**Supplementary material: Potential implications identified in the review and expert elicitation process for each Sustainable Development Goal**

**SDG-1: End poverty in all its forms everywhere**

Potential physical side-effects:

* Effects on the ozone layer resulting from SAI might affect poorer populations with less means to protect themselves disproportionately.
* SRM might be planned or deployed in ways that maximize the benefits for wealthier populations while physical side-effects for poorer ones are not sufficiently considered. This might apply cross-country as well as within countries.

Potential climate-related implications:

* Climate change impacts (especially if global temperature increase exceeds 2°C) pose serious threats to eradicating poverty by disrupting livelihoods and economic systems (Nerini et al., 2019; Pretis et al., 2018), disproportionately affecting the poor and reversing gains made toward eradicating poverty (World Bank, 2016b). SRM could potentially play important role in reducing the impacts of climate change on the poor, although such benefits rely on efficacy and feasibility at scale, on effective governance and on the ability to maintain a focus on reducing GHG emissions.
* SRM could in the best-case scenario help directly maintain conditions that avoid some of the threats climate change pose to the poorest and most vulnerable (MacMartin et al., 2018).
* Significant challenges in participation or representation of the poorest in international decision making processes could, however, also skew outcomes to favor more influential over less influential, poorer regions

Potential socio-economic and political implications:

* Increases in the price of commodities whose production is reduced or demand for which is increased due to SRM might disproportionally weigh on the poor.
* Pursuit of SRM could lead to reductions in overall spending on climate change mitigation and adaptation, which could lead to expansion of poverty due to increased climate change impacts on the poor. A successful deployment of SRM as part of an ensemble of mitigation measures to reach 1.5 to 2°C, could on the other hand reduce overall public spending needs on greenhouse gas mitigation and climate change adaptation.

Areas for further research:

* Region-specific climate change impact pathways on the poorest — and correspondingly the potential attenuation through SRM — are not well understood.
* Repercussions from large new public expenditure programs at national or international levels for SRM on public spending for eradicating poverty require dedicated study.

**SDG-2: End hunger, achieve food security and improved nutrition and promote sustainable agriculture**

Potential physical side-effects:

* Increased soil acidification from the release of sulphate aerosols deployed in Stratospheric Aerosol Injection could affect yields of food crops or lead to additional costs (e.g. requiring farmers to enhance alkalinity of their soils) although other types of aerosols might attenuate or counter this effect (Keith et al., 2016).
* Stratospheric Aerosol Injection could have an impact on plant growth due to scattering of light, rendering certain species more and others less productive (Xia et al., 2016).
* Stratospheric Aerosol Injection could slow the recovery of the ozone layer which could adversely affect agriculture (Barnes et al., 2019), although this effect might depend on the types of aerosols deployed.

Potential climate-related implications:

* SRM may potentially be deployable in ways that effectively limit climate change impacts on food production (temperature and precipitation patterns) as well as
a potential reduction of extreme weather events and thereby help maintain agricultural yields.
* Some SRM deployment scenarios (e.g. completely masking large amounts of warming or rapid changes) could lead to local changes in climate parameters with consequent reductions in agricultural productivity.
* Large local decreases in precipitation due to SRM could significantly decrease crop yields.

Potential socio-economic and political effects:

* None identified

Areas for further research:

* Given complex implications for agricultural productivity particularly via climate change impacts, more research is needed to establish, which effects — including positive and negative impacts on food production — might dominate under specific climate change and SRM deployment scenarios globally as well as in various regional conditions and depending on particular policy designs.
* Understanding the effects that different aerosols deployed in Stratospheric Aerosol Injection could have on acidification and the ozone layer and corresponding impacts on food production requires more research.
* Locally rooted research needs to explore various — locally appropriate — policy designs compatible with food security informed by an understanding of local cultural and socio- economic conditions which will require involving a diversity of stakeholders.

**SDG-3: Ensure healthy lives and promote well-being for all at all ages**

Potential physical side-effects:

* SRM could affect drinking water quality. Aerosol particles and dust and changes in UV radiation can impact water quality.
* Airborne particles for cloud seeding or sunlight reflection (such as sulphate or other aerosols) could also be a concern for respiratory health (Effiong and Neitzel, 2016).
* Delay or acceleration in the recovery of the ozone layer due to SAI and the associated changes in ultraviolet radiation would likely have significant health implications (Barnes et al., 2019; Nowack et al., 2016).
* Large-scale transport of material related to SRM could cause traffic-accident related casualties and injuries.

Potential climate-related implications:

* Climate change is recognized as a major threat to human health (WHO, 2012) and some have argued that the potential health hazards from side effects described above might largely be surpassed by benefits due to reduced climate change / extreme event impacts (e.g. avoided deaths from malnutrition, avoided forced migration and associated health risks, reduced pervasiveness of malaria, diarrhea and heat stress).
* Local albedo modification could reduce city heat islands and help limit adverse health effects of heat waves.

Potential socio-economic and political implications:

* If consideration of SRM resulted in lessened political will to reduce fossil fuel use, substantial health benefits due to reductions in respiratory disease from particulate matter pollution would be reduced or lost.

Areas for further research:

* Health impacts from various potential SRM particulates likely vary depending on particle type, quantities and injection points. More research is needed to analyze the potential health implications of various substances and processes.
* Should materials be proposed in forms that do not naturally occur in environmental systems, testing health implications may have to meet or exceed the standards for testing novel medical procedures.
* Implications — positive or negative — from various potential particles used for SAI on the ozone layer and by extension ultraviolet radiation and associated issues surrounding skin health require further study, in particular to fully understand how certain substances might accelerate or slow the recovery of the ozone layer under real-world conditions.
* The drivers for phasing out fossil fuel use need to be better understood, to judge whether SRM would endanger the health benefits of that transition.
* How to design a transport system for SRM technological interventions that minimizes negative health side effects.

**SDG-4: Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all**

Potential physical side-effects:

* Should physical side effects of SRM negatively affect living conditions and health, there could be a risk that access to education would be adversely affected, particularly for populations at a high risk of displacement.

Potential climate-related implications:

* SRM might reduce the impacts from extreme weather events, heat waves, health problems and other adverse impacts that climate change can have on education opportunities (e.g. damage to school and transportation infrastructure, nutritional and health issues and increased displacement causing interruptions in school attendance; Glewwe, 2005).
* Local albedo modification might help limit adverse effects of heat on learning particularly for children — especially in cases of urban heat islands, which could otherwise disrupt school attendance during heat waves.

Potential socio-economic and political implications:

* Many effects discussed with regard to SDG 1 could also indirectly impact on SDG 4.
* The potential climate-related implications for education highlighted in the previous section could have long-term impacts on social and economic development.

Areas for further research:

* Given that many implications of SRM are likely to be indirect (resulting e.g. from health and well-being implications of physical side-effects and climate change limitation effects), a better understanding of such second-order implications on school attendance and quality is needed.
* Furthermore, policy effects concerning e.g. allocations of funding to education require more study, to understand whether funding of SRM activities could potentially enhance or diminish funding for education in certain socio- economic or political contexts.

**SDG-5: Achieve gender equality and empower all women and girls**

Potential physical side-effects:

* SRM resulting in changes to agricultural practices, forest management, precipitation patterns or access to drinking water (due to e.g. biomass plantations) could affect women disproportionately, particularly in indigenous, marginalized and traditional agricultural communities.
* Some impacts could particularly affect women who lack access to typical adaptive coping mechanisms, such as migration to cities, access to capital, or educational opportunities to pursue different types of work (Buck et al., 2014).

Potential climate-related impacts:

* Successful reductions in climate change impacts via SRM could benefit women disproportionately as it is widely recognized that women are particularly susceptible to the negative effects of climate change (Dankelman, 2002).

Potential socio-economic and political implications:

* Women are currently underrepresented among SRM researchers and research quality and policy design would potentially benefit from better gender balance, broadening the range of assessment metrics in use beyond cost-benefit and risk categories, and by introducing a broader range of ethical concepts to the dilemmas posed by these technologies (Buck et al., 2014).

Areas for further research:

* Research needs to address how specific regional changes in precipitation and temperature from particular SRM deployment scenarios would affect conditions and livelihoods for women and girls in light of local socio-economic and cultural conditions.
* Research on SRM as well as international governance processes needs to become more gender-balanced to avoid overlooking important areas of research and governance that may be relevant for SDG delivery.

**SDG-6: Ensure availability and sustainable management of water and sanitation for all**

Potential physical side-effects:

* Some forms of SAI could contribute to the acidification of lakes and streams (Kravitz et al., 2009), although others might do the opposite (Keith et al., 2016).
* Surface albedo modification requiring large quantities of materials could result in additional and unwanted material deposition in aquatic systems.

Potential climate-related implications:

* SRM could have substantial implications on water availability due to their potential impacts on precipitation and evaporation. SRM is likely to counteract an increase in global precipitation intensity (Irvine et al., 2010), which would locally reduce water availability (Haddeland et al., 2014).
* Some scenarios suggest precipitation changes caused by climate change could be counteracted by SRM to some degree (Jones et al., 2018).

Potential socio-economic and political implications:

* The social, economic and political imperative to maintain integrity of water resources at a national or local level could be significantly compromised or supported depending on the specifics of different types of SRM.

Areas for further research:

* Potential effects of cloud modification through seawater spraying on coastal freshwater availability are not well understood.
* Local and regional precipitation effects of various SRM techniques remain a key subject for earth system modelling research, which may need to be complemented with broader impact assessments regarding socio-economic and environmental factors.

**SDG-7: Ensure access to affordable, reliable, sustainable and modern energy for all**

Potential physical side-effects:

* As some types of SRM would result in more scattered light, they could potentially reduce yields of concentrated solar power and increase yields of solar photovoltaic cells (Smith et al., 2017).
* Potential losses or gains in wind energy yields due altered average and extreme windspeeds could have implications for energy access and land-use trade-offs.

Potential climate-related implications:

* SRM might have benefits for energy access in light of substantial energy sector vulnerability to climate change impacts such as constraining water availability for hydropower or for cooling of thermal or nuclear power stations, potentially lowering energy generation capacity up to 60-90% as well as increasing energy demands (van Vliet et al., 2016). If precipitation is locally reduced by SRM, hydropower yield could somewhat decrease.
* Some forms of surface albedo modification might reduce energy demand for air- conditioning due to local cooling effects.

Potential socio-economic and political implications:

* none identified

Areas for further research:

* Further research may be required to understand regional vulnerabilities of energy infrastructure to climate change impacts and how SRM could attenuate or aggravate these.

**SDG-8: Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all**

Potential physical side-effects:

* SRM requires the setup of physical infrastructure and occupation of land, sea or air space that competes with use of the same area for productive economic activities.

Potential climate-related implications:

* Regional differences of SRM impacts on temperature, precipitation and extreme weather events could result in regional redistributions of climate-dependent productivity and damages to assets.
* Successfully avoiding climate change impacts through SRM would provide substantial economic benefits especially in poorer regions, which are expected to be especially hard-hit from climate change at 2°C or more (Pretis et al., 2018; Moore and Diaz, 2018).

Potential socio-economic and political implications:

* SRM could have implications for economic growth or employment due to competition over land, water and mineral resources or due to effects on fisheries or land ecosystems affecting dependent economic activities. Indirect effects through the reduction of supply of these resources and propagation of related price shocks through the economy would be negative.
* The expected financial costs per unit of radiative forcing reduced via SRM might be orders of magnitude lower than of classical mitigation, but nevertheless — the atmosphere being a public good — no business case for deployment has been demonstrated to date without public investment. Furthermore, costs increase proportionally with the duration at which SRM needs to be maintained and full cost assessments will have to include funding for accompanying policies (e.g. monitoring of results or compensation for and adaptation to induced regional changes; Reynolds et al., 2016).
* Most SRM technologies are currently far away from presenting economically viable business cases for deployment. It is thus unclear to what degree deployment of SRM would contribute to inclusive and sustainable growth in light of their dependence on public spending. A particular concern is the opportunity cost of public spending on SRM that would otherwise be available to provide infrastructures and public goods necessary for sustained economic growth and employment.

Areas for further research:

* Research on potential policy instruments for SRM deployment has just started. As a consequence, little is known concerning the potential implications of such policies on economic growth and employment.
* More sophisticated and broad-based assessment methods need to be developed to quantify and compare how changes in prices and availability of different resources that are potentially affected by SRM (e.g. energy, food, water, ecosystem services etc.) might interact to impact on inclusive and sustained economic growth.

**SDG-9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation**

Potential physical side-effects:

* SRM will increase the need for dedicated infrastructure and increase pressure on existing transport infrastructure.

Potential climate-related implications:

* SRM could potentially mitigate the destructive forces of extreme weather events on built infrastructure and a corresponding reduction of public and private spending required to restore crucial infrastructure and build resilience to higher levels of warming (World Bank, 2016a).

Potential socio-economic and political implications:

* Investments in SRM research, development and deployment could stimulate industrial innovation.
* Increased freight transportation for SRM could locally adversely affect transport systems.

Area for further research:

* Regional infrastructure and transportation requirements of SRM deployment are not well understood. More research is therefore needed to better understand the potential implications for different types of infrastructure in different regions and economic contexts.

**SDG-10: Reduce inequality within and among countries**

Potential physical side-effects:

* Any harmful side-effects such as those described elsewhere in this report including from particulate pollution on health, degraded natural environments or reduced agricultural and economic productivity that affect disadvantaged populations within or between countries and regions could lead to an increase in inequality.

Potential climate-related implications:

* By reducing climate change impacts, SRM could contribute to improving development outcomes for the most disadvantaged both within and between countries.

Potential socio-economic and political implications:

* Side-effects of SRM may be unevenly distributed in ways which could further exacerbate economic inequality.
* SRM research is presently predominantly funded by- and executed in countries of the global North, thus risking biases towards those countries’ interests and overlooking key issues for developing countries.

Areas for further research:

* Further research is needed to understand how SRM effects could be distributed in ways that avoid increasing inequalities both within or between countries.
* More research is also needed to understand how the side-effects of SRM could be managed to avoid increasing inequalities.
* More analysis is needed to better understand how different types of SRM could impact on different countries, regions or localities both socially and economically.
* Strengthened efforts to enable involvement of developing country research institutions and a broad range of stakeholders in SRM research could be important to avoid exacerbating or creating new inequalities.

**SDG-11: Make cities and human settlements inclusive, safe, resilient and sustainable**

Potential physical side-effects:

* SRM through roof albedo increase could potentially contribute to reducing urban heat-island effects.

Potential climate-related implications:

* Reducing climate change impacts could result in significant benefits to city dwellers as cities are often found in particularly vulnerable places, e.g. on low-lying coastlines and rivers.
* Reducing impacts of extreme meteorological events and reduced agricultural yields in rural areas could reduce migration pressure and thus urbanization rates.
* Using surface-albedo modifications as a means to counteract urban heat islands could substantially improve local conditions of urban populations during heatwaves.

Potential socio-economic and political implications:

* Cities and networks of subnational government entities would likely demand to be involved in developing governance mechanisms for local or regional SRM forms and could substantially contribute to global and regional governance efforts.

Areas for further research:

* Uncertainties with regard to SRM impacts on cities include their potential for altering key climate variables (e.g. sea level rise, extreme temperature and precipitation events) as well as implications on resource availability (e.g. drinking water) affecting urban communities.
* Local and regional implications of substantial urban surface albedo modifications (e.g. on wind and precipitation) are not well understood and may require bottom-up research that takes local conditions into account.
* More research may be needed to better understand and enable the potential role of subnational governments in sub-national, national or global governance of SRM.
* Potential contributions of urban design and management are to be explored further (Fink, 2013).

**SDG-12: Ensure sustainable consumption and production patterns**

Potential physical side-effects:

* None identified

Potential climate-related implications:

* By attenuating real or perceived climate impacts, deployment of SRM could potentially reduce pressures toward changing lifestyles and industrial production, thus weakening support for sustainable consumption and production patterns.

Potential socio-economic and political implications:

* Anticipating adverse physical side-effects resulting from SRM might enhance support for sustainable consumption and production of some populations.
* Consideration or deployment of SRM could potentially reduce political support for pursuing sustainable consumption and production patterns among some populations.

Areas for further research:

* Further social science research could help inform understanding of the conditions under which consideration of SRM might weaken efforts to undertake a transformation toward sustainable consumption and production patterns — and under which conditions the opposite effect could be the result. This includes addressing questions around the framing of these issues in international discussions as well as evolving institutional responsibilities.

**SDG-13: Take urgent action to combat climate change and its impacts**

Potential physical side-effects:

* Physical side-effects of SRM could include unexpected regional differences in climate outcomes as well as secondary cooling effects from avoiding crossing of ice-melt, permafrost methane emissions or other earth systems tipping points.
* Physical risks of SRM on climate action also include the risk of abrupt termination of its deployment and corresponding impacts from rapid changes in climate (Trisos et al., 2018; Parker and Irvine, 2018).

Potential climate-related implications:

* The efficacy of SRM to combat climate change and its impacts is debated: Many have serious objections against considering SRM
as a potential means to reduce climate change risks. However, some consider SRM to hold serious potential for contributing to reaching the 1.5°C to well below 2°C target. Evidence from computer models suggests that partial compensation of moderate GHG-induced global temperature increase through SAI could limit climate change impacts across regions and key climate variables (MacMartin et al., 2018).

Potential socio-economic and political implications:

* Climate action may be one of the most interlinked dimensions of Sustainable Development and there may be a very high risk for missing key goals, in the absence of ambitious climate policy that limits warming to 1.5/2°C (Ansuategi et al., 2015).
* There are concerns that SRM could obstruct emissions reduction efforts (Morrow, 2014).

Areas for further research:

* Whether or not SRM can effectively contribute to limiting climate change and its impacts is the subject of ongoing research and cannot be resolved without substantial research efforts across a broad range of disciplines as well as substantial public discussion and deliberation.
* The international governance of climate change is already intricate and complex, with many regimes and institutions beyond the UNFCCC involved. Serious consideration of SRM could both strengthen or challenge collaboration across institutions involved in these global governance processes and more research is needed to understand these opportunities and risks toward addressing climate change, especially in the context of the Paris Agreement, being driven by voluntary national contributions.
* Research in particular is needed to understand how discussion of SRM would affect political support for reducing GHG emissions and how strategic communication could help ensure mitigation ambition is raised over time.
* Research might also explore whether introducing SRM might have implications on interpretations of important principles such as equity and burden-sharing as it represents a departure from the direct relation between greenhouse gas concentrations and climate change.

**SDG-14: Conserve and sustainably use the oceans, seas and marine resources for Sustainable Development**

Potential physical side effects:

* SRM may have potential effects on ocean chemistry and ecosystems due to particles precipitated in SAI or changes in algal growth due to scattering of solar irradiation.

Potential climate-related implications:

* Climate change affects ocean ecosystems largely through increasing water temperature and acidification resulting from carbonation. SAI with alkaline materials could potentially help counteract acidification and revitalize fisheries and oceanic ecosystems. In case of uneven distribution, ocean ecosystems might, however, also be altered in less fortunate ways – variously in- or decreasing biological activity. Uncertainties with regard to such effects (particularly from cloud- and surface albedo modifications) are substantial.
* SAI could counteract warming of ocean waters — thus alleviating one of two key stressors to oceanic ecosystems (Kwiatkowski et al., 2015).
* SRM may have the potential to slow or halt the crossing of earth systems tipping points such as accelerating ice-melt and its effects on ocean currents and nutrient distributions as well as the destabilization of ocean methane clathrates (Belaia et al., 2017).
* Cloud modification through spraying of sea salt could require large fleets of ships cruising the world’s oceans and could thus have a negative impact on marine life.

Potential socio-economic and political implications:

* Governance of SRM in or above international waters is likely to pose a challenge to the pertinent governance bodies. This includes questions such as whether policy instruments to incentivize beneficial applications can be created and in which institutional context.

Areas for further research:

* Further research is required to understand how SRM might affect the complex interactions within ocean food-chains and oceanic chemistry, as well as the associated impacts on fisheries.
* Further research is needed to understand under which conditions some forms of SRM might be capable of slowing polar ice-melt and attenuate its effects on ocean currents and ecosystems.

**SDG-15: Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss**

Potential physical side-effects:

* SRM could have an indirect effect on land-based ecosystems due to an increase in diffuse light, which could enhance photosynthetic productivity of some plants and reduce it for others (Xia et al., 2016).
* SAI based on sulphur dispersion could harm ecosystems sensitive to acidification.

Potential climate related implications:

* SRM could potentially reduce the pressures to land- based ecosystems caused by climate change.
* Regional temperature increases might result from afforestation in northern latitudes as forests have a lower reflectivity than other land-surfaces.

Potential socio-economic and political implications:

* None identified

Areas for further research:

* Ecological effects under water and the potential land ecosystem effects from various particles that could in theory be used for SRM need to be researched further.

**SDG-16: Promote peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective, accountable and inclusive institutions at all levels**

Potential physical side effects:

* Transboundary side-effects of SRM could create tensions and pose challenges for international institutions, and justice if for example, extreme weather events that occur after deployment might be attributed or even perceived to be linked to such an intervention and strain diplomatic relations (Macnaghten and Szerszynski, 2013). In such as scenario, unilateral SRM might be counteracted through various technical means (Parker and Irvine, 2018), the release of potent industrial GHGs or even destruction of deployment equipment by military intervention.
* In the event of regional differences in side-effects, serious legal challenges might emerge in attributing causality and agency rendering claims for compensation for relative gains or losses very difficult.

Potential climate-related implications:

* In the event of SRM deployment, the need to agree a common temperature goal that would accommodate diverging national interests could test the capability of international institutions to come to agreement and operationalize it via coordinated deployment. Some see this as a potential new source of international conflict and disagreement (Macnaghten and Szerszynski, 2013).
* SRM could reduce climate change impacts that pose increasingly serious threats to disrupt stability and peace (e.g. by triggering resource conflicts and large-scale migration flows);

Potential socio-economic and political implications:

* The potential political and commercial interests bound up in SRM proposals could pose a challenge to international governance.
* Significant differences of opinion and differing interpretations of ethical and equity implications of SRM techniques could pose serious political and social challenges.

Areas for further research:

* There is a broad range of questions requiring the attention of scholars, practitioners and decision-makers concerning implications of SRM techniques for governance and institutions at all levels. For example, will SRM require more centralised or dispersed forms of global governance and will this further concentrate power globally, or could it disperse it, e.g. due to the relative affordability of the technology (see Reynolds, 2018)?
* Is SRM inherently anti-democratic or can it be governed and potentially deployed via democratically-mandated decision-making processes?
* Can large-scale SRM be effectively deployed through participatory decentralised modes, or would policy instruments inevitably be captured by corporate interests? How far do public and private interests diverge?
* If SRM demands global coordination and strong global governance institutions would that help or hinder achievement of other SDGs?

**SDG-17: Strengthen the means of implementation and revitalize the global partnership for Sustainable Development**

Potential physical side-effects:

* Variation in regional redistribution of side-effects and associated trade-offs in outcomes from SRM deployment could lead to a loss of trust and collaboration between networks of international institutions working toward human development and reducing climate impacts.

Potential climate-related implications:

* Serious consideration of SRM could challenge current narratives, reduce impetus and destroy existing partnerships toward Sustainable Development.

Potential socio-economic and political implications:

* Potential reallocations of public funding upon implementation of SRM policies and away from other important areas such as the humanitarian sector is a concern often voiced (Suarez, 2017). Such changes may be inconsistent with hard-won understanding of global roles, expected contributions and the meaning of partnerships in pursuit of Sustainable Development.
* The emergence of a largely new and urgent coordination challenge that can only be addressed within a framework of global agreement and cooperation might create linkages and solutions that offer potential for direct or analogous approaches elsewhere in the Sustainable Development field (Nicholson et al., 2018). Strengthened public consultation and deliberation processes that many are calling for (e.g. Frumhoff and Stephens, 2018) would appear particularly relevant in this context.

Further research needed:

* Implications of SRM on global partnerships and their governance will require engaging various perspectives, including national governments, industries, investors and other private sector players, and civil society including the defenders of various ecosystems and rights of indigenous peoples.
* Issues of collective monitoring and verification of the impact of SRM initiatives would pose considerable technical challenges that by necessity might lead to strengthening international collaboration. However, this might also strain international collaboration.
* In view of the importance of the local context (such as socio-economic, political, cultural, and climatic factors as well as differences in the natural resource availability), inclusive and broad-based research and deliberation is a necessity for gaining better understanding of the implications of SRM.
* Given that institutions based in developing or under-developed economies may not prioritise such activities over other urgent issues of concern, financial support from the global North may be required to enable the necessary participation (Rahman et al., 2018).
* Further research areas include in particular questions of potential implications and trade- offs for public budget allocations such as toward technology development, funding for climate change adaptation, humanitarian work or disaster relief.
* As work toward Sustainable Development transformations as well as debate on SRM advances, a better understanding of the potential for constructive decision making, partnerships and synergies between various goals could be gained through political science research.

**Supplementary material: Table of experts involved in the review process**

Tab s1: Experts involved in the review process

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | **Geographic location** | **Academic discipline** | **Thematic expertise** | **Institutional expertise** |
| 1 | Western Europe | Economics | Climate policy | Research, UN- private sector, development cooperation advisory |
| 2 | Western Europe | Environmental sciences | Environmental science | Research, UN advisory |
| 3 | East Asia | Economics | Climate- and urban development policy | Domestic mitigation policy- and UN advisory |
| 4 | Western Europe | Law | International carbon markets | Domestic agricultural policy |
| 5 | North America | Psychology | Sustainable communities | Int. development cooperation, UN |
| 6 | Western Europe | Sociology | Climate engineering | Research |
| 7 | Western Europe | Economics | Energy-environment-economy systems modeling | Research |
| 8 | Southern Europe | International law | Maritime law and conservation | Foreign policy |
| 9 | Western Europe | Economics | Trade and environment | Research |
| 10 | Northern Europe | Philosophy | Climate and justice | Research |
| 11 | North America | Political science | International peace and conflict | Research |
| 12 | North America | Experimental physics | SRM | Research |
| 13 | Eastern Europe | Geophysics | Climate change | Environmental NGOs, research |
| 14 | Western Europe | Sustainability sciences | Earth system governance | Research |
| 15 | Western Europe | Applied mathematics  | Modeling socio-economic systems | Research |
| 16 | Western Europe | Sociology | Justice and social impact of technologies | Research and NGOs |
| 17 | Sub-saharan Africa | Business administration, economics | Green growth and entrepreneurship | Research and international advisory |
| 18 | South America | Economics | Human rights and urban development | Social NGOs |
| 19 | North America | Engineering | Climate change governance | UN, environmental NGOs |
| 20 | Western Europe | Political science | Eastern european climate policy | Research |
| 21 | South America | International law | Environmental- and climate policy | Domestic environmental policy, environmental NGOs |
| 22 | South Asia | Economics | Interior-, rural and water policy | Domestic environmental- and rural development policy |
| 23 | Western Europe | Philosophy, sociology | Climate policy, wicked problems | Research |
| 24 | Southeastern Asia | Economics | Climate economics, energy modeling | Research |
| 25 | Southern Europe | Biology | Clean air, forestry and land-use policy | Research, domestic environmental policy advisory, multilateral funds, UN |
| 26 | North America | International law | Humanitarian-, health and climate policy | Environmental NGOs, UN |
| 27 | Sub-saharan Africa | Economics | Sustainable development, energy- and climate policy | Research and advisory |
| 28 | North America | Economics and Finance | Climate change governance, carbon markets | UN, environmental and industrial NGOs |
| 29 | North America | Political science | Carbon removal and solar geoengineering | Environmental NGOs |
| 30 | North America | Social-, Political science | Migration, disaster management, humanitarian aid and climate | Environmental NGOs, UN |
| 31 | Western Europe | Environmental studies, business administration | Industrial manufacturing and environmental policy | Research and advisory |
| 32 | North America | Atmospheric physics | Climate modeling | Research |
| 33 | Western Europe | Philosophy, law, political science | Sustainability policy | Research |