration with the Centre for Biodiversity Information Development at Strathmore University, Kenya. More information on this will be available soon.

Decolonisation Reading Group

Centre members discussed launching a reading group where we share resources on decolonisation and meet regularly to openly discuss our findings and questions. The aim of the reading group would be to increase our consciousness and awareness of the biases embedded in research and the coloniality of knowledge production. Papers that apply critical decolonial theory to environmental and climate scientific research would serve as an easier access point for individuals and research groups who have not previously engaged in this literature.

Reading list

Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy. By Cathy O'Neil (2016).

This report has been produced by the Leverhulme Wildfires EDI Working Group