Introduction and background

As we enter the Anthropocene Era, new drivers of migration emerge such as climate change, unprecedented inequality, and modern forms of conflict. These drivers are leading to new patterns and scales of human migration across the globe. According to the Intergovernmental Panel on Climate Change (IPCC) 1990, human migration was projected as one of the greatest impacts of climate change with millions of people displaced by shoreline erosion, coastal flooding and agricultural disruption. Several different analysts have examined and addressed the problem of future flows of climate migrants, sometimes referred to as "climate refugees", and predicted that about 200 million people will be displaced from their places of abode to different areas by 2050. In addition to the climate change impacts, migration has been due to other major global challenges of our time, inter alia, economic challenges, unemployment, conflict and the rise of violent extremism and terrorism. While none of these challenges have singularly been unique to the world, the unprecedented combination and scale of these crises and emergencies have stretched the resilience and the capacity of many affected throughout the world. The impact of climate change and other factors on migration is complex and varied in different parts of the world. However, to meaningfully and significantly address this challenge requires collaborative efforts and shared experiences.

The topic of migration provides a strong anchor for social and natural sciences and gives the opportunity to connect to a number of stakeholder groups. As such, excellent potential exists for transdisciplinary teams to address research questions related to human migration and global change.

Appropriate Scale: To increase policy relevance, research should be conducted, as much as possible, at the scale of migration and policy-making, rather than the global scale. Migration is variable over space and time, and context dependent. It is therefore difficult (and perhaps counter-productive) to search for global patterns of migration and their links to global change. Within specific regions, situations, ecosystems, and within specific livelihood categories, however, there are likely to be many important, unanswered, policy relevant transdisciplinary research questions that link various data sources, from earth observation to demography, at appropriate scales. There is also important research assessing the factors that set the appropriate scale, allowing robust links between cause and effects. Finally, research with a focus on the issue of internal and rural migration, which is more widespread globally than long distance, international migration, but often receives less attention, would be beneficial.

A Systems Perspective: A stronger focus on the integrated impacts, and causal links between multiple environmental and social pressures will make an important contribution. While climate-linked migration is important, it is often not acting in isolation.

- Research advancing our capacities to tease apart the multiple drivers of migration - climate, famine, plague, pest, plant disease, conflict, and economic security – and the multiple pathways that link these factors, is needed. In many cases, significant acute events (conflict, famine, pest outbreaks, wildlife interactions, etc.) are at the beginning of causal chains that lead to migration, but these events are often linked to longer term trends, and our predictive capacity in this area is limited.
- Finally, our understanding of thresholds with regard to global change factors and migration response is extremely limited. Taking a systems approach must be done at an appropriate scale. Migration at sub-national or regional scales may relate to global scale systems and processes, and vice versa.
- Additionally, work that examines both the push and pull of migration - the reasons why people are leaving one area (e.g. famine, drought, conflict, poverty, famine, conflicts and disputes, decline in subsistence farming as a result of development of commercial agriculture, poverty, lack of proper amenities and services), and the features that attract them to another area (e.g. safety and security, economic opportunity, education opportunities), as well as work exploring thresholds, intersectionality, and consequences, will also support a broader systems perspective.

A Human-centered Approach: Too often, work linking migration and global change fails to appropriately disaggregate the links between global change and migration. More research is needed to understand how global change impacts differ across social class, race, ethnicity, (dis)ability, gender, and sexuality, and how the different responses affect patterns of migration. A greater focus on the integration of intersectionality into transdisciplinary research on human migration and global change would therefore benefit the field, and there is a need to better understand how group status, including marginalized group status (LGBT status, ethnicity, economic condition) impact access, rights, integration, and attainment of needs such as health, education, access to livelihood/economic, upward mobility, and political voice, before, during, and after migration in relation to global change. Additional topic areas of importance within this need for a more human-centered approach include:

- A focus on how migration decision-making processes are situated within other adaptation possibilities available for households and individuals. More broadly asking "why do people migrate?" may also lead to questions about voluntary versus involuntary migration and the issue of human trafficking, labor trafficking, ad human smuggling.
- A stronger focus on vulnerable people within migrant communities – children, and the elderly particular and including unaccompanied minors and ethnic minorities (e.g. Rohingya).
- Research may focus on the permanence, reversibility, seasonality and circular nature of migrations and how this feature influences or moderates effects of migrations in the context of global change.
- Research can ask how migration affects those who do not move, in both source and destination areas.

- Research supporting a greater understanding of the political impact and response of migration processes initiated through global change processes. In particular, research supporting greater predictive capacities surrounding the political impacts of migration on receiving countries both near and far from the sources of global-change induced migration, and the social contexts that change these outcomes.
- Research may focus on the need for quantitative indices and mapping tools to evaluate populations' susceptibility to migration.
- Research that pushes against the access-bias would be particularly valuable. There is a tendency to focus research on populations that are easily accessible, English-speaking (or common language speaking e.g. Spanish, French), and in locations that are safe and secure for researchers to travel to. This is understandable, but it leaves large knowledge gaps about certain populations (e.g., Syrian refugees)

Additional sub-tops topics of interest within the broad category of work on global change and migration include:
- Research that includes a focus on "biocultural loss" and "biocultural gain", including research examining changes in generational knowledge (including traditional ecological knowledge) of what has been tried in the past, what has worked, what had failed, when it comes to responding to global change, and how migration affects this knowledge base in both migration source and destination areas.
- Research on how best to measure and understand the vulnerabilities to global change that make migration a matter of injustice.
- Research on health both before and subsequent to migration. Health in refugee camps may require particular attention including the effects of trauma / traumatic stress and other psychological impacts on health, including on mental health.
- There is a need for studies that look at the chronic illness that affects one in four people in arid rural areas, and force people to migrate to urban centres for health care services. Chronic illness such as asthma, hypertension, diabetes and cholesterol are affected by changes in climate including more frequent sandstorms in the region.
- Research exploring the impacts of migration on global change.
- Research on how digital life affects the experience of immigration, and the influence of digital connectivity on migration and/or evacuation choices including social networks. Given that many migrant communities organize themselves and maintain digital connectivity through the use of mobile devices, such research could yield important policy-relevant results.
- Research projects may include efforts to more clearly define migration, perhaps through comparative work about different populations and examination of legal constructs and policy frameworks. Currently, there is substantial scholarly debate about how to define a project given the differing definitions for migration, forced migration, immigrant, refugee, expatriate, etc. Being explicit about how migration/mobility is defined in the context of a research proposal and /or project should be a requirement.
- Research in the legal framework, since the (international) migration process is strongly impacted by the existing legal framework : climate justice, application of international

agreements, legal status of migrants, access of migrants to the rule of law and basic services.
- Research questions may focus on the efficacy of interventions such as: How can migration be discouraged, encouraged, facilitated? How can migrants be empowered? Where are the weak spots in humanitarian response?
- Research may focus on measuring success towards achieving SDGs related to migration.

Approaches to be encouraged and to be avoided in the development of a funding call

Strong transdisciplinary research (research to impact) focus: There is a strong need to engage the implementing bodies (e.g. international development agencies, human rights organizations, refugees and migration organizations, small, local organizations) in the design and execution of the research, including the involvement of migrant communities to inform, drive, and execute research efforts.

Use Existing Data: The call should encourage creative and appropriate use of existing climate data and other global change data sources, and should encourage research making use of existing data sources, particularly data within which migration information has not been substantially engaged by the research community. Original data collection may be undertaken in cases where no sufficient source exists to respond to the central research questions. Decision-support modeling and geospatial approaches may be encouraged.

Keep the call broad: The call should be broad enough to encompass research on stresses (ongoing, chronic problems) and shocks (extreme and acute events), and it should be written to include contributions from communities often not engaged in Belmont Forum Calls - environmental ethics and human rights research communities, demographers, and other communities in the humanities. Inclusion of these disciplines will encompass those research communities that focus on definitions and conceptions surrounding migration.

Go Big: Avoid funding small pilot projects unless there is a consideration of continuity and opportunities to scale up with Belmont support. It may be preferable to fund large and ambitious initiatives that can access funds to scale up the project in the future. Phased funding approaches may also be considered

Watch the Frame: Avoid framing migration as a problem to be controlled. The question of whether migration is either an adaptation or a failure to adapt is not appropriate to ask in a general sense or on a large scale. The answer will vary case-by-case.

Facilitate partnership development: Research and practitioners may not be mobilized to respond to the call in a coordinated way. Participation in a proposal by early career researchers and non-academics could be challenging due to cost. Belmont could facilitate workshops (including virtual workshops and webinars) to get people together before the call is launched.