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A geopolitical-economy of distant water fisheries access arrangements



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In recent decades, fishing fleets and effort have grown in aggregate throughout the waters of lower-income coastal countries, much of which is carried out by vessels registered in higher-income countries. Fisheries access arrangements (FAAs) underpin this key trend in ocean fisheries and have their origins in UNCLOS's promise to establish resource ownership as a mechanism to increase benefits to newly independent coastal and island states. Coastal states use FAAs to permit a foreign state, firm, or industry association to fish within its waters. This paper provides a conceptual approach for understanding FAAs across the global ocean and for exploring their potential to deliver on the promise of UNCLOS. Illustrated with the findings from multiple case studies, we advance understanding of FAAs by developing a *geopolitical-economy of access* that attends to the combination of contingent and context-specific economic, ecologic, and geopolitical forces that shape the terms, conditions and practices of the FAAs shaping this persistent phenomenon of higher-income industrial fleets fishing throughout lower-income countries' waters.

Coastal state ownership of marine resources: was the promise of UNCLOS fulfilled for lower income states?

The 1982 United Nations Convention on the Law of the Sea (UNCLOS) promised increased benefits to newly independent and lower income coastal states from fisheries resource ownership. The mechanism supporting this claim is the sovereign rights over marine resources within coastal states' exclusive economic zones (EEZs). UNCLOS provides the legal foundation, as well as the promise, for coastal and island states to use marine resources within their EEZs, including to capture rents from foreign fishing via fisheries access arrangements¹. This is of central importance to understanding marine fisheries given that over 95% of global marine fish catch is within the human-drawn borders of the world's EEZs². The aim of this perspective is to suggest that the promise of ocean resource ownership under UNCLOS may not have been fully realized by lower income coastal and island states, and to highlight the importance of studying fisheries access arrangements (FAAs) in their various forms in order to better understand this phenomenon. To do so, we begin with the historical context that has created the conditions for

contemporary fisheries access arrangements. We suggest that a research agenda using a geopolitical economy lens can help to better understand the continued prevalence and dynamics of FAAs in the waters of lower income, predominantly tropical, countries. We develop a conceptual approach and apply it to a series of geographically diverse country case studies, identifying the conceptual and methodological elements for further research to explain the important phenomenon – and outcomes – of distant water fishing, especially in tropical waters.

For centuries prior to UNCLOS, state jurisdiction was largely absent from the oceans, and indeed from the 1700s, the European imperial powers pressed for “freedom of the seas” in order to smooth the globalizing flow of commerce and colonialism to their benefit. This left fisheries as open access resources for those entities able to exploit them without regulation and free of charge. These dynamics began to shift in the mid-20th century. The expansion of industrialized fishing after World War I^{3,4} and its globalization after World War II upended fisheries production dynamics and – alongside political processes of decolonization – ushered in an era of fisheries-related

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jurisdictional claims and conflicts that contributed to and framed the prolonged international negotiations that led to UNCLOS⁵.

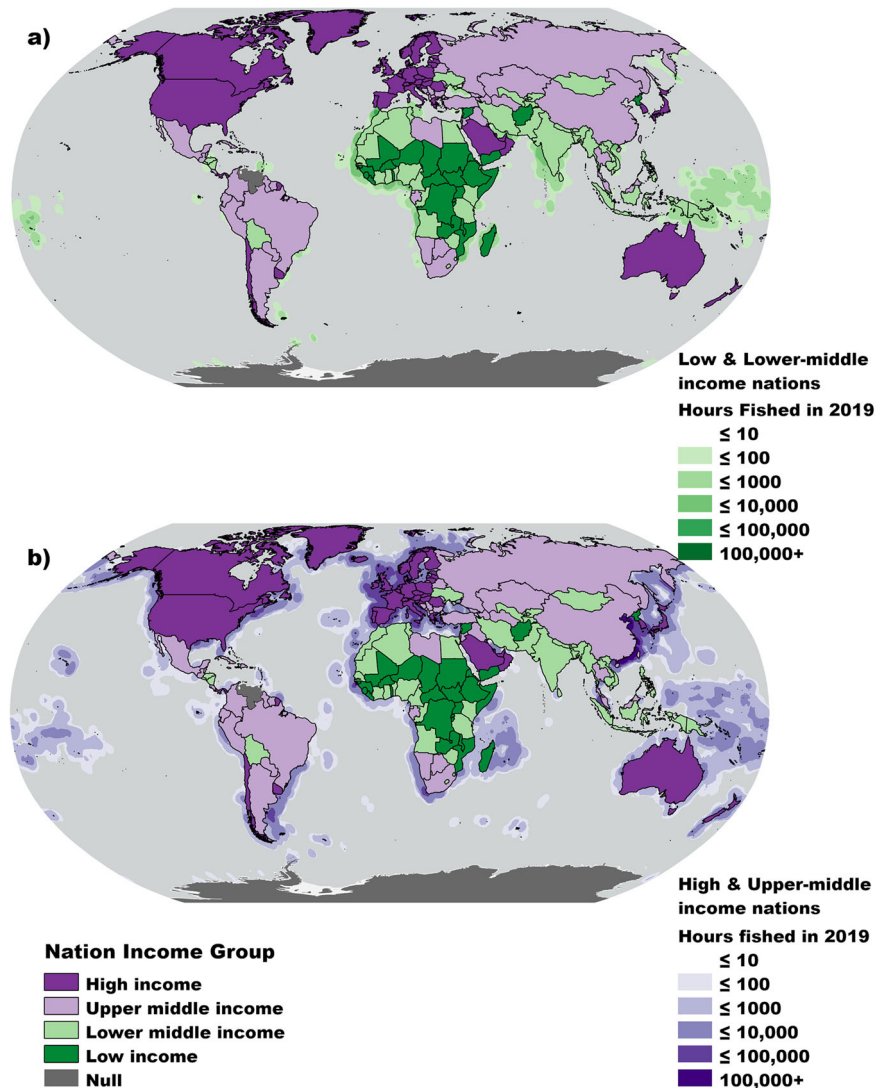
Debates at UNCLOS III (1973–1982) were an expression of the historical conjuncture arising from the decline of formal colonialism, contestation over control of marine resources, and the Cold War politics during which the Convention was negotiated. Of particular note is that the Group of 77 developing countries propelled forward the UNCLOS process as part of their larger efforts at the United Nations for a New International Economic Order (NIEO). The NIEO called for international reforms of the rules of the game of the world economy to adjust the patterned history through which the Global North gained wealth through (neo)colonial relations that facilitated the unequal extraction of resources from the Global South^{6,7}.

In this context, the formation of new regulatory mechanisms for the oceans presented opportunity^{8–10}. The states of the Global South – many newly independent – recognized ocean policy as an institutional tool to control access to marine resources and promote redistribution and benefit sharing. The 1945 Truman Proclamations had already unilaterally established US claims to the marine subsoil and fisheries conservation zones running to the continental shelf off the US coastlines. Chile, Ecuador, and Peru had rapidly followed suit asserting state-space in the oceans by declaring EEZs with 200-mile limits, which they mutually recognised in the 1952 Santiago Declaration¹¹. By the mid-1970s, the EEZ had been accepted in customary international law. Coupled with EEZ codification under UNCLOS in 1982, coastal states secured sovereign rights over resource-rich

waters proximate to their terrestrial shores, a move that represents the largest enclosure of the commons in human history and that transformed vast swathes of the free sea into state property¹². UNCLOS established state rights over a variety of fishing activities within EEZs, including, *inter alia*, the right to: charge access and fishing fees to fishing firms, define resource management, and prohibit or exclude fishers. In sum, UNCLOS provides for sovereign rights as a form of state-property over around 95% of marine capture fisheries³, making marine resources and spaces a public asset. It also provides the legal foundation for coastal states to establish their own fisheries access arrangements.

Over 40 years later, fleets from wealthier nations still dominate industrial fishing in the waters of lower income tropical nations, operating now under a diversity of FAAs (Ref. 13, Figs. 1, 2, supplemental data). In this article, we explore how the promise of resource ownership under UNCLOS has played out through the evidence of FAAs in their various forms. Fishing fleets and effort have grown in aggregate throughout the waters of lower-income countries in recent decades, while generally decreasing in the more temperate waters of higher-income countries¹⁴. In this context, recent measures of industrial fishing effort apparent from satellite Automatic identification system (AIS) data suggest that the majority of fishing in the waters of low to lower middle-income (henceforth, “lower-income”) countries continues to be carried out by vessels registered in wealthier countries, often characterized as “distant water fishing fleets” (DWFs). (Distant water fishing fleets are defined here as firms fishing in areas outside

Fig. 1 | Apparent fishing effort data shown in hours fished in 2019. Based on World Bank data, green land mass delineates a low or lower middle income nation and purple land mass delineates a higher-income nation. The same classifications are applied to a fishing vessel’s flag state. Apparent fishing effort in hours is separated based on the income group classification of flag states. **a** Fishing effort by vessels flagged to lower-income states in 2019. **b** Fishing effort by vessels flagged to higher-income nations. All fishing effort data is obtained from Global Fishing Watch’s AIS classification data. Mapping by Gabrielle Carmine.



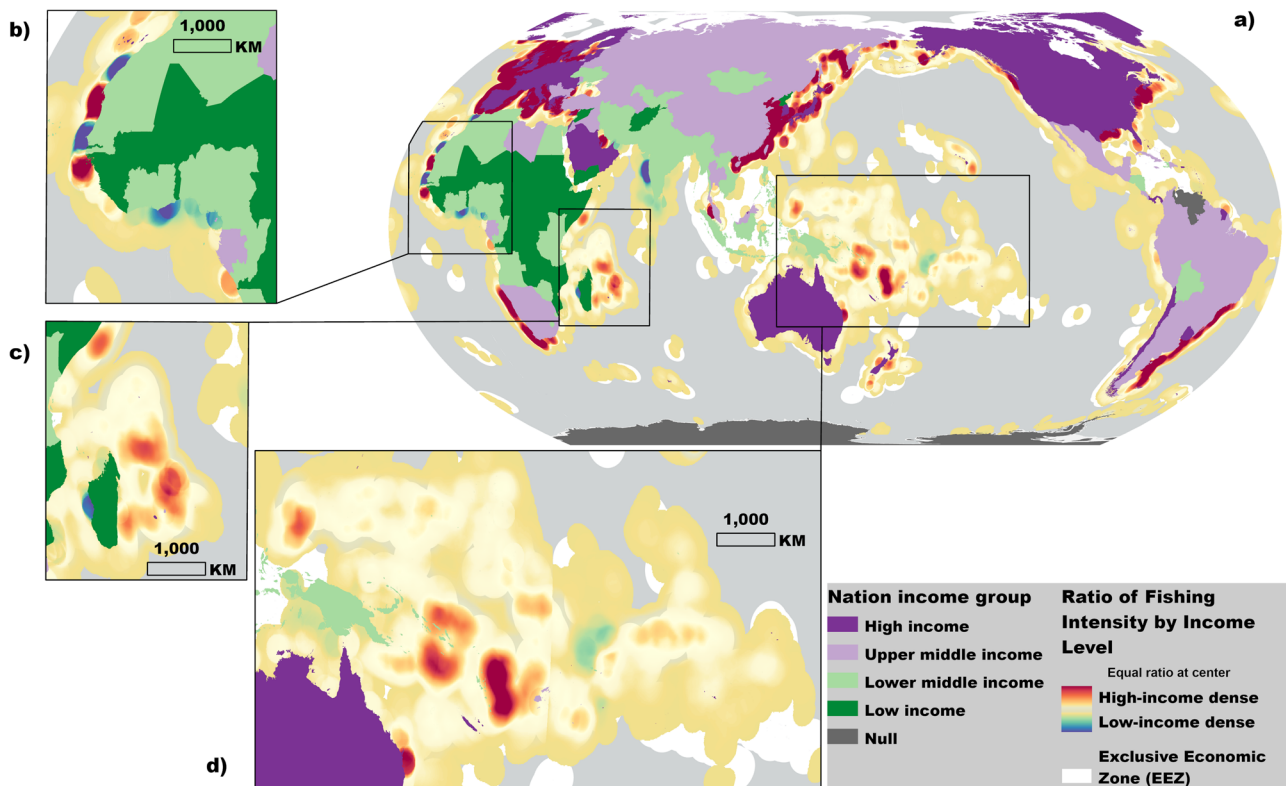


Fig. 2 | a Ratio map of higher-income vessels' apparent fishing effort comparative to lower-income vessels' apparent fishing effort (hours fished) within Exclusive Economic Zones. This figure uses Global Fishing Watch AIS data for the 2019 calendar year. Based on World Bank data, green land mass delineates a low or lower-middle income country (light or dark green, respectively) and purple land mass delineates a high or upper middle-income country (light or dark purple, respectively). The same classifications are applied to all fishing vessel flag states in 2019 and that fishing effort in hours is separated based on flag state income group classification. A ratio of higher- and lower-income fishing effort is taken. The red ratio represents the further extent of higher-income fishing intensity when subtracting lower-income fishing effort (in hours) within each analysis cell; the darkest red indicates fishing is almost

exclusively undertaken by higher-income countries. The blue ratio represents the further extent of lower-income fishing intensity when subtracting higher-income fishing effort (in hours) from each analysis cell; the darkest blue indicates fishing is almost exclusively undertaken by lower-income countries. The transparent color indicates equal ratios across income groupings. Figure 2 does not show density of fishing effort, which is depicted in Fig. 1. **b** Illustrates areas in the Eastern Atlantic off of the West Coast of Africa where there are both high concentrations of higher-income flags as well as high concentrations of lower-income flags. Insets (c) and (d) illustrate that in the Indian and Pacific Oceans, the ratio of fishing intensity tilts strongly toward higher-income flags. This is despite trends in both ocean regions in which foreign capital invests in local flags. Mapping by Gabrielle Carmine.

of the jurisdiction where beneficial ownership is held and beyond the FAO Major Fishing Area(s) that is (are) adjacent to the natural coastline of that jurisdiction. This definition draws on draft fisheries subsidies texts in the WTO Negotiating Group on Rules). The opposite pattern is found in high or upper-middle income (henceforth, “higher-income”) country waters where vessels flying higher-income country flags predominate.

In 2019, 60% of fishing effort in lower-income EEZs was conducted by vessels flying flags of higher-income countries (Fig. 1). This represents a decline in the higher-income countries' global share of in-EEZ fishing compared to 2016 when McCauley et al.¹⁵ found that 78% of industrial fishing within the EEZs of lower-income nations was by vessels flagged to higher-income nations. Part of this shift can be explained by an increase in the use by higher-income country fleets of flags from lower-income coastal states as a strategy to secure access to the latter's fisheries (discussed further below). This introduces a serious limitation in the use of data organized by flag state because it obscures the many cases of firms from higher-income states reflagging to lower-income states to gain strategic access to their EEZs^{16,17}. Despite this important caveat, Fig. 1 shows that, overall, the spatial extent and intensity of fishing in the EEZs of lower-income countries is greater for vessels from higher-income countries than for vessels from lower-income countries.

While the industrial fishing effort apparent from satellite signals available for tracking vessels can miss significant numbers of vessels that do not send such signals^{18,19}, these estimates do indicate a pattern of foreign-registered fleets from higher-income countries fishing in the national waters

of lower-income countries throughout the global ocean. This pattern is not dissimilar from the pattern of industrial fishing when UNCLOS was agreed in 1982^{20,21}, and which, as noted above, developing coastal and island states sought to change via establishing EEZs. For example, throughout the tropical waters under the jurisdiction of lower-income countries, the majority of industrial fishing is by vessels flagged to higher-income countries, as illustrated in the elaboration of the ratio of fishing intensity by vessel flag state income level in Fig. 2.

While the ratio map in Fig. 2 illustrates spatial trends, the fact that *firms* fish, not countries, makes the analysis of global marine fisheries based on flag somewhat problematic. As we argue below, a more fine-grained analysis of FAAs that attends to both flag and firm dynamics is necessary to understand trends. FAAs establish the level of fishing effort that occurs in coastal state waters, and also the distribution of economic benefits and losses from industrial fishing between (and within) higher- and lower-income countries²², with a diversity of arrangements and outcomes in place throughout the tropics. Despite their importance in the current global pattern of industrial fishing, FAAs are difficult to study, not least because the terms and conditions of FAAs vary worldwide and even within EEZs. This challenge is gaining new urgency: attention to FAAs is growing because of their role in geopolitical relationships, their importance to ocean-based economic development, their implications for ocean sustainability and their links to fisheries subsidies (SDG 14.6), and more broadly, their role in fulfilling the promise of ownership for coastal and island states under UNCLOS (e.g., SDG 14.7). Yet, even if the generic terms and conditions of

some FAAs are available, little is known of the catches, payments and investments under the vast majority of arrangements. These aspects are treated as confidential and not available for public scrutiny, and because the content, structure and goals of access arrangements are heterogeneous, this important process is not well understood. What is clear is that FAAs are shaped by geopolitical dynamics such as trade relations, overseas aid relations and diplomacy; the economic interests of industrial fishing fleets and the value chains that they supply raw material to; and the geopolitical ambitions of the world's most powerful states.

We suggest that applying a *geopolitical economy lens to fisheries access arrangements* can help scholars and practitioners better understand the persistent dominance of industrial fishing effort by higher-income countries in the waters of lower-income countries, and the distribution of benefits from this phenomenon. In the subsequent section, we develop a conceptual approach for applying a geopolitical economy lens to the study of FAAs, and then illustrate its use through a series of geographically diverse country case studies. These case studies are synthesized from a recent mapping by the authors of fisheries access arrangements across oceans that the Food and Agriculture Organisation of the United Nations commissioned in 2021¹⁶. This article builds upon this report in two important ways. First, it synthesizes a detailed and wide-ranging set of empirical data to advance and offer a conceptual approach for the study of FAAs that attends to and details their heterogeneous terms, socio-ecological origins and implications. Second, this synthesis further disseminates the important findings, enhancing their reach to intended audiences, including policy makers in coastal and island developing states.

Methodologically, the use of case studies overcomes the empirical constraints in the study of most FAAs by explicitly recognizing that heterogeneity is high in these arrangements, that data are uneven from case to case, and allowing focus on key dynamics in FAAs for which information is available in academic, policy, media and gray literature and via researchers' regional expertise. The qualitative methods employed in the cases range from historical and/or predominantly interview-based analyses where very little public information is available through to fuller institutional accounts where FAAs are published. Building upon key findings from these country-level case studies, we propose conceptual and methodological elements to guide further research into the combination of contingent and context-specific economic, ecologic, and geopolitical forces that shape the terms, conditions and practices of fisheries access by distant water fleets. We refer to this conceptual approach as a *geopolitical economy of access*.

A conceptual approach for studying the geopolitical economy of distant water fisheries access arrangements

Our conceptualization of the geopolitical economy of access characterizes key players in FAAs as (a) *resource-owning coastal and island states* with sovereign rights over marine resources in their EEZ, and as (b) *resource-seekers*, which consist of firms and states wanting to access fisheries in resource-owning states' EEZs. UNCLOS codifies coastal states' sovereign rights for managing marine resources as a form of state-property that allows for the capture of rent¹². UNCLOS also, among other things, sets out the coastal state responsibility to promote "optimum" use of resources, to decide on the possibility of making any "surplus" resources available to other states, and to collaborate with foreign states on the management of shared, highly migratory species that move across EEZ boundaries¹, including into the legally gray space of the high seas. As such, determinations on the level of any surplus and the terms and conditions of FAAs are at the discretion of the relevant coastal state, and are highly heterogeneous.

We use the terminology of resource-owners and resource-seekers to emphasize that *firms* as well as distant water fishing nations (DWFNs) play active roles in the fisheries access process. Specifically, firms, not flag states, engage in fishing, though the distinction between the two is often blurred analytically because of the requirement that firms fly the flag of the state in which they are registered. While state-owned enterprises may appear to be an exception to this general trend, especially for the China DWF, they

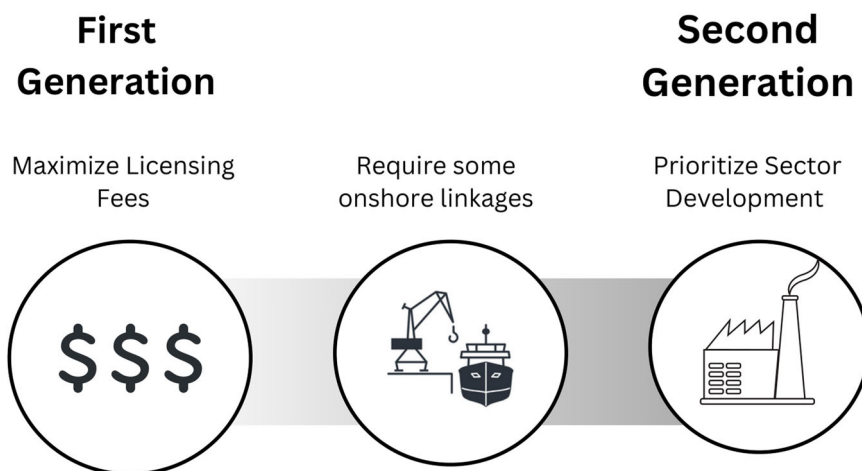
remain economic agents and do not always neatly follow "home state" policy²³. The relationships between states and their "home" firms is crucial to the forms that access takes. States can seek access to fishing grounds on behalf of or in concert with (what are perceived as) their "home" firms. Other forms of direct ties between states and firms – such as fisheries subsidies – also shape access relations²⁴. This analytical specificity differentiates the *geopolitical economy of access* from other approaches to access which tend to focus primarily on vessel flags or DWFNs and collapse the state-firm relation as a singular, unified domestic political-economic interest^{25,26}, when in practice, the logics of resource-seeking states and firms, and relations and tensions between them, come in many forms that are consequential to access outcomes.

Assessment of the economic benefits of fisheries access considers that the monetary value that a resource-owner can charge for access to a specific fishery in an EEZ will reflect the expected profitability of fishing firms, acknowledging that EEZs have distinct attributes that shape these values. These different returns can most simply be understood as a rent. Rent can be affected by factors such as: competition with other firms and/or states, the rate of exploitation of fishing crew, differing EEZ size, health and abundance of fish stocks or species composition, the strength of fisheries management, different costs of doing business (e.g., logistics costs), among others. A coastal state may also seek to remove or minimize rent relations. For instance, a small number of states have chosen to privatize their sovereign rights by transferring the right to fish to private legal entities, which can be characterized as a "Ricardian reform": i.e., an attempt to keep resource rent low so as to encourage profitability in fishing enterprises.

However, rent is not purely a function of economic variables. The value of access is also shaped by politics and political-economic relationships including: the relative power and organizational capabilities of actors (e.g., multinational enterprises vs. small states), official development assistance (ODA) linked to fisheries access, the role of fisheries in broader geopolitical and economic relations, and/or corrupt practices of state representatives and seafood firms, among others. As such, "rent" can be hard to measure and to apply with analytical precision and consistency because conditions and the objectives of parties involved often differ in each access arrangement. The terms, conditions and value of access are *negotiated* around these dynamics. In sum, as measures of the economic benefits of FAAs, rents in these arrangements are a contested process worked through politics, value chain dynamics, and shifting environmental conditions, not a technical one. This contributes to making the study of most FAAs notoriously difficult.

Conceptualizing actors in fisheries access arrangements as resource-owners and resource-seekers, we describe a spectrum of the diverse types of approaches to access relations, providing a typology of FAAs (Fig. 3). One end of the spectrum represents FAAs in which resource-owners authorize fishing with no further obligation (e.g., cash for access, also known as "first generation access"). On the other end of the spectrum are FAAs in which resource-owners require onshore investments, such as fish processing facilities (also known as "second generation access"). The use of the terms "first" and "second" does not connote a preference, teleology, or "stage" of development. Indeed, "second" generation type FAAs first appeared when the USSR set up FAAs with post-independence African states from 1959 onwards, long before EEZs were accepted¹⁶. The terminology of "first" and "second" generation can be traced to European Commission²⁷ reflections on its own practices, especially its controversial FAA with Argentina in 1994 which saw the creation of JVEs^{28,29}. In between the two poles of the spectrum are a wide range of FAAs wherein resource-owning countries aspire to coupled benefits but are constrained in establishing industrial onshore linkages such as processing (e.g., by small populations, infrastructure limitations, and/or prohibitive relative cost structures). They may instead offer inducements for DWFs to adopt domestic flags on the assumption that this may generate local gains, resulting in the recent growth in vessel numbers in certain resource-owning fleets noted earlier. To avoid resource seekers engaging in minimal compliance with local development aspirations through flagging alone, FAAs in this middle zone of the spectrum often require that access has some links to onshore economic activities, such as

Fig. 3 | Spectrum of the types of approaches to fisheries access arrangements. The band darkens as it moves to the right to indicate increased linkages to domestic economic activities. Resource-holders do not necessarily aspire to “move” FAA policies from the left to the right over time. Each country’s FAA approach is developed based on geopolitical-economic and environmental factors that are context specific.



local transshipment and/or landings, domestic crewing, and/or the formation of joint-venture enterprises (JVEs) in fishing.

Those FAAs classified as being at the first generation – “cash for access” – end of the spectrum involve a foreign entity gaining the opportunity to fish in a coastal state EEZ through the payment of resource rent. The terms of first generation access arrangements are typically drawn up by resource-seekers. Various methods are used to calculate the financial component and the FAAs are normally regulated by a set of requirements relating to: fisheries management; monitoring, control and surveillance (MCS); and enforcement. First generation FAAs may be organized in the following ways:

- government-to-government, which can be bilateral in the case of EU Sustainable Fisheries Partnership Agreements (SFPAs) or multilateral in the case of the “South Pacific Tuna Treaty” between the USA and the Pacific Islands.
- industry association-to-government, are commonly used by DWFs from China, Japan, South Korea and Taiwan.
- company-to-government, are used by individual firms or vessel-owners, e.g., from the EU and Taiwan (often using flags of convenience, FOC) in FAAs with resource-owning states.

The first two types of FAAs can be accompanied by additional payments made by the DWF’s home state, illustrating the entanglement of geopolitical goals within access arrangements. This can be done directly through the legal terms of the FAA (e.g., the EU, USA) or indirectly through (de)coupled bilateral aid and/ or loans (e.g., China, Japan).

Those FAAs that fall closer towards “second-generation” access arrangements tend to be promoted by resource-owners as an effort to increase linkages between fisheries extraction and domestic economic activity. They are highly varied, but usually involve one or a combination of two broad mechanisms:

- Granting discounted access fees in return for DWF vessels registering locally and agreeing to use local crew, goods and services, and transshipping and/or landing fish domestically.
- Granting discounted access fees in return for onshore investment in processing facilities. In this case, the operator may be expected to commit to onshore investment in the form of JVEs that, theoretically, involve direct and indirect employment generation, support or foment ancillary industries, exports, technology transfer, etc.

Potential investment-related returns from this approach in which maximizing access fees is traded off for other domestic investments, are depicted in Fig. 4. The comparison or understanding of which benefits are being gained in lieu of access fees is not always clear and information about this accounting is rarely transparent. Further, there are multiple examples of lost access revenue or other tax breaks that resource-owners offer to resource-seekers to secure investment.

Two additional types of FAA are worth noting though they are not addressed in detail in what follows: illicit arrangements, which remain important in some contexts (e.g., Myanmar) and have been historically significant; and open registries where the provision of a flag by a vessel registry has almost no strings attached (e.g., due to weak state capabilities to engage in MCS), which can create havoc in domestic and regional fisheries (we do not address this example explicitly, but do further elaborate the ways that resource-seeking firms make use of these flags of convenience).

Additional elements of a geopolitical-economy of access approach reflect the diversity of legal, economic and political processes negotiated in FAAs. These may include:

- *Resource units:* access arrangements can specify single species or multi-species.
- *Reciprocity:* access arrangements can be reciprocal or non-reciprocal. Reciprocal access is typically, but not always, among higher-income DWFNs. Non-reciprocal access is typically between higher-income DWFs and lower-income coastal states. In some cases, parties to an arrangement are *both* resource-seekers and owners. These are often reciprocal arrangements which are less about revenue capture on behalf of the resource-owner and more about resource sharing and pooling (e.g., EU-Norway and the web of agreements in the East China and Yellow seas among China, Japan, South Korea and Taiwan). Some developing country arrangements are reciprocal too, such as between Mauritius and Seychelles, but this agreement benefits vessels owned by European capital using the vessel registry in each country and, as such, these can be considered distant water fishing as per our definition.
- *Cooperation:* access relations under transboundary fisheries typically require resource-owning and resource-seeking states to engage in collaborative, regional management, which can generate legal complexities and conflicts. Some of the largest fisheries in the world – such as the global tuna industry – contend with these challenges.
- *Jurisdiction:* disputed claims over maritime boundaries can shape access relations. Sometimes pragmatic responses are evident, such as the East China and Yellow seas arrangements where geopolitical disputes over maritime territory may be (temporarily) parked to allow for the economic interest of sharing fisheries access. In other cases, ongoing tensions over maritime jurisdiction – and fisheries access – threaten regional stability, especially in the South China Sea.
- *Conflicts:* Territorial Waters (the 12 nm zone) and their treatment often (but not always) exclude DWFs, but can result in tensions, including with local fishers.

Application of the geopolitical economy of access approach to country case studies

Resource-seeking firms engaged in distant water fishing in other countries’ waters are headquartered in a small number of countries, all supported, in

Fig. 4 | Pathways through which second generation FAAs might generate socio-economic benefit in a resource-owning state. The inner ring of each “pie section” begins with one kind of socio-economic return; subsequent rings illustrate how benefits can expand into the broader economy.

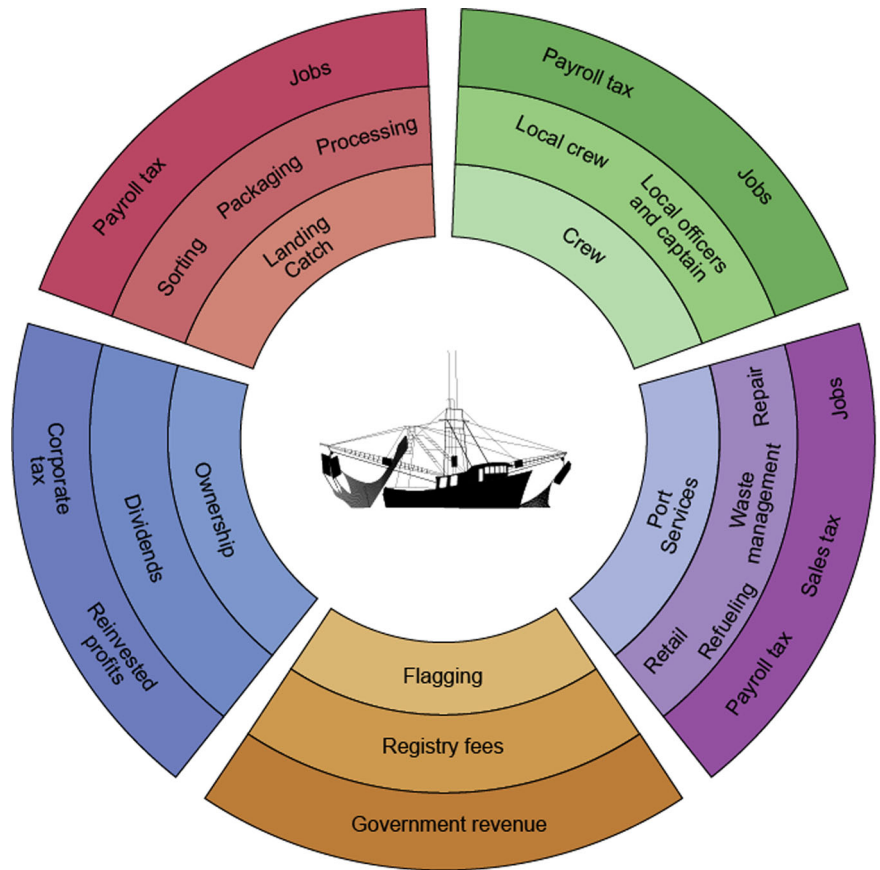


Table 1 | Resource-seeker approaches to FAAs

Japan	Access to overseas marine fisheries played a role in Japan’s industrialization, food security, national identity, and employment creation in the Interwar and Post-War periods ⁴¹ . As such, Japan set the global scene for access arrangements from the 1970s onwards with outward FDI and consumer demand supporting distant water fleet development across East Asia ^{42,43} . Strong industry associations, a revolving door with senior government officials and ODA tied to access arrangements produce a strong state-firm alliance vis-a-vis resource-owners ⁴⁴ .
EU	France was the driver of the early design of the EU’s FAAs, linking its post-colonial fisheries investments and trade relations with Africa ^{45,46} . Spain has emerged as the leading beneficiary and most powerful DWF in the EU ⁴⁷ . Public subsidies to a network of Sustainable Fisheries Partnership Agreements (SFPAs) – mainly in African waters – have relatively very high levels of transparency and scrutiny ^{48,49} . Tight regulation of the EU DWF has led firms to conclude alternative FAAs, including “second generation” ones (see below), that are far less transparent and accountable than SFPAs.
China	China rapidly emerged as the world’s largest DWF by the late 1990s ⁵⁰ . Driven by an industrial strategy at national and provincial scales, China’s DWF catch is largely export-oriented ²³ . After a poor record of DWF governance, a sequence of reforms in the late 2010s and early 2020 s have established a stricter DWF policy framework ^{17,51} ; although the extent of improvements in practices is not known. China’s DWF relies heavily on second generation approaches, which appear to be facilitated by decoupled loans.
Taiwan	Since the 1970s, Taiwan’s DWF has specialized in raw material extraction based on a trading-transshipment model. After initial focus on the Japanese market due to historical commercial ties, it rapidly developed a global reach. Taiwan has used fisheries access as part of its wider diplomatic efforts at international political recognition ⁵² . Firms from Taiwan also regularly operate under FOC with significant governance weaknesses ⁵³ ; these have been a focus of enhanced regulation since 2016 ⁵⁴ .
South Korea	Since the 1970s, South Korea’s DWF has been vertically integrated in family-controlled firms (Chaebols); again, initially via commercial connections with the Japanese market. It has since diversified into other fisheries and to other markets. After a period of expansion toward a global ocean reach, the DWF gradually reduced and, by the 2020 s, focuses on the WCPO and Russian waters ^{55,56} .
USA	The USA was an early innovator in distant water fishing and an important fleet in the Pacific Ocean from the 1970s. After resisting UNCLOS EEZ designations in the 1980s (the USA is still not an UNCLOS signatory), US government and industry entered into a unique set of legal arrangements with Pacific Islands countries for multilateral access in the WCPO. The resulting South Pacific Tuna Treaty granted the US fleet access to multiple EEZs and high seas in the WCPO, involved industry payments, and was supported by US government development assistance. For a period, the agreement was state-of-the-art in access for its relatively high returns, transparency and governance oversight ⁵⁷ . While in recent years, the US fleet has declined, the US government continues to support the Treaty, including as a tool of diplomatic engagement and geopolitical reach ⁵⁸ .

different ways, by their “home” states. The “top five” in terms of kilowatt hours of effort (i.e., hours spent fishing multiplied by the power of the engine vessel) are China, the European Union (EU, mainly Spain and France), Japan, South Korea and Chinese Taipei (Taiwan)³⁰. Each of these resource-seekers’ approaches to FAAs are elaborated in Table 1, which also includes the USA because of a distinctive FAA with the Pacific Islands. Resource-

seekers engage in all types of FAAs, but generally DWF negotiators prefer to use a “blueprint” first generation FAA, which facilitate resource extraction and contain limited ties to resource-owners’ domestic economic activity.

Resource-owners engage in all types of FAAs, and some also play the leading role in pressing for second generation FAAs in an attempt to multiply the benefits and returns of FAAs to their domestic economies (see

Table 2 | Selected resource-owner approaches to FAAs

West Africa	Multiple DWFs are active across the region. Resource-owning states govern individually, and seven states (Cabo Verde, the Gambia, Guinea, Guinea Bissau, Mauritania, Senegal and Sierra Leone) cooperate in the West Africa Sub-Regional Fisheries Committee. Across the region there are conflicts between DWFs and local fishers, for example with foreign-registered industrial vessels making incursions into coastal zones legally reserved for artisanal fishers in countries including Guinea-Bissau, Liberia and Sierra Leone ⁵⁹ .
Namibia	Post-independence, Namibia made a significant push to domesticate DWFs and nurture onshore fisheries investment. It has become a leading example of second generation FAAs with considerable success in the form of onshore employment in export-oriented fish processing ⁶⁰ . However, political corruption and unscrupulous multinational firms undermined local benefits ⁶¹ .
Western Indian Ocean (WIO) island states	Madagascar, Mauritius and Seychelles each have SFPAs with the EU as well as first generation FAAs with East Asian DWFs. While East Asian fleets have been active in the region since the 1950s, industrial fisheries in the region are broadly an EU sphere of influence ⁶² . Each country has tuna processing facilities whose product is locked into preferential trade agreements with the EU that require EU-caught fish for market access, and thus lock-in and benefit the EU fleet ⁶³ . FAA relationships are characterized by competition among coastal states rather than cooperation (e.g., to attract DWFs, FDI and raw material for tuna processing) ⁶⁴ .
Myanmar	From late 1988 until the 2010s, Myanmar's FAA approach was characterized by macro-regional competition and the pursuit of second-generation access arrangements ^{65,66} – albeit those with Thailand were often interrupted in tune with regional geopolitical tensions ⁶⁷ . Post-2010, Myanmar enhanced its implementation of MCS and broader government regulatory powers. Along with a parallel tightening of fisheries regulation by the major market and processing hub of Thailand, these changes enabled Myanmar to transform its FAA regime to one that prioritizes domestic operators, although it is widely considered that illegal access arrangements continue ⁶⁸ .
India	After 1991, DWF entry has been limited as a result of a powerful domestic political coalition led by small-scale fishing communities pressing for the government to prioritize domestic fishing ⁶⁹ . The coalition of traditional fishers, largely those who opposed FAAs in the 1990s, have continued to thwart the entry of foreign capital in domestic fisheries ⁶⁹ . By the 2020 s, FAAs were primarily second-generation with an aim to explore the connection between access and local development, albeit in a context of depleted fish populations.
Pacific Island countries (PICs)	Fourteen PICs have long-term focus on building regional institutions for effective South-South cooperation. Eight Parties to the Nauru Agreement (PNA) successfully used cooperation to maximize rent from DWFs via developing and implementing the regional purse seine Vessel Day Scheme ⁷⁰ . Limited success in efforts to expand regional cooperation to more species/gear types (e.g., South Pacific Albacore and tropical longline fisheries) reveal the complexity of FAAs for multispecies straddling fish stocks ⁷¹ . Important differences among policy goals and socio-economic and ecological conditions lead to heterogeneous FAA approaches and uses of financial surplus. PICs fall across the spectrum of access approaches and efforts to link access to domestic development have yielded some investments in industrial processing (with mixed results) and a marked increase in the number of PIC-flagged vessels as DWFs have reflagged to gain desirable terms of access ¹⁷ .

Figs. 2 and 3). Resource-owner approaches are shaped by a range of domestic priorities, with some states seeking to maximize licensing fees while others try to nurture linkages with the domestic economy. Historically, second-generation arrangements include JVEs between foreign firms (with home government support) and resource-owner governments (e.g., the USSR across Africa, Japanese multinationals in the Pacific Islands in the 1970s). More recent iterations are firm-led arrangements in which resource-owners offer fishing entities commercially significant concessions (e.g., on fishing licenses, access to land, tax breaks and other incentives) in exchange for building domestic onshore linkages (e.g., Ghana, Namibia and Papua New Guinea). Some countries have seen a rapid move towards second generation access as a strategy to increase domestic returns from access, though results are mixed for several reasons.

Resource-owners often are subject to manipulation by DWFs that use second-generation/ domestic development aspirations to maneuver for discounted, long-term strategic access. For example, DWFs use second-generation access to one EEZ to benefit from South-South cooperation arrangements that grant access to additional EEZs, such as French and Spanish-owned vessels that flag and register in Mauritius and Seychelles to use a reciprocal bilateral FAA between these two island states. Whilst Chinese and Taiwanese DWFs reflag to Pacific Islands to take advantage of small island developing state (SIDS) special dispensation for high seas fishing, discounted licenses, and/or exemptions from strict conservation measures that are permitted to support SIDS development goals. Such practices benefit DWFs, increase competition among SIDS, can result in deteriorating resources in the case of highly migratory and straddling stocks, and reduce access fee revenue capture by regional states.

Table 2 offers strategic overviews of the FAA strategies of selected resource-owners. These cases were selected to illustrate differences and the wide spectrum of resource-owner approaches (e.g., across the first - second generation spectrum, complete withdrawal from FAAs, and illicit), rather than to provide a representative sample.

Key findings from taking a geopolitical economy approach to study fisheries access arrangements in country case studies

The conceptual approach and empirical application here center access relations as a fundamental element of many marine fisheries worldwide. UNCLOS provides the legal constitution for the global ocean and fisheries access relations in particular, and establishes fisheries as a public asset. Understanding the choices that states make about their ocean spaces and resources, why they make them, and who benefits from them, requires a geopolitical-economy lens, especially in a moment in which the oceans are a space of heightening politics and rapid ecological change. Taking a geopolitical-economy approach to the study of FAAs directs attention to several key points that in turn help to elaborate how the promise of ownership of fisheries resources under UNCLOS has played out.

It bears repeating: inside of EEZs, fisheries are a public asset. Sovereign rights allow resource-owning states to impose access terms and conditions in relation to their national economic and environmental objectives, albeit mediated by the economic strategies of multinational firms and geopolitical forces.

Although access arrangements can be usefully typologized, their functioning and experience is place- and context-specific. Access relations are influenced by factors such as the presence or absence of civil society or organized labor, national institutions and juridical norms and practices, shifting geopolitics, ecological conditions, and dynamics in the value chains of which they are a part. These criteria differ from fishery to fishery. Thus, while efforts towards better practice in access arrangements are vital, the nature and consequences of access arrangements will ultimately be a case-specific empirical question.

Firms – predominately with capital headquartered in resource-seeking states – are the primary beneficiary of access relations. There is no quintessential business model or form of industrial organization in marine fisheries: firms range from small, private organizations to family business groups, and from vertically-integrated multinational corporations to state-

owned enterprises³¹. Firms use a diversity of strategies for gaining access to resource-owners' waters including flying the latter's national flag, flying a third country flag, entering into joint-ventures, or complying with other requirements of resource-owning states that confer access. Firms also often work closely with their home states which leverage aid, diplomacy and geopolitics to the advantage of "their" businesses. This demonstrates the necessity to comprehend and analyze business strategy and structure to evaluate the potential economic, social and ecological implications of access techniques³²⁻³⁴.

Intersections across these factors illustrate that although fishery resources are public assets, control of and access to them are not exclusively national. Sovereign rights are only actualized when foreign firms and states enter access arrangements and carry out extraction. In other words, access arrangements are thoroughly relational. They are negotiated between states and firms; entangled in domestic, regional and global politics; scrutinized by civil society organizations and actors throughout global value chains; and, they materialize with and through the characteristics of the fishery in question and its rendering through extractive techniques, regulatory practices, and scientific knowledge and management.

Given this context, revenues from access arrangements should be seen as public assets. Particular care must be taken to ensure accountability and consider opportunity costs where access is provided for free or with discounts in arrangements that aim to encourage domestic economic development. If government revenue is gained, or forfeited to incentivize domestic development, then the public revenue – or loss thereof – must be accounted for, not least because the public record on the benefits of second generation access is mixed^{16,17}. Models for public accounting exist: in fisheries, terms and conditions of some access arrangements are in the public domain and the Fisheries Transparency Initiative (FiTI) is an example of a global initiative that encourages governments to publish information on access arrangements, including on revenues. Moves toward transparency help to address the bigger questions around access arrangements: who is benefitting, how, and why? Yet, transparency without accountability is not a silver bullet. Resource-owners often argue that they need some degree of secrecy on the prices paid for access to maintain their bargaining position with resource-seekers or risk losing a portion of the public asset as a result of asymmetrical power relations. This presents a genuinely difficult problem in refining transparency initiatives for access arrangements. One middle-ground argument is that full public disclosure of aggregated access revenues could contribute to bargaining power as resource-owner negotiators are incentivized to show their local population that they received a fair revenue from the public asset.

Finally: the relational geopolitical economy of access is ripe with tensions and contradictions; these tensions shape the ways that UNCLOS' promise of resource ownership plays out via FAAs. Table 3 – deduced from the case studies outlined above – synthesizes the motivations of resource-seeking states and firms and places them alongside those of resource-owning states, though not all motivations apply to all resource seekers or holders. Looking *within* the resource-seeker or resource-owner column, it is evident that some motivations may overlap and complement each other. At times, however, motivations can be conflicting and require tradeoffs. For instance, for resource-seekers, profit maximization for firms may be in conflict with a state's efforts to protect and expand an industry, which may require initial supporting less profitable firms via policy or subsidies; while domestic civil society organizations may object to such practices on sustainability grounds. A state's geopolitical interests might mean that it desires its fleet's presence in a location that may or may not align with the firm's fishing priorities. That is to say, firms and home state interests in FAAs might be aligned or misaligned around each motivation. For resource-owners, tensions may also emerge between maximizing rent, increasing domestic investment, prioritizing sustainability, or using FAAs for geopolitical reasons.

Looking *between* columns highlights that motivations rarely correlate for resource-seekers and owners – most obviously in the struggle over value in the form of profit and rent. A potential exception is the growing

Table 3 | Disparate motivations shaping FAA participant behaviors

Resource-seeker motivations	Resource-owner motivations
<ul style="list-style-type: none"> • Profit maximization for firms <ul style="list-style-type: none"> ◦ Includes corruption (e.g. bribery) • Protecting/ expanding domestic industry <ul style="list-style-type: none"> ◦ Strategic raw material access in response to risk (e.g., environmental depletion) ◦ Industrial strategy ◦ Maintain employment in domestic fishing and processing • Geopolitical influence <ul style="list-style-type: none"> ◦ Diplomacy ◦ Maritime reach ◦ Fisheries management and ocean governance ◦ Security ◦ Other economic and political mechanisms • Response to domestic constituents (e.g., conservation, fisheries-related industry associations, workers) 	<ul style="list-style-type: none"> • Rent maximization for public sector • Increase domestic fisheries-based economic activities <ul style="list-style-type: none"> ◦ Employment ◦ Tax revenue ◦ Higher value-added industries ◦ Complementary industries • Leadership in oceans governance <ul style="list-style-type: none"> ◦ Fisheries management • Geopolitical relations <ul style="list-style-type: none"> ◦ Securing aid ◦ Trade relations • Private gain (corruption) • Building regional networks and South-South cooperation

commitment to fisheries management and environmental sustainability, though this too can be mobilized differently (and politically) for seekers and owners. The disconnect between the columns helps to explain uneven outcomes and stresses the centrality of geopolitical-economic dynamics in the formulation and functioning of FAAs. It also helps to illuminate and better explain what is obscured by narrow analysis of a specific fishery, of an individual FAA, or individual resource-owner or resource-seeker motivations. These distinctions offer openings for understanding the lasting and dynamic importance of relational power dynamics in variegated FAA outcomes, and as such, in the realization (or not) of the UNCLOS promise of redistribution of economic benefits through resource ownership.

Conclusions: a research agenda for the study of access arrangements

The conceptual approach and country cases presented here highlight common contours of marine fisheries access arrangements and their impacts. Together, they form a call for more policy attention and research on the modalities of FAAs that takes the geopolitical-economy of the oceans seriously, conceptually and methodologically. The lens presented in this article encourages critical examination of the economic surplus generated from ocean spaces and resources under national jurisdiction, as well as the externalities associated with putting them to use. It explores how state, firm, and civil society interests play out in cooperation, conflict and competition over spaces and resources, and turns attention to the size and relative importance of the central (but often opaque) question of the distribution of benefits from ocean economies. It is attentive to the changing environmental conditions of the oceans, and to the ways that these shape, and are shaped by, geopolitical-economic activity as the human imprint on the oceans continues to intensify, from the coasts outward. Finally, in the context of UNCLOS, a political-economy lens enables exploration of the capabilities of state and non-state actors to influence, eschew, and capture rents in the oceans – and in doing so, to realize the promise of resource ownership. As eyes increasingly turn to the oceans as a source of wealth and influence, a geopolitical-economy approach offers the tools required to account for the distributional concerns and conflicts that lay ahead.

More broadly, this approach offers openings for examining blue economy activities within EEZs in the context of ecological change and contention over the distribution of benefits and risks of established and emergent oceanic activities. Humanity's claims on ocean space and resources have grown exponentially in the twenty-first century³⁵, which, combined with climate change, increase pressure on coastal environments and communities worldwide³⁶. The economic benefits from ocean use have been largely concentrated in wealthier countries and firms³⁴, a pattern that

mirrors uneven North-South relationships around climate change and biodiversity loss, among other global processes (e.g. ref. 37), and which members of the G-77 sought to realign via the UNCLOS agreement. Industrial fishing – and the role of FAAs therein – provides an important blue economy case study for understanding the unequal distribution of access to ocean spaces and resources between and among states and other interest groups^{38–40}.

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Author contributions

L.C. led the project. L.C. and E.H. conceptualized and drafted the manuscript, to which J.V. contributed. G.C. prepared Figs. 1 and 2, D.H. and E.H. prepared Figs. 3 and 4. L.C. prepared Tables 1 and 2, E.H. and J.V. prepared Table 3; all authors did the underpinning research and reviewed the manuscript.

Competing interests

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