Presented by Kat Linscott
Slides by Pritha Mandal (modified)

Studio SICCS

DESIGNING TO COMMUNICATE CLIMATE FUTURES

30 April 2026

- Purpose of the Poster Assignment
- Key Considerations
- Anatomy of a Good Poster
- Design Principles and Tips

Purpose of the Poster Assignment

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WHAT ARE WE TRYING TO DO?

Research -------- **Climate Futures** -------- Shape

"What are –or could be –our key contributions to researching and shaping climate futures?"

An informed but innovative contribution...

...that can be communicated effectively

...perhaps something interdisciplinary?

30 April 2026

Anatomy of a Good Poster

WHAT MAKES FOR A GOOD POSTER?

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Tells a Clear & Compelling Story

Title
Introduction/Motivation
Knowledge Gap
Methods/Strategy
Conclusion/Call to Action

Don’t forget to add references for your research – and all the images!

Effective Visual Design

- ✓ Legible and not too much text
- ✓ Combo of visual/textual information (min. 50:50, but better 60:40)
- ✓ efficient use of space
- ✓ accessible
- ✓ clear structure and sequence

Balancing Act ⚖

Stand on its own vs. compliment your presentation
Scientifically sound vs. attention-grabbing

WHAT TO THINK ABOUT?

Know your audience....

What knowledge can be assumed?
What language will be used?

the extended CLICCS/ SICSS community...
Student peers
Professors
Academics
Non-Academic Personnel

Decide on your core message....

Which message do I want to convey?
What should be the main takeaway?

HOW TO GO ABOUT STRUCTURING POSTER?

Preparation

- Thinking, researching, collecting materials
- What do I want to say? (1 sentence)
- Sorting (5-step procedure):

Talk / Plan

1. **Topic,** relevance for audience (motivation)
2. **Starting point**, current situation, the problem/knowledge gap
3. **Description of improvement** – where do I want to go?
4. **Path to solution**, methods, tools, strategies
5. **Generalization**

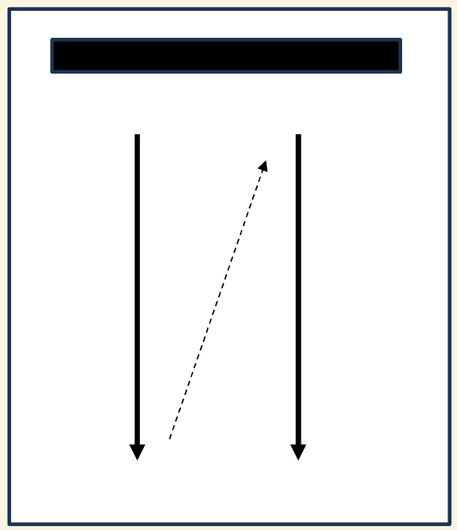
   What does this mean for audience?
   What is the take-home message?
   Summary

Strategies for finding the story?

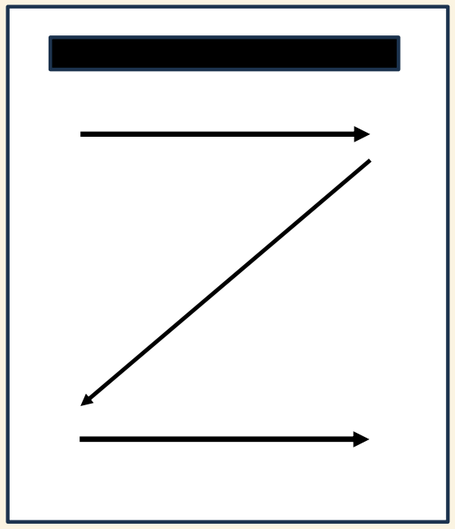
- Structure around headers
- Start with figures and adapt text accordingly.
- Narrow down to core components: outline on paper or try explaining it to another person
- Test draft before committing! Get feedback from your peers!

LAYOUT

Column Layout



Z - Pattern Layout



FONTS

- Use 1–2 font families max for a clean, unified look
- Prefer sans-serif fonts (like Monserrat, **Arial**, **Calibri**) over serif fonts (like **Times New Roman**, **Georgia**, Garamond) for body text and headings— highly readable from a distance
- Minimum sizes for A0 posters:
  32 pt for body text
  48 pt+ for headings
- Avoid *italics*, underlines, or ALL CAPS for large text blocks — they reduce readability
- Maintain consistent line spacing and alignment (left-align is best for blocks)

COLOR THEORY

...can be confusing

Instead, try...

For colors:

60 – 30 – 10 rule

Role	Portion of Poster	Purpose
60% Primary	Background or large blocks	Sets the base tone, makes it feel cohesive
30% Secondary	Supporting areas (text boxes, sidebars)	Adds visual interest without chaos
10% Accent	Headlines, buttons, icons	Draws attention where you need it most

For contrast:

4.5:1 minimum rule

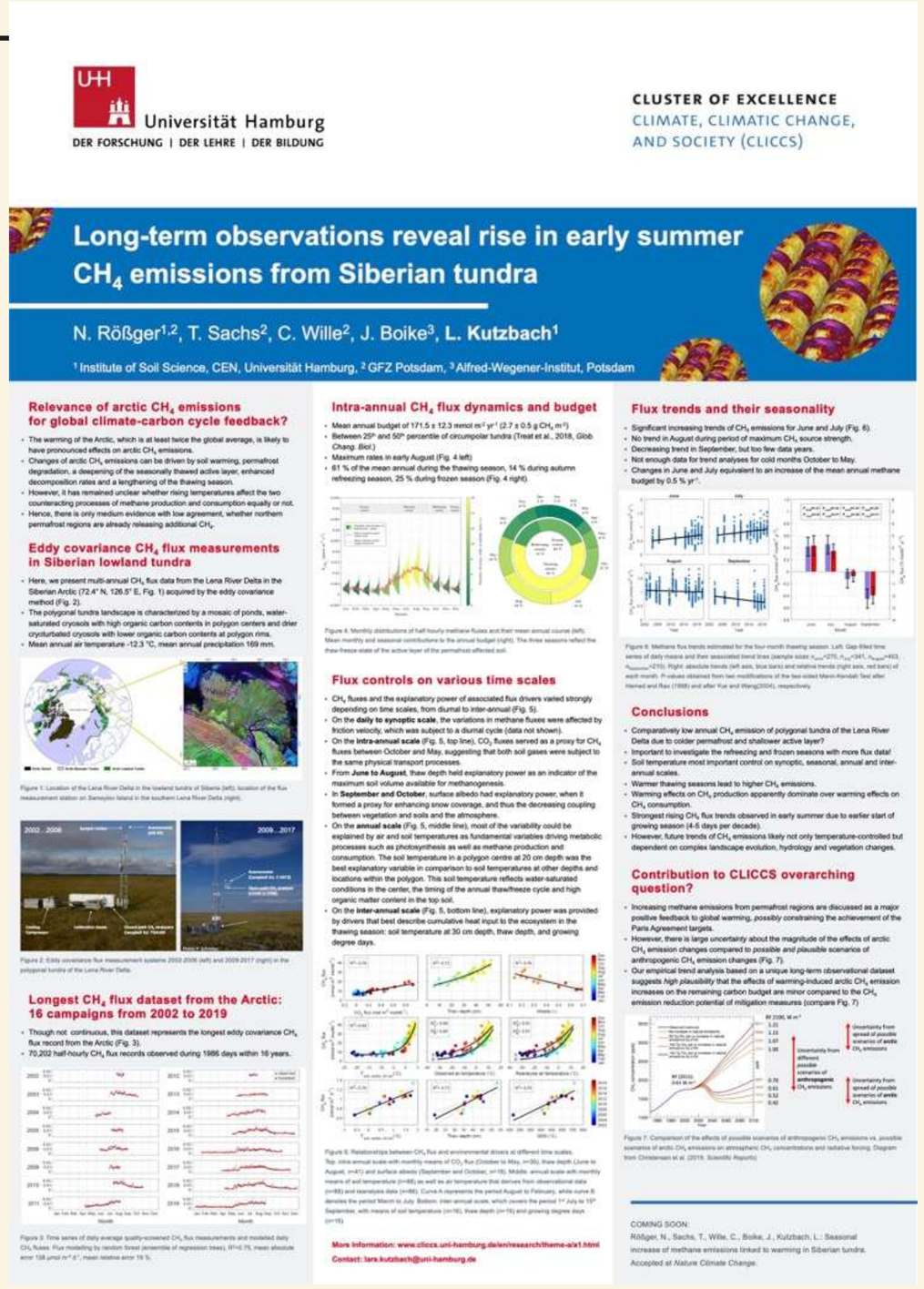
- Consider the ratio between text color and background color brightness.
- Higher the ratio, more readable it is.

Example:
Black text on a white(ish) background = high contrast (≈21:1)

Grey text on light yellow = low contrast
(<4.5:1 = bad)

Anatomy of a
Good Poster

EXAMPLES – WHAT WORKS FOR YOU? WHAT DOESN'T?



Universität Hamburg
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CLUSTER OF EXCELLENCE
CLIMATE, CLIMATIC CHANGE, AND SOCIETY (CLICCS)

Long-term observations reveal rise in early summer CH_4 emissions from Siberian tundra

N. Rößger[1,2], T. Sachs[2], C. Wille[2], J. Boike[3], **L. Kutzbach[1]**

[1] Institute of Soil Science, CEN, Universität Hamburg, [2] GFZ Potsdam, [3] Alfred-Wegener-Institut, Potsdam

Relevance of arctic CH_4 emissions for global climate-carbon cycle feedback?

- The warming of the Arctic, which is at least twice the global average, is likely to have pronounced effects on arctic CH_4 emissions.
- Changes of arctic CH_4 emissions can be driven by soil warming, permafrost degradation, a deepening of the seasonally thawed active layer, enhanced decomposition rates and a lengthening of the thawing season.
- However, it has remained unclear whether rising temperatures affect the two counteracting processes of methane production and consumption equally or not.
- Hence, there is only medium evidence with low agreement, whether northern permafrost regions are already releasing additional CH_4.

Eddy covariance CH_4 flux measurements in Siberian lowland tundra

- Here, we present multi-annual CH_4 flux data from the Lena River Delta in the Siberian Arctic (72.4° N, 126.5° E, Fig. 1) acquired by the eddy covariance method (Fig. 2).
- The polygonal tundra landscape is characterized by a mosaic of ponds, water-saturated cryosols with high organic carbon contents in polygon centers and drier cryoturbated cryosols with lower organic carbon contents at polygon rims.
- Mean annual air temperature -12.3 °C, mean annual precipitation 169 mm.

Figure 1: Location of the Lena River Delta in the lowland tundra of Siberia (left). location of the flux measurement station on Samoylov Island in the southern Lena River Delta (right).

Figure 2: Eddy covariance flux measurement systems 2002-2006 (left) and 2009-2017 (right) in the polygonal tundra of the Lena River Delta.

Longest CH_4 flux dataset from the Arctic: 16 campaigns from 2002 to 2019

- Though not continuous, this dataset represents the longest eddy covariance CH_4 flux record from the Arctic (Fig. 3).
- 70,202 half-hourly CH_4 flux records observed during 1986 days within 16 years.

Figure 3: Time series of daily average quality-screened CH_4 flux measurements and modelled daily CH_4 fluxes. Flux modelling by random forest (ensemble of regression trees), RT=0.75, mean absolute error 108 $\mu mol\ m^{-2}\ d^{-1}$, mean relative error 19 %.

Intra-annual CH_4 flux dynamics and budget

- Mean annual budget of 171.5 ± 12.3 mmol $m^{-2}\ yr^{-1}$ (2.7 ± 0.5 g $CH_4\ m^{-2}$)
- Between 25th and 50th percentile of circumpolar tundra (Treat et al., 2018, *Glob. Chang. Biol.*)
- Maximum rates in early August (Fig. 4 left)
- 61 % of the mean annual during the thawing season, 14 % during autumn refreezing season, 25 % during frozen season (Fig. 4 right).

Figure 4: Monthly distributions of half-hourly methane fluxes and their mean annual course (left). Mean monthly and seasonal contributions to the annual budget (right). The three seasons reflect the thaw-freeze state of the active layer of the permafrost-affected soil.

Flux controls on various time scales

- CH_4 fluxes and the explanatory power of associated flux drivers varied strongly depending on time scales, from diurnal to inter-annual (Fig. 5).
- On the **daily to synoptic scale**, the variations in methane fluxes were affected by friction velocity, which was subject to a diurnal cycle (data not shown).
- On the **intra-annual scale** (Fig. 5, top line), CO_2 fluxes served as a proxy for CH_4 fluxes between October and May, suggesting that both soil gases were subject to the same physical transport processes.
- From **June to August**, thaw depth held explanatory power as an indicator of the maximum soil volume available for methanogenesis.
- In **September and October**, surface albedo had explanatory power, when it formed a proxy for enhancing snow coverage, and thus the decreasing coupling between vegetation and soils and the atmosphere.
- On the **annual scale** (Fig. 5, middle line), most of the variability could be explained by air and soil temperatures as fundamental variables driving metabolic processes such as photosynthesis as well as methane production and consumption. The soil temperature in a polygon centre at 20 cm depth was the best explanatory variable in comparison to soil temperatures at other depths and locations within the polygon. This soil temperature reflects water-saturated conditions in the center, the timing of the annual thaw/freeze cycle and high organic matter content in the top soil.
- On the **inter-annual scale** (Fig. 5, bottom line), explanatory power was provided by drivers that best describe cumulative heat input to the ecosystem in the thawing season: soil temperature at 30 cm depth, thaw depth, and growing degree days.

Figure 5: Relationships between CH_4 flux and environmental drivers at different time scales. Top: intra-annual scale with monthly means of CO_2 flux (October to May, n=30), thaw depth (June to August, n=41) and surface albedo (September and October, n=18). Middle: annual scale with monthly means of soil temperature (n=88) as well as air temperature that derives from observational data (n=88) and reanalysis data (n=88). Curve A represents the period August to February, while curve B denotes the period March to July. Bottom: inter-annual scale, which covers the period 1st July to 15th September, with means of soil temperature (n=16), thaw depth (n=16) and growing degree days (n=16).

More Information: www.cliccs.uni-hamburg.de/en/research/theme-a/a1.html
Contact: lars.kutzbach@uni-hamburg.de

Flux trends and their seasonality

- Significant increasing trends of CH_4 emissions for June and July (Fig. 6).
- No trend in August during period of maximum CH_4 source strength.
- Decreasing trend in September, but too few data years.
- Not enough data for trend analyses for cold months October to May.
- Changes in June and July equivalent to an increase of the mean annual methane budget by 0.5 % yr^{-1}.

Figure 6: Methane flux trends estimated for the four-month thawing season. Left: Gap-filled time series of daily means and their associated trend lines (sample sizes n_{June}=270, n_{July}=341, n_{August}=463, $n_{September}$=210). Right: absolute trends (left axis, blue bars) and relative trends (right axis, red bars) of each month. P-values obtained from two modifications of the two-sided Mann-Kendall-Test after Hamed and Rao (1998) and after Yue and Wang(2004), respectively.

Conclusions

- Comparatively low annual CH_4 emission of polygonal tundra of the Lena River Delta due to colder permafrost and shallower active layer?
- Important to investigate the refreezing and frozen seasons with more flux data!
- Soil temperature most important control on synoptic, seasonal, annual and inter-annual scales.
- Warmer thawing seasons lead to higher CH_4 emissions.
- Warming effects on CH_4 production apparently dominate over warming effects on CH_4 consumption.
- Strongest rising CH_4 flux trends observed in early summer due to earlier start of growing season (4-6 days per decade).
- However, future trends of CH_4 emissions likely not only temperature-controlled but dependent on complex landscape evolution, hydrology and vegetation changes.

Contribution to CLICCS overarching question?

- Increasing methane emissions from permafrost regions are discussed as a major positive feedback to global warming, *possibly* constraining the achievement of the Paris Agreement targets.
- However, there is large uncertainty about the magnitude of the effects of arctic CH_4 emission changes compared to *possible* and *plausible* scenarios of anthropogenic CH_4 emission changes (Fig. 7).
- Our empirical trend analysis based on a unique long-term observational dataset suggests *high plausibility* that the effects of warming-induced arctic CH_4 emission increases on the remaining carbon budget are minor compared to the CH_4 emission reduction potential of mitigation measures (compare Fig. 7)

Figure 7: Comparison of the effects of possible scenarios of anthropogenic CH_4 emissions vs. possible scenarios of arctic CH_4 emissions on atmospheric CH_4 concentrations and radiative forcing. Diagram from Christensen et al. (2019, *Scientific Reports*)

COMING SOON:
Rößger, N., Sachs, T., Wille, C., Boike, J., Kutzbach, L.: Seasonal increase of methane emissions linked to warming in Siberian tundra. Accepted at *Nature Climate Change*.

Researching and Shaping Climate Futures

30 April 2026

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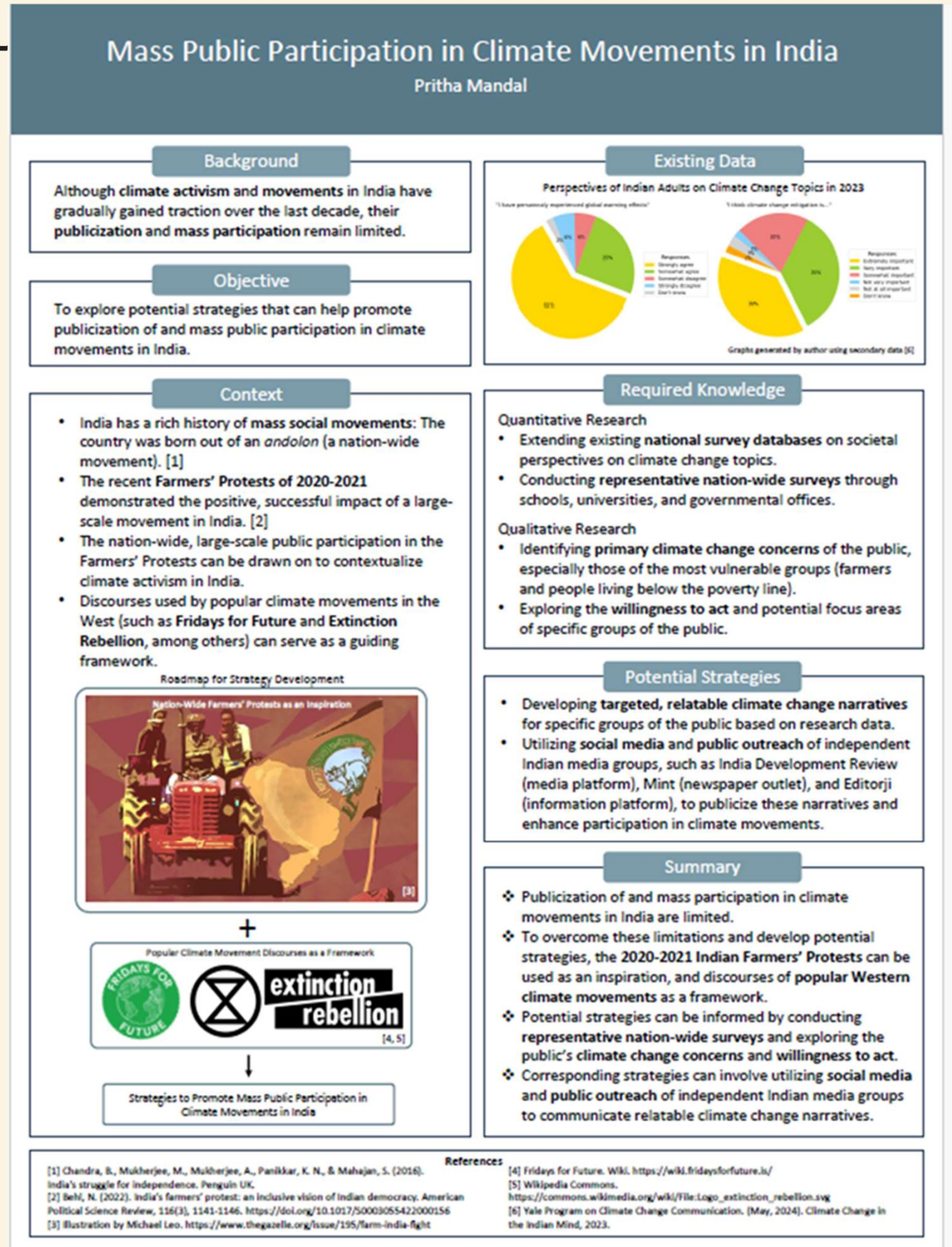
EXAMPLES – WHAT WORKS FOR YOU? WHAT DOESN'T?



Mass Public Participation in Climate Movements in India

Pritha Mandal

Background

Although **climate activism** and **movements** in India have gradually gained traction over the last decade, their **publicization** and **mass participation** remain limited.

Objective

To explore potential strategies that can help promote publicization of and mass public participation in climate movements in India.

Context

- India has a rich history of **mass social movements**: The country was born out of an *andolon* (a nation-wide movement). [1]
- The recent **Farmers' Protests of 2020-2021** demonstrated the positive, successful impact of a large-scale movement in India. [2]
- The nation-wide, large-scale public participation in the Farmers' Protests can be drawn on to contextualize climate activism in India.
- Discourses used by popular climate movements in the West (such as **Fridays for Future** and **Extinction Rebellion**, among others) can serve as a guiding framework.

Roadmap for Strategy Development

Nation-Wide Farmers' Protests as an Inspiration [3]

+

Popular Climate Movement Discourses as a Framework [4, 5]

↓

Strategies to Promote Mass Public Participation in Climate Movements in India

Existing Data

Perspectives of Indian Adults on Climate Change Topics in 2023

Graphs generated by author using secondary data [6]

Required Knowledge

Quantitative Research

- Extending existing **national survey databases** on societal perspectives on climate change topics.
- Conducting **representative nation-wide surveys** through schools, universities, and governmental offices.

Qualitative Research

- Identifying **primary climate change concerns** of the public, especially those of the most vulnerable groups (farmers and people living below the poverty line).
- Exploring the **willingness to act** and potential focus areas of specific groups of the public.

Potential Strategies

- Developing **targeted, relatable climate change narratives** for specific groups of the public based on research data.
- Utilizing **social media** and **public outreach** of independent Indian media groups, such as India Development Review (media platform), Mint (newspaper outlet), and Editorji (information platform), to publicize these narratives and enhance participation in climate movements.

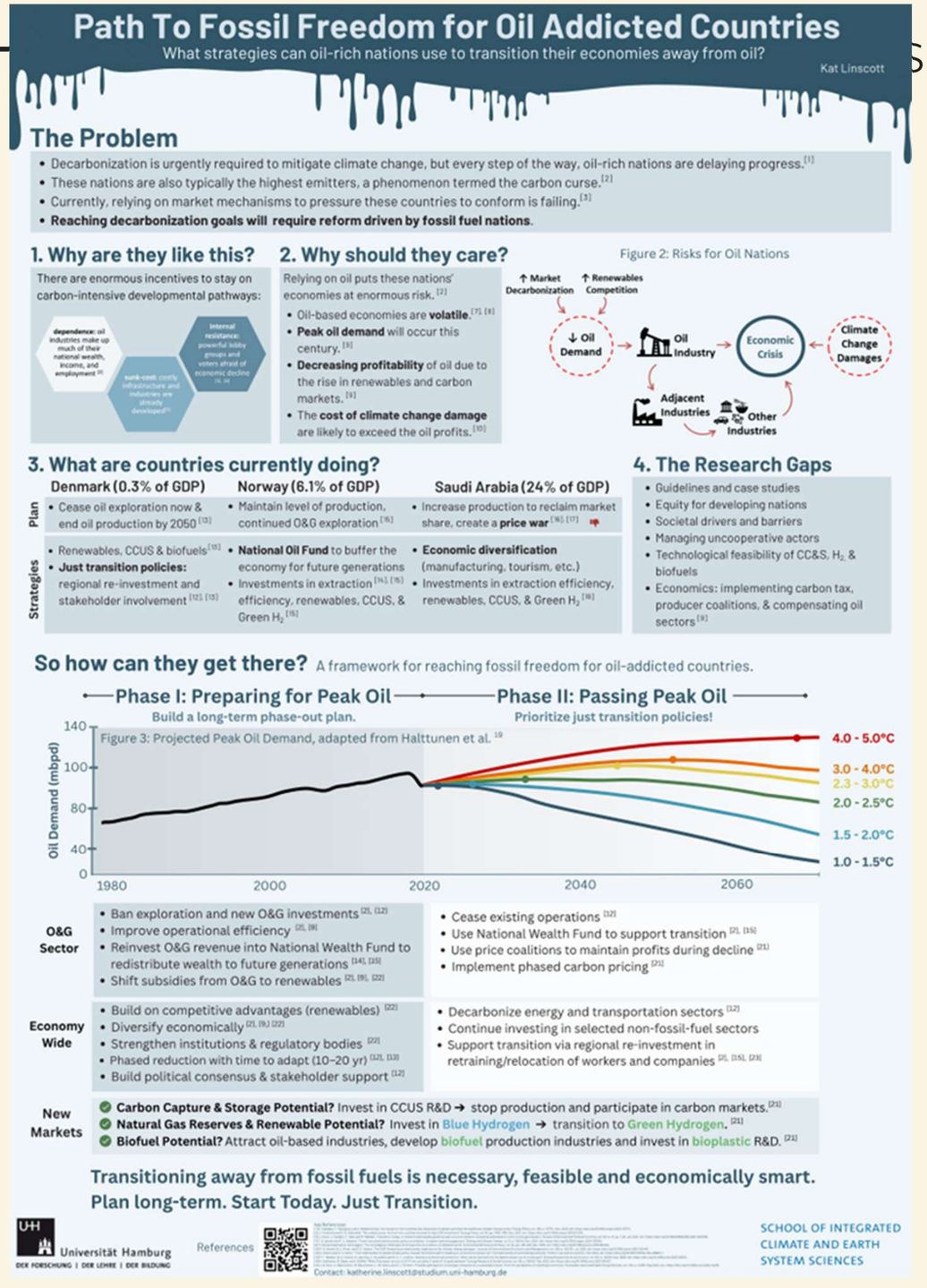
Summary

- Publicization of and mass participation in climate movements in India are limited.
- To overcome these limitations and develop potential strategies, the **2020-2021 Indian Farmers' Protests** can be used as an inspiration, and discourses of **popular Western climate movements** as a framework.
- Potential strategies can be informed by conducting **representative nation-wide surveys** and exploring the public's **climate change concerns** and **willingness to act**.
- Corresponding strategies can involve utilizing **social media** and **public outreach** of independent Indian media groups to communicate relatable climate change narratives.

References

[1] Chandra, B., Mukherjee, M., Mukherjee, A., Panikkar, K. N., & Mahajan, S. (2016). India's struggle for independence. Penguin UK.
[2] Behl, N. (2022). India's farmers' protest: an inclusive vision of Indian democracy. American Political Science Review, 116(3), 1141-1146. https://doi.org/10.1017/S0003055422000156
[3] Illustration by Michael Leo. https://www.thegazelle.org/issue/195/farm-india-fight
[4] Fridays for Future. Wiki. https://wiki.fridaysforfuture.is/
[5] Wikipedia Commons. https://commons.wikimedia.org/wiki/File:Logo_extinction_rebellion.svg
[6] Yale Program on Climate Change Communication. (May, 2024). Climate Change in the Indian Mind, 2023.

EXAMPLES – WHAT WORKS FOR YOU? WHAT DOESN'T?



SOFTWARES

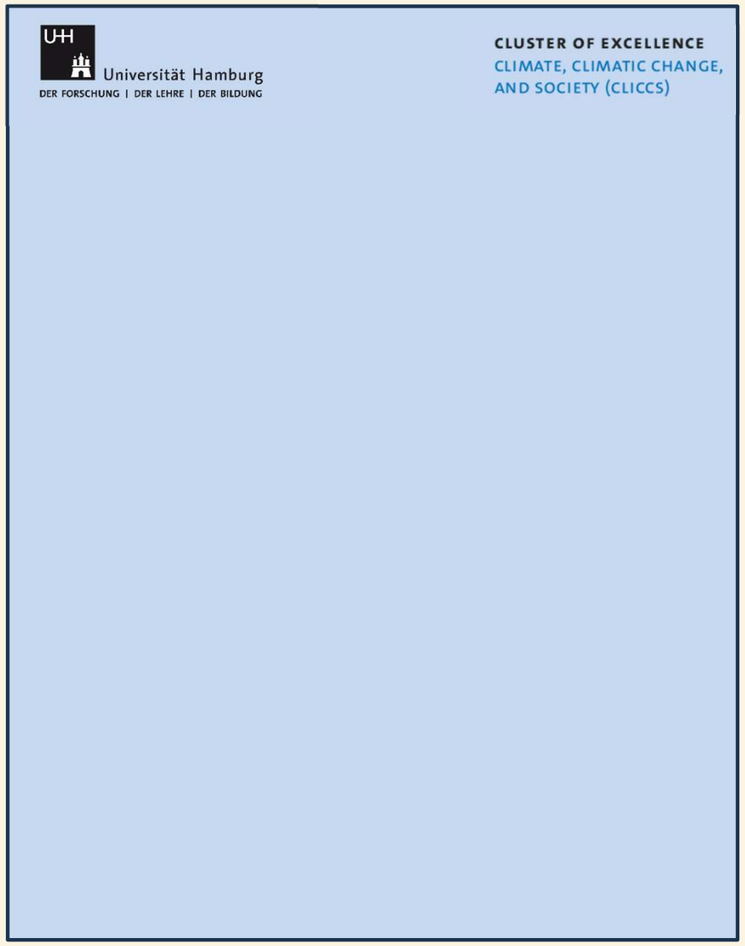
LATEX

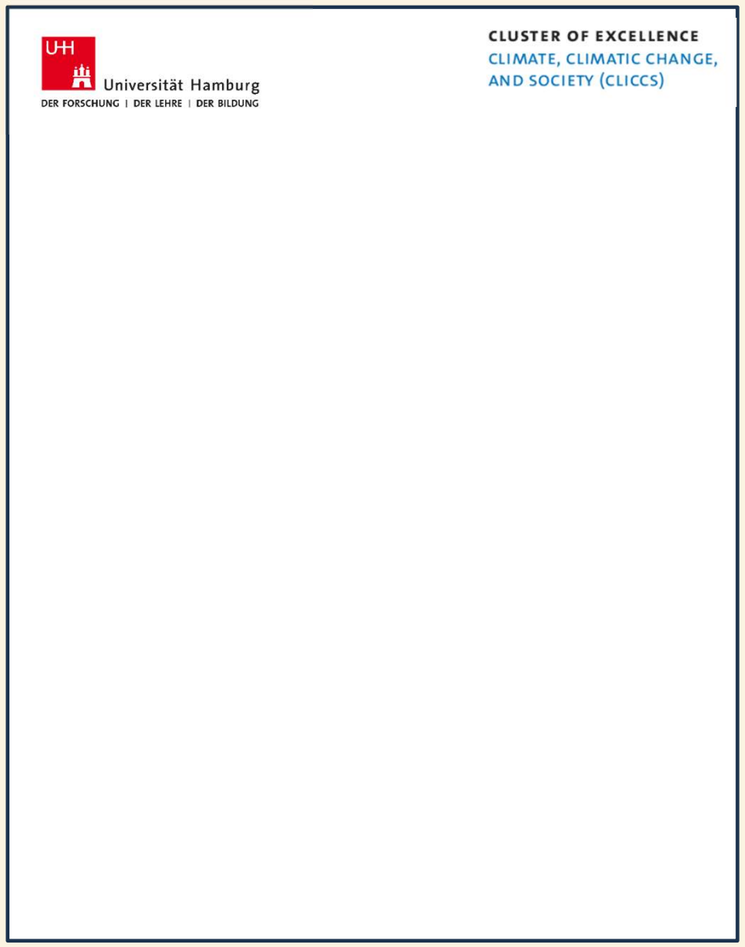
Canva

CITE YOUR SOURCES!

- Anything that is not your idea must be cited as such
- Free choice of citation format (APA, MLA, IEEE, etc.)
- In-text citations – text vs. numbering
- References at the bottom – full references is preferable, QR code + important citations is ok if references are very long

UHH LOGOS





Do not edit these!!

Guidance on use: https://www.kus.uni-hamburg.de/themen/oeffentlichkeitsarbeit/corporate-design/logo.html

SUMMARY

- **Tell a clear and compelling story**
  - Don’t data dump. Guide your reader with a clear flow from motivation to message.
  - Flow > details: Sketch structure and experiment before jumping into design.

- **Know your audience:** keep it accessible, easy to scan and audience-appropriate

- **Effective and accessible design**
  - Requirements: A0 size, with proper citations & logos (UHH, CLICCS)
  - Layout & design: choose between column or Z-pattern structure or find your own style.
  - Colour: Balance palette (60-30-10 color rule) + contrast check (4.5:1 minimum) + colour-blind friendly.
  - Text: Keep fonts simple, consistent and big enough (32 pt for body text, 48 pt+ for headings). Use sans-serif fonts. Ensure clean alignment.

General Poster Feedback: Speed-Dating (June 11th) & Poster Clinic (June 25th).

Reach out to me (Kat) if you have any questions!

ADDITIONAL GUIDANCE

MORE STRUCTURAL ADVICE...

- **Can be read from top left to lower right.**
  - Stress positions: top left and lower right, here you find the core information.

- **Balance visuals and text:** 50:50, but better 60:40 (start with key visuals; do they cover the main point?).
  - Can be understood from far/ on an A4 print-out.
  - Use headers to structure your poster.
  - Start with figures and adapt text accordingly. (NOT the other way around!)

MORE STRUCTURAL ADVICE...

Introduction

- Motivation, overview
- Mental road map
- Raise interest
- Clear description of problem/knowledge gap
- Clear statement on objectives/research questions/hypotheses

Sections

- Structure
- Create re-entry points

Closing

- Repeat core message
- Find good closing sentence

SOME HELPFUL WEBSITES

- Extract a custom color palette from any image you upload:
  Color Palette from Image – ColorKit
- Generate pretty color combos from scratch:
  Create a Palette – Coolors
- Check if your colors play nice *and* pass the accessibility check:
  Color Contrast Checker – Coolors
- Design typography scales and preview font pairings with custom settings:
  Typescale - Create stunning typography, generate CSS, and find inspiration.

Examples

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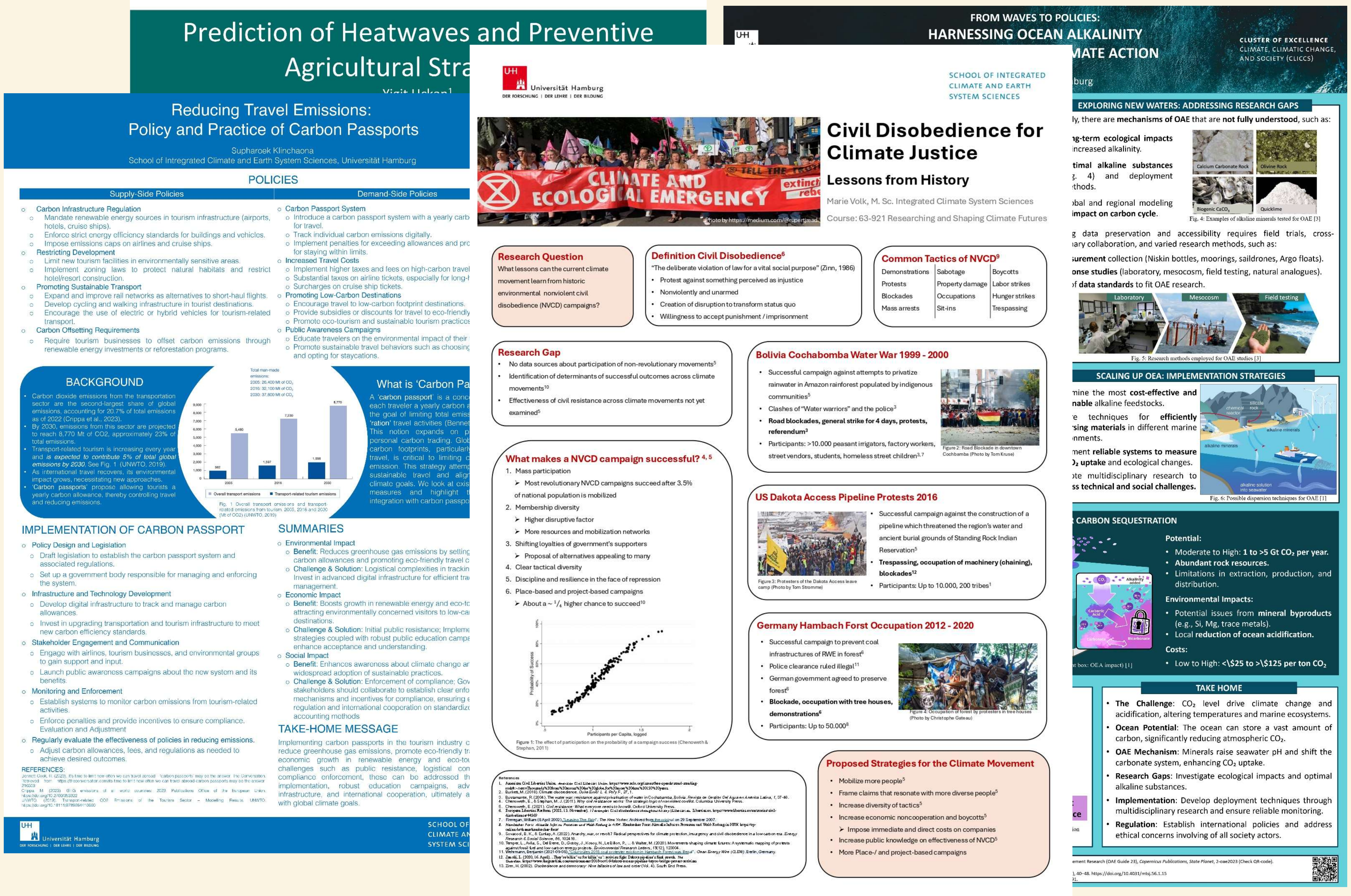

30 April 2026

REFERENCES

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