Beyond the prohibition list: redirecting negative subsidies into positive incentives could mitigate overfishing and protect coastal communities in WTO fisheries reform

Hollie Booth[1,2,3,4,5,7*] and Luky Adrianto[4,7]

1. Darwin-Hamied Centre for Biodiversity, Christ's College, University of Cambridge, UK
2. Department of Biology, University of Oxford, Oxford, UK
3. School of Environmental and Natural Sciences, Bangor University, Wales, UK
4. Centre for Coastal and Marine Resource Studies, IPB University, Indonesia
5. Fish & Fisheries Lab, Centre of Sustainable Tropical Fisheries & Aquaculture, James Cook University, Townsville, Australia
6. Yayasan Kebersamaan Untuk Lautan (KUL), Bali, Indonesia
7. Department of Aquatic Resources Management, Faculty of Fisheries and Marine Sciences, IPB University, Bogor, Indonesia

*Correspondence: hb313@cam.ac.uk

ABSTRACT

The World Trade Organization's Agreement on Fisheries Subsidies is a landmark in multilateral environmental governance, yet its current phase of negotiations on addressing subsidies that contribute to overcapacity and overfishing is contentious due to perceived welfare risks for small-scale fishers. In framing the debate around prohibiting subsidies, negotiators have thus far given little attention to which financial instruments could take their place, which is a missed opportunity. Here we argue that positive incentives — financial instruments designed to encourage sustainable fishing actions or reward positive environmental outcomes — are a neglected but powerful complement to prohibition. Drawing on evidence from co-designed, rigorously evaluated pilot programs in Indonesian small-scale fisheries, we show that positive subsidies could mitigate overfishing while protecting small-scale fishing communities. We propose that the Agreement on Fisheries Subsidies, and analogous national reforms, should explicitly distinguish capacity-reducing from capacity-enhancing instruments, preserve policy space for transparent and evidence-based positive subsidies, and recognise community co-designed programs within special and differential treatment. Reframing fisheries subsidy reform from prohibition to redirection would advance the goals of the Agreement: decoupling public support from fishing effort, protecting small-scale fishing communities, and creating new mechanisms to incentivise ecosystem recovery. It could also facilitate negotiations by addressing the concerns of fisher folk and developing coastal states.

Keywords: *fisheries subsidies; World Trade Organization; small-scale fisheries; decoupling; payments for ecosystem services; marine conservation; marine biodiversity; Indonesia*

1. The Fish 2 dilemma

After more than two decades of negotiation, the World Trade Organization (WTO) adopted its Agreement on Fisheries Subsidies at the Twelfth Ministerial Conference in June 2022 (Bangura & Kromah, 2022; WTO, 2022). The Agreement, widely referred to as "Fish 1", was the first WTO accord to place environmental sustainability at its centre, and it entered into force in September 2025. It prohibits subsidies to operators engaged in illegal, unreported and unregulated (IUU) fishing, subsidies for fishing overfished stocks, and subsidies for fishing in the unregulated high seas (Alger et al., 2023; Bangura & Kromah, 2022; WTO, 2022).

However, Fish 1 left unfinished arguably the most consequential component of fisheries subsidy reform: the treatment of subsidies that contribute to overcapacity and overfishing (Bangura & Kromah, 2022; Sumaila, Alam, et al., 2024). These are large structural transfers — fuel subsidies, vessel construction and modernisation grants, and gear support — that enable fleets to operate harder, longer and further from shore than would otherwise be economically viable. They are costly, accounting for the majority of the world's estimated US$22 billion in annual capacity-enhancing fisheries subsidies (Sumaila et al., 2019). They also create negative ecological, economic and social consequences by driving fishing pressures beyond maximum sustainable and maximum economic yields (Sumaila, Skerritt, et al., 2021), and by being inequitably distributed (Schuhbauer et al., 2017). Disciplining them is the unfinished task of the second phase of WTO fisheries reform negotiations, "Fish 2", which members aim to conclude in 2026.

For developing coastal states, however, Fish 2 poses a genuine dilemma, which could stall negotiations if left unresolved due to backlash from fisher folk and civil society organisations (e.g., (IGJ, 2025)). Overfishing is the greatest threat to marine ecosystems and species (IPBES, 2019), and many stocks and ecosystems are already depleted to the point where recovery requires proactive intervention rather than the removal of pressure alone (Damania et al., 2023; Dulvy et al., 2026). Capacity-enhancing subsidies are a recognised driver of overfishing, and their reform is overdue (Sumaila, Alam, et al., 2024; Sumaila, Skerritt, et al., 2021). Yet hundreds of millions of people depend on marine ecosystems and fisheries, and on small-scale fisheries (SSF) in particular, for food security, income and cultural identity (Basurto et al., 2025). Where government support reaches these communities, its abrupt withdrawal under Fish 2, even of economically distorting support, carries near-term welfare risk if nothing takes its place. The negotiating challenge is therefore threefold: to discipline harmful subsidies; to do so without

abandoning the coastal communities that current support, however imperfectly, should serve; and to invest actively in the recovery and sustainable, equitable use of fish stocks and marine ecosystems.

This dilemma, which is in part a failure of framing, could be solved by shifting from a prohibition logic towards a redirection logic. While the focus of Fish 2 has been on generating a list of harmful subsidy types to be banned, less attention has been paid to the types of positive financial instruments that could take their place. Positive and performance-based subsidies — designed to incentivise sustainable actions or reward positive outcomes (Bladon et al., 2016; Booth et al., 2021; Innes et al., 2015) — are a powerful complement to prohibition as part of subsidy reform (Costello et al., 2020; Damania et al., 2023; Gerasimchuk et al., 2025; Teh et al., 2024). Explicitly recognising them and protecting the policy space to use them could transform Fish 2 from a constraint into an opportunity: facilitating negotiations by addressing concerns of fisher folk and developing coastal states, and delivering positive environmental, economic and social outcomes.

2. Not all subsidies are equal: from harmful subsidies to positive incentives

Public and political debate frequently conflates "subsidies" with "harmful subsidies". In practice, the effect of a subsidy depends on what it pays for and who receives it. A subsidy that lowers the cost of fishing effort (e.g., cheap fuel, free or subsidised gear, grants for larger vessels) predictably increases catching power, and where management is weak, drives overcapacity, stock depletion and marine biodiversity loss (Sumaila, Skerritt, et al., 2021). Most conventional capacity-enhancing subsidies are also regressive, accruing disproportionately to large-scale industrial fleets rather than to the small-scale fishers in whose name they are often justified (Schuhbauer et al., 2017). As such, many existing subsidies create ecological and social harms. In contrast, subsidies that pay for the opposite — for fishers to reduce effort, switch to selective gears or adopt bycatch reduction technologies, release threatened species, or protect and restore marine biodiversity; and which are progressive — can deliver positive ecological and social outcomes (Bladon et al., 2016; Booth et al., 2021; Clark et al., 2005; Leduc & Hussey, 2019). It is therefore important to maintain a clear distinction between harmful subsidies, which must be phased out, and positive incentives, which could take their place.

The term *positive incentives* can be used to describe the broad family of financial instruments which incentivise desirable actions or outcomes (Pigou, 1920). This concept is not new to environmental management: it draws on a substantial body of theory and practice in behavioural and resource economics (Ferraro & Kiss, 2002; Wunder, 2005). Moreover, scaling of positive

incentives is explicitly called for in Target 18 of the Kunming–Montreal Global Biodiversity Framework as the complement to elimination of subsidies that are harmful to biodiversity (CBD, 2022). Yet positive incentives (and *positive subsidies,* defined as the subset delivered as government financial support) have received little explicit attention in WTO fisheries subsidy negotiations, which have been framed predominantly around prohibition (WTO, 2022). Positive incentives could take many forms within WTO fisheries reform, distinguished by what they pay for, who receives them, and how revenue is raised. Here we propose five broad families, which are suited to different contexts and can be used as a complementary mix: 1) Buybacks and decommissioning, which pay fishers to leave a fishery permanently. Fishers surrender vessels and licences at a price they accept, and, if well-implemented, capacity is permanently retired with no opportunity for re-entry (Clark et al., 2005, 2007; Squires, 2010). Buybacks provide a form of compensation for the opportunity cost of surrendering vessels and licences, which can be invested by exiting fishers as they wish in new income-generating activities or 'alternative livelihoods'. 2) Gear exchanges, which provide financial support for fishers to adopt new and more sustainable fishing technologies that they otherwise could not afford. This could include support for switching from damaging to selective fishing technologies, for example replacing bycatch-intensive gillnets with fish traps or handlines that catch fewer threatened species and often higher-value fish, or for incorporating proven bycatch reduction technologies into existing fishing operations (Booth et al., 2020; Booth, Fajri, et al., 2026; Cronin et al., 2025; Jenkins & Garrison, 2013). 3) Conditional payments for conservation actions, which reward or compensate fishers for specific, verifiable behaviours which are proven to be beneficial, and where payment is contingent on evidence that the action occurred. This could include financial compensation for safely releasing threatened species that are caught and retained as valuable secondary catch (Booth et al., 2025; Leduc & Hussey, 2019). It could also include compensation for avoiding fishing in specified spatio-temporal hotspots or critical habitats (Jaiteh et al., 2016; Mangubhai et al., 2020) or rewards for protecting nests (Ferraro & Gjertsen, 2009; Gjertsen et al., 2014). 4) Rewards for measurable outcomes, which pay coastal communities for demonstrable improvements in the state of nature. Such payments could be conditional on the recovery of a stock, the maintenance of a population of threatened species, or improvements in extent and/or condition of marine ecosystems within an area they manage (Wunder et al., 2020; Zabel & Holm-Müller, 2008). 5) Blue taxes invert the logic of the first four families. Where positive subsidies pay actors to generate benefits for the ocean, blue taxes would charge actors for the costs they impose on it or for the benefits they draw from it, thus internalising negative externalities. This makes blue taxes the mirror image of subsidies rather than subsidies per se. Two variants are

relevant to the WTO negotiations. Pigouvian polluter-pays levies internalise negative externalities by charging for degradation of marine ecosystems (e.g., bycatch, overfishing, pollution, habitat destruction, greenhouse gas emissions) and can yield a double dividend by disincentivising damaging activities while raising revenue (Booth et al., 2021; Pigou, 1920; Sumaila, Wabnitz, et al., 2024). Beneficiary-pays levies instead charge industries that profit from a healthy ocean (e.g., coastal tourism) recovering value they would otherwise enjoy for free (Booth et al., 2022; Mangubhai et al., 2020; Snyman & Bricker, 2019). However, a tax in isolation only raises revenue; it is the use of that revenue that determines whether an externality is internalised. When paired with a transfer package, blue taxes become the financing counterpart to families 1–4: their revenue can be earmarked to fund buybacks, gear exchanges, payments for actions or outcomes so that those who damage or benefit from the ocean pay those who steward it. Moreover, progressive environmental taxes can, if well designed, redistribute wealth and therefore support SSF welfare and social equity at the same time (Booth et al., 2021, 2022; Pigou, 1920; Sumaila, Wabnitz, et al., 2024). Note we deliberately use 'positive' rather than the more established 'beneficial' subsidies (Sumaila et al., 2019) here. The terms are complementary, and our use is defined by what a payment is conditional on rather than by budget line, and so extends to some instruments that are classified as ambiguous in the Sumaila et al. (2019) taxonomy.

The unifying feature of these instruments is that they decouple public support from fishing effort. Capacity-enhancing subsidies are coupled to effort, so that support scales with pressure on stocks and ecosystems (Cisneros-Montemayor & Sumaila, 2019); positive subsidies make payment conditional on desirable actions or outcomes. Where a vessel-construction grant adds catching capacity to the water, a buyback removes it; where free gillnets lower the cost of an unselective, bycatch-intensive technology, a gear exchange lowers the cost of a selective one; where open-ended fuel support drives up negative externalities, polluter-pays levies internalise them, and can generate new revenue to reinvest in positive ocean outcomes. Decoupling is what allows public support to keep reaching coastal communities without driving the overcapacity that Fish 2 exists to discipline.

3. Real-world examples from Indonesia

Indonesia is an instructive setting in which to test these ideas. It is among the world's largest marine capture-fishery nations, with millions of households dependent on small-scale fishing (Basurto et al., 2025; Selig et al., 2018), and where climate-driven shifts in stock distribution and productivity are compounding existing pressures on coastal livelihood resilience (Kaczan et al., 2023). Indonesia is also an active participant in the Fish 2 negotiations, with fisher folk and civil

society organisations actively voicing their concerns about potential perverse outcomes (IGJ, 2025). It is also home to several positive incentive pilot programs that provide useful case studies. Over the past six years a small local NGO, Yayasan Kebersamaan Untuk Lautan (KUL), has worked together with SSF communities, government and researchers from Oxford, Bangor and IPB Universities to co-design, pilot and evaluate a portfolio of incentive-based programs, which could provide models for redirection of negative subsidies, in a way that mitigates overfishing while providing social protections for small-scale fishers. Two features distinguish this body of work. First, programs were co-designed with fishing communities, using behaviourally informed diagnostic and participatory methods to identify and tailor locally appropriate instruments (Booth, 2026a; Booth et al., 2023). Second, their impacts are being evaluated using rigorous causal inference, including randomised controlled trials (Booth et al., 2025; Booth, Fajri, et al., 2026).

1. **Vessel buyback.** In a targeted shark longline fishery in East Lombok, KUL piloted an incentive-compatible reverse auction (Vickrey, 1961) to facilitate voluntary and permanent exit from the fishery at a fair price set by fishers themselves. Based on the received bids and modest available budget, two vessels were permanently decommissioned. The retired vessels are estimated to avert the capture of more than 4,000 threatened sharks over the next ten years, at a unit cost below US$9 per unit mortality avoided (Booth, Ramdlan, et al., 2026). This is not only cost-effective marine conservation but reduces overcapacity while supporting fisher welfare as vessel owners and crew each received a fair lump sum of approximately US$17,000, which is being invested in establishing alternative livelihoods. Moreover, it represents a smart investment in the future of Indonesia's valuable and rapidly growing shark dive tourism industry (Mustika et al., 2020). While this is a small pilot, it is likely the first example of a successful buyback in a small-scale fishery in the global south and provides a proof-of-concept for fair, cost-effective capacity reduction and phasing-out of unsustainable fisheries. A similar program in Alor worked closely with thresher shark fishers to transition them to new revenue-generating activities, reducing shark catches by over 90% while increasing household income amongst participating fishers (Shidqi et al., 2025).

2. **Gear exchange.** In a randomised pilot, KUL offered four vessels operating in the West Aceh Important Shark and Ray Area the opportunity to voluntarily exchange their bycatch-intensive gillnets for selective fish traps. The exchange achieved a 100% reduction in the bycatch of Critically Endangered hammerhead sharks and wedgefish among participating vessels (95% reduction in bycatch odds) and was accompanied by an increase in net income (Booth, Fajri, et al., 2026). Trap fishers received an additional US$48 per trip — a 142% rise relative to

control vessels — as trap operating costs were lower, and the traps caught a smaller number of larger, higher quality fish. At a total cost of $2,200 per treatment vessel, the program cost an estimated $400 per unit bycatch averted and represented a 169% return on investment for fisher income (Booth, Fajri, et al., 2026).

3. **Compensate-to-release.** Financial compensation was offered to 160 small-scale fishing vessels in Aceh and West Nusa Tenggara Provinces for the safe release of Critically Endangered species that became entangled in their fishing nets, with compensation conditional on submission of video evidence. Across the 90 vessels that chose to participate, more than 3,000 safe releases of wedgefish and hammerhead sharks have been reported since 2022 at a cost of $3 – 6 per unit retained bycatch averted, with over US$18,000 in conservation-linked cash transfers disbursed directly to coastal households, leading to maintained or improved subjective wellbeing (Booth et al., 2025). It is worth noting that the first iteration of the program reduced retained wedgefish catches by 25% but also caused some negative spillovers for hammerheads, with a subset of fishers increasing their hammerhead-relevant fishing effort to receive more payments (a type of hidden action or moral hazard). This was detected through randomised evaluation, and the program design was subsequently adapted, with experimental monitoring and evaluation on-going (Booth et al., 2025).

4. **Rewards-for-outcomes (in development).** A fourth instrument, currently under development, would pay coastal communities for demonstrable improvements in the state of marine ecosystems and species within their de-facto coastal areas, shifting the basis of payment from conservation actions to verified outcomes. A key challenge is the availability of cost-effective in-situ methods for reliably tracking changes in the state of marine nature across space and time. However, KUL are working with research partners to trial various methods (e.g., echo-sounding and baited videography (Letessier et al., 2015, 2021)) and generate robust but sufficiently sensitive metrics to which periodic reward payments could be linked.

Taken together, this portfolio of positive incentive programs supports four observations. First, positive subsidies can deliver measurable positive outcomes for marine ecosystems and fisheries in line with Fish 2 (i.e., capacity reduction, bycatch mitigation) while maintaining or improving the wellbeing of small-scale fishers and coastal communities. Second, the unit costs are modest, and highly competitive with the harmful subsidies these instruments could replace (Sumaila et al., 2019). Third, these instruments can be progressive rather than regressive. Conventional capacity-enhancing subsidies tend to scale with capital and fuel use, so their

benefits flow disproportionately to wealthier, larger-scale operators (Schuhbauer et al., 2017). The positive incentives piloted here did the reverse: payments went directly to small-scale fishers, crew and coastal households (e.g., lump-sum payments to both vessel owners and crew in the buyback, income gains to trap fishers in the gear exchange, and conditional cash transfers to participating families in the compensate-to-release program). By being designed in a way which channels public support down the wealth distribution rather than up it, positive subsidies can advance distributive equity alongside sustainable fisheries. Fourth, the design process and principles that made these programs work — co-design with fishers, conditionality on verified actions or outcomes, rigorous evaluation — are, in principle, transferable beyond the specific contexts in which they were tested (Booth, 2026a). Moreover, this participatory process, coupled with progressive payments by design, helps to deliver both procedural and distributive justice, thus increasing acceptability and likelihood of compliance amongst small-scale fishers and developing coastal states.

4. Anticipating the critiques

Five potential objections to a larger role for positive subsidies deserve a direct response.

Positive incentives are too small, too costly, or too difficult to administer at scale. The pilot programs presented here are, by definition, small; the more relevant question is whether they are cost-effective, financeable and scalable. On cost-effectiveness, early evidence is encouraging since unit costs are low relative to the outcomes achieved and the capacity-enhancing subsidies they could replace. On financing, the proposition is redirection. Positive subsidies could be funded from within the same fiscal envelope currently spent on capacity-enhancing support rather than as additional expenditure. Polluter-pays and beneficiary-pays levies (on industrial fisheries or marine tourism) offer a second source that is sovereign and recurrent (Booth et al., 2021, 2022; Sumaila, Wabnitz, et al., 2024), and investible programs delivering measurable outcomes could mobilise novel sources of outcome-focused finance such as marine nature credits, blue bonds or debt-for-nature swaps (Sumaila, Walsh, et al., 2021). External and philanthropic finance, which funded the pilots described here, can also provide early catalytic support, for design, piloting, evaluation and transition costs, with proven instruments subsequently scaled through government finance. On administration, scaling from NGO-managed pilots to government-administered instruments introduces verification, payment and dispute-resolution costs that pilots do not fully reveal. These burdens are not unique to positive subsidies: capacity-enhancing support is also costly to administer, and widely documented to suffer weak targeting, leakage and capture (Damania et al., 2023); however, verifying positive

actions or outcomes may be harder than verifying eligibility. Several design choices could reduce them. The first is to favour instruments with a low recurring verification burden: buybacks and gear exchanges are one-off, physically verifiable transactions, whereas per-event conditional payments require continuous verification. The second, where recurring verification is necessary, is to build on existing systems, such as vessel registries, logbooks, cooperatives and digital payment channels, which could be enhanced by tech-enabled low-cost third-party monitoring for conditionality. For example, DNA barcoding and automated image analysis are already supporting verifiable catch data at scale in SSF (Quinlan et al., 2021; Shedrawi et al., 2024), while underwater video and acoustic surveys could provide independent third-party measures of ecological state against which outcome-based rewards are verified (Letessier et al., 2021; MacNeil et al., 2020). Where appropriate, burdens of proof could also be placed on claimants themselves, with incentive payments structured such that honest reporting is the rational choice (Vickrey, 1961; Walker & Townsend, 2008).

The evidence on positive incentives is too context-specific to generalise. The evidence presented here comes from a handful of contexts in one country over relatively short time horizons; it does not support claims of external validity or ranking of instruments by average effectiveness. The instruments themselves, however, are not unique to Indonesia. Vessel buybacks have been used extensively in industrialised fisheries, with a substantial literature on when they reduce capacity rather than merely recapitalise (Clark et al., 2005, 2007); payments for the protection or release of threatened species have been trialled in several countries and contexts (Ferraro & Gjertsen, 2009; Wosnick et al., 2020); Bangladesh's hilsa compensation scheme shows that such instruments can be administered nationally and from domestic budgets, reaching over 220,000 households, while also illustrating the cost of doing so poorly (Bladon et al., 2018). What generalises is therefore not the specific details of the pilot programs described here, but the broad instrument types and the principles and process by which they were designed (Booth, 2026a). The examples also provide indications of the conditions under which different incentive types may be appropriate. For example, buybacks suit fisheries with identifiable, licensed capacity, where exit can be made permanent and enforced, and leakage prevented (Booth, Ramdlan, et al., 2026; Clark et al., 2005, 2007). Gear exchanges suit fisheries in which a selective alternative exists that is at least as profitable (Bache, 2003; Booth, Fajri, et al., 2026). Conditional payments for actions suit random, incidental catch of species with modest market value, where the desired behaviour is discrete and verifiable (Booth et al., 2025). Rewards for outcomes require cost-effective and sufficiently sensitive indicators of ecological state, and secure community tenure over the area rewarded (Wunder, 2013). These are

conditions rather than guarantees, and the appropriate mix will be context-specific, which is an argument for preserving policy space to experiment and for independent replication, not for a single prescribed instrument.

Positive incentives can be gamed. Incentives can cause unintended and undesirable effects, as the compensate-to-release pilot directly demonstrated (Booth et al., 2025). Key issues include hidden actions, to secure more payments at the expense of social and environmental goals; hidden information, which can lead to adverse selection and a lack of additionality (Booth et al., 2025; Ferraro, 2008); spillovers or leakage, which can occur spatially and temporally or towards other species, ecosystems and types of damaging activities (Clark et al., 2007; Smith, 2012); and elite capture, where better-resourced fishers are better equipped to meet documentation requirements or influence selection, so that a program narrows inequities between fleets while widening them within communities (Dasgupta & Beard, 2007). But this is an argument for rigorous design, evaluation, adaptive management and sensible safeguards, not for dismissing positive incentives altogether. Appropriate safeguards include the design choices that support verification already described above, as well as participatory targeting with publicly announced eligibility rules, payment to crew as well as vessel owners, allocation by transparent incentive-compatible auction, and measuring effort and distributional outcomes, not only catch, so that leakage and capture are detectable rather than assumed absent. It is worth noting that prohibition-based instruments are also gamed (illegal fishing is precisely the evasion of a prohibition); can lead to perverse environmental and social outcomes for many of the same reasons (Booth, 2026b); and are rarely properly evaluated. A performance-based positive subsidy with measured impacts and adaptive management is therefore more accountable than an unmonitored ban.

Redirection is politically naive. One reason capacity-enhancing subsidies persist is that they are politically valuable domestically, while external discipline is weak (Auld et al., 2025; Rickard, 2022). They are seen as necessary for competing with other large fishing nations; and their benefits are visible, concentrated and delivered to well-organised constituencies, while their costs are diffuse, deferred and borne by fish stocks and future fishers (Cisneros-Montemayor & Sumaila, 2019; Rickard, 2022). Redirection will therefore be resisted by incumbent beneficiaries, and the record of subsidy reform across sectors is one of repeated reversal (Damania et al., 2023). This, however, is a general feature of subsidy reform rather than a specific weakness of redirection, and prohibition alone is arguably the more naive of the two. Prohibition faces the same incumbent beneficiaries and adds a constituency of its own: the small-scale fishers and civil society organisations who experience prohibition as withdrawal, and whose opposition is

already visible in the Fish 2 negotiations (IGJ, 2025). Redirection, though untested at this scale, changes the political offer: prohibition alone asks governments to take something away, whereas redirection gives them something to offer in its place, with an identifiable constituency and a visible transfer.

Governments cannot be trusted to appropriately manage positive subsidies. This is a legitimate concern because a capacity-enhancing subsidy could be relabelled as "positive" to evade discipline. The safeguard is not to exclude positive subsidies altogether but to define them rigorously and ensure they are well-evidenced and independently evaluated. A protected category could be conditional on transparency, conditionality of payment against verified desired actions or outcomes, and third-party evaluation — the same principles that make the Indonesian pilots credible.

5. Implications for Fish 2 and related domestic policies

If positive subsidies are to play a potential role, the design of Fish 2 disciplines and related domestic policies matters. Three provisions within Fish 2 could preserve the necessary policy space without weakening the Agreement's core purpose. First, distinguish capacity-reducing from capacity-enhancing instruments. Disciplines drawn around broad categories of expenditure — e.g., "vessel-related support" — risk capturing buybacks and decommissioning, which reduce capacity, alongside construction grants, which increase it. The relevant distinction is not the budget line but the direction of the effect: Fish 2 should discipline subsidies by what they pay for. Second, preserve and define policy space for positive subsidies. The Agreement should make clear that transparent, performance-based subsidies demonstrably designed to reduce overcapacity and overfishing or proactively restore stocks and ecosystems are permitted, and distinct from the subsidies it prohibits. This would not be a novel legal device: the Agreement on Agriculture's Green Box already exempts domestic support that is decoupled from production and prices (WTO, 1994), and Fish 2 could apply the same decoupling logic to fishing effort. This would give members the confidence to invest in such instruments and provide an opportunity for constructive redirection rather than simply removal of existing subsidies. In turn, this could alleviate concerns of small-scale fishers and developing coastal states thus speeding up negotiations. Third, recognise community co-designed programs within special and differential treatment. Special and differential treatment for developing countries and small-scale fisheries is usually framed in terms of access thresholds — vessel size, distance from shore, catch volume. These matter, but they are not the only markers of a legitimate positive subsidy. Programs that are participatory in design, transparent in operation, conditional on sustainable

actions or measurable ecological outcomes, rigorously evaluated, and improve equity through progressive wealth redistribution warrant recognition. Special and differential treatment should reward how a subsidy is designed and governed, as well as who it reaches.

These international provisions also have a domestic counterpart, which is arguably more consequential given the WTO's comparatively weak external enforcement (Auld et al., 2025). The same logic that argues for creating space for positive subsidies at the WTO argues for redirecting harmful subsidies domestically. Existing national budgets currently spent on negative subsidies that drive overcapacity — free gillnets, open-ended fuel and vessel support — can be repurposed towards instruments that support fair and just transitions to sustainability and ecosystem restoration, such as buybacks, selective gears and bycatch reduction technologies, and performance-based rewards. This is reform within the existing fiscal envelope, not new expenditure. Domestic reform can also go beyond redirection: complementary instruments such as levies on industrial fisheries and marine tourism could internalise the externalities of ocean industries and channel new revenue to small-scale fishers and coastal communities (Booth et al., 2021, 2022; Sumaila, Walsh, et al., 2021).

Taken together, this offers a constructive and coherent position, which is potentially appealing to developing coastal states: discipline the subsidies that drive overcapacity and overfishing, preserve space for positive subsidies that mitigate overcapacity and overfishing and enable proactive restoration, and bring a country's domestic reform agenda and its WTO commitments into a single, mutually reinforcing mix of policies and instruments that deliver positive outcomes for oceans and coastal communities.

6. Conclusion

The Agreement on Fisheries Subsidies was negotiated to confront a real and pressing problem: public money is being spent in ways that not only hasten the decline of fish stocks and the degradation of marine ecosystems but are also largely unfair and inequitable (Schuhbauer et al., 2017; Sumaila, Alam, et al., 2024). That problem is genuine, and prohibition is a necessary part of the response. But prohibition answers only half of it, and ignores what to fund instead. Examples from Indonesia show that positive performance-based subsidies, co-designed with fishers and rigorously evaluated, can mitigate overfishing and support recovery of marine biodiversity while sustaining coastal livelihoods. They are a constructive complement to prohibition, which could speed up negotiations and deliver better outcomes for oceans and coastal communities.

As members work to conclude Fish 2, there is an opportunity to reframe fisheries subsidy reform from a narrowing list of permissible expenditures into a positive agenda for a sustainable and equitable sector. Coastal communities and small-scale fishers are not a problem to be regulated, but partners in solutions. With the right incentives, marine ecosystems, fish stocks and coastal communities can thrive side by side, and a reformed subsidy regime should be designed to help them do so.

Acknowledgements

The authors are grateful to the small-scale fishing communities, the staff of Yayasan Kebersamaan Untuk Lautan (KUL), government partners, and collaborating researchers at the University of Oxford, Bangor University and IPB University who co-designed, implemented and evaluated the pilot programs discussed in this article. HB also wishes to acknowledge the following funding sources: the UK Darwin Initiative (ref 30-008), the Shark Conservation Fund (SCF), and the Leverhulme Trust as part of the Leverhulme Centre for Nature Recovery, University of Oxford (RC-2021-076).

Conflict of Interest

HB and LA were involved in the design and evaluation of several of the programs discussed and hold unpaid affiliations with Yayasan Kebersamaan Untuk Lautan (KUL), the non-governmental organisation that co-designed and implemented them. While the evaluations cited were pre-registered and, where possible, randomised, the authors note the importance of independent replication and evaluation of these approaches by third parties. The authors declare no other competing interests.

Data Availability Statement

Data sharing is not applicable to this article, as no new primary data were generated. The findings discussed draw on previously published and forthcoming studies that are cited herein, from which the underlying data are available.

References

Alger, J., Le Billon, P., Leinberger, E., & Sumaila, U. R. (2023). What would Article 5.1 of the 2022 WTO Ministerial Agreement on Fisheries Subsidies accomplish? *Marine Policy*, *153*, 105641. https://doi.org/10.1016/j.marpol.2023.105641

Auld, K., Del Savio, L., & Feris, L. (2025). An Environmental Agreement in a Trade Court – Is the WTO's Agreement on Fisheries Subsidies Enforceable? *World Trade Review*, *24*(1), 25–49. https://doi.org/10.1017/S1474745624000375

Bache, S. J. (2003). Bycatch mitigation tools: selecting fisheries, setting limits, and modifying gear. *Ocean and Coastal Management*, *46*(1–2), 103–125.

https://www.infona.pl/resource/bwmeta1.element.elsevier-defe0da3-ae2f-38e7-abed-6cd5bbc405ef

Bangura, K. Z., & Kromah, A. Z. (2022). The WTO's Fisheries Subsidies Agreement: What's New and What's Next? *Global Trade and Customs Journal*, *17*(10), 431–435. https://doi.org/10.54648/GTCJ2022061

Basurto, X., Gutierrez, N. L., Franz, N., Mancha-Cisneros, M. D. M., Gorelli, G., Aguión, A., Funge-Smith, S., Harper, S., Mills, D. J., Nico, G., Tilley, A., Vannuccini, S., Virdin, J., Westlund, L., Allison, E. H., Anderson, C. M., Baio, A., Cinner, J., Fabinyi, M., … H Thilsted, S. (2025). Illuminating the multidimensional contributions of small-scale fisheries. *Nature*, *637*(8047), 875–884. https://doi.org/10.1038/s41586-024-08448-z

Bladon, A. J., Mohammed, E. Y., Hossain, B., Kibria, G., Ali, L., & Milner-Gulland, E. J. (2018). Evaluating the ecological and social targeting of a compensation scheme in Bangladesh. *PLOS ONE*, *13*(6), e0197809. https://doi.org/10.1371/JOURNAL.PONE.0197809

Bladon, A. J., Short, K. M., Mohammed, E. Y., & Milner-Gulland, E. J. (2016). Payments for ecosystem services in developing world fisheries. *Fish and Fisheries*, *17*(3), 839–859. https://doi.org/10.1111/faf.12095

Booth, H. (2026a). From research to impact: an integrated toolkit for designing, testing and adapting incentive-based conservation programs. *Biological Conservation*, *321*, 112022. https://doi.org/10.1016/j.biocon.2026.112022

Booth, H. (2026b). Making CITES count for sharks and rays. *Nature Ecology & Evolution*. https://doi.org/10.1038/s41559-026-02984-9

Booth, H., Arlidge, W. N. S., Squires, D., & Milner-Gulland, E. J. (2021). Bycatch levies could reconcile trade-offs between blue growth and biodiversity conservation. *Nature Ecology & Evolution*. https://doi.org/10.1038/s41559-021-01444-w

Booth, H., Fajri, I., Rusdiansyiah, Banda Naira, K., Rizal, M., Adrianto, L., & Jones, J. P. G. (2026). Positive outcomes and insights for scaling from a randomized pilot of a gear exchange program to reduce bycatch in small-scale fisheries. *[Manuscript Accepted for Publication. Available at EcoEvoRxiv]*.

Booth, H., Mourato, S., & Milner-Gulland, E. J. (2022). Investigating acceptance of marine tourism levies, to cover the opportunity costs of conservation for coastal communities. *Ecological Economics*, *201*, 107578. https://doi.org/10.1016/J.ECOLECON.2022.107578

Booth, H., Pienkowski, T., Ramdlan, S. M., Banda Naira, K., Muhsin, Milner-Gulland, E. J., Adrianto, L., & Ferraro, P. J. (2025). Conservation impacts and hidden actions in a randomized controlled trial of a marine pay-to-release program. *Science Advances*, *11*(17), eadr1000. https://doi.org/https://doi.org/10.1126/sciadv.adr1000

Booth, H., Ramdlan, M. S., Hafizh, A., Wongsopatty, K., Mourato, S., Pienkowski, T., Adrianto, L., & Milner-Gulland, E. J. (2023). Designing locally-appropriate conservation incentives for small-scale fishers. *Biological Conservation*, *277*, 109821. https://doi.org/10.1016/j.biocon.2022.109821

Booth, H., Ramdlan, S. M., Muhsin, Zuhri, S., Bachri, S., & Adrianto, L. (2026). Vessel buybacks could fairly and cost-effectively mitigate overfishing of sharks and implement CITES in small-scale fisheries in the Global South: insights from an incentive-compatible auction in Indonesia. *Available at SSRN*. https://doi.org/http://dx.doi.org/10.2139/ssrn.6832603

Booth, H., Squires, D., & Milner-Gulland, E. J. (2020). The mitigation hierarchy for sharks: A risk-based framework for reconciling trade-offs between shark conservation and fisheries objectives. *Fish and Fisheries*, *21*(2), 269–289. https://doi.org/10.1111/faf.12429

CBD. (2022). *The Kunming-Montréal Global Biodiversity Framework*. Conference of the Parties to the Convention on Biological Diversity. https://www.cbd.int/doc/c/e6d3/cd1d/daf663719a03902a9b116c34/cop-15-l-25-en.pdf

Cisneros-Montemayor, A. M., & Sumaila, U. R. (2019). Busting myths that hinder an agreement to end harmful fisheries subsidies. *Marine Policy*, *109*, 103699. https://doi.org/10.1016/J.MARPOL.2019.103699

Clark, C. W., Munro, G. R., & Rashid Sumaila, U. (2007). *Buyback Subsidies, the Time Consistency Problem, and the ITQ Alternative* (Vol. 83, Number 1). https://www.jstor.org/stable/27647746

Clark, C. W., Munro, G. R., & Sumaila, U. R. (2005). Subsidies, buybacks, and sustainable fisheries. *Journal of Environmental Economics and Management*, *50*(1), 47–58. https://doi.org/10.1016/j.jeem.2004.11.002

Costello, C., Millage, K., Eisenbarth, S., Galarza, E., Ishimura, G., Rubino, L. L., Saccomanno, V., Sumaila, U. R., & Strauss, K. (2020). Ambitious subsidy reform by the WTO presents opportunities for ocean health restoration. *Sustainability Science 2020 16:4*, *16*(4), 1391–1396. https://doi.org/10.1007/S11625-020-00865-Z

Cronin, M. R., Murua, J., Croll, D. A., Hutchinson, M., Lezama-Ochoa, N., Lopez, J., Murua, H., Palacios, M. D., Restrepo, V., Stewart, J. D., Swimmer, Y., Zilliacus, K. M., & Moreno, G. (2025). Evidence for a fisher-designed solution to manta and devil ray bycatch in tuna fisheries. *Conservation Biology*, *40*(1), e70150. https://doi.org//doi/pdf/10.1111/cobi.70150

Damania, R., Balseca, E., de Fontaubert, C., Gill, J., Kichan, K., Rentschler, J., Russ, J., & Zaveri, E. (2023). *Detox Development: repurposing environmentally harmful subsidies*. https://openknowledge.worldbank.org/server/api/core/bitstreams/61d04aca-1b95-4c06-8199-3c4a423cb7fe/content

Dasgupta, A., & Beard, V. A. (2007). Community driven development, collective action and elite capture in Indonesia. *Development and Change*, *38*(2), 229–249. https://doi.org/10.1111/J.1467-7660.2007.00410.X;REQUESTEDJOURNAL:JOURNAL:14677660;JOURNAL:JOURNAL:14677660;WGROUP:STRING:PUBLICATION

Dulvy, N. K., Aitchison, R. M., Arnold, A. E., Booth, H., Charvet, P., Finucci, B., Fordham, S. V, Matsushiba, J. H., Mull, C. G., Rigby, C. L., Seidu, I., Samantha Sherman, C., & Simpfendorfer, C. A. (2026). Bending back the curve of shark and ray biodiversity loss. *Nature Reviews Biodiversity*. https://doi.org/10.1038/s44358-025-00120-2

Ferraro, P. J. (2008). Asymmetric information and contract design for payments for environmental services. *Ecological Economics*, *65*(4), 810–821. https://doi.org/10.1016/j.ecolecon.2007.07.029

Ferraro, P. J., & Gjertsen, H. (2009). A Global Review of Incentive Payments for Sea Turtle Conservation. *Chelonian Conservation and Biology*, *8*(1), 48–56. https://doi.org/https://doi.org/10.2744/CCB-0731.1

Ferraro, P. J., & Kiss, A. (2002). Direct payments to conserve biodiversity. *Science*, *298*(5599), 1718–1719. https://doi.org/10.1126/science.1078104

Gerasimchuk, I., Doan, D., Mcconnell, C., Urazova, I., Ullah, F., Laan, T., Tipping, A., & Morra, F. (2025). *Reforming Environmentally Harmful Subsidies A playbook*. https://www.iisd.org/system/files/2025-02/environmentally-harmful-subsidies-reform-appendices.pdf

Gjertsen, H., Squires, D., Dutton, P. H., & Eguchi, T. (2014). Cost-Effectiveness of Alternative Conservation Strategies with Application to the Pacific Leatherback Turtle. *Conservation Biology*, *28*(1), 140–149. https://doi.org/10.1111/cobi.12239

IGJ. (2025). *Statement Regarding the World Trade Organization (WTO) Agreement on Fisheries Subsidies*.

Innes, J., Pascoe, S., Wilcox, C., Jennings, S., & Paredes, S. (2015). Mitigating undesirable impacts in the marine environment: a review of market-based management measures. *Frontiers in Marine Science*, *2*(OCT), 76. https://doi.org/10.3389/fmars.2015.00076

IPBES. (2019). *Global assessment report on biodiversity and ecosystem services of the intergovernmental science-policy platform on biodiversity and ecosystem services*. https://doi.org/10.5281/zenodo.3831673

Jaiteh, V., Lindfield, S. J., Mangubhai, S., Warren, C., Fitzpatrick, B., & Loneragan, N. R. (2016). Higher Abundance of Marine Predators and Changes in Fishers' Behavior Following Spatial Protection within the World's Biggest Shark Fishery. *Frontiers in Marine Science*, *3*(April), 1–15. https://doi.org/10.3389/fmars.2016.00043

Jenkins, L. D., & Garrison, K. (2013). Fishing gear substitution to reduce bycatch and habitat impacts: An example of social–ecological research to inform policy. *Marine Policy*, *38*, 293–303. https://doi.org/10.1016/j.marpol.2012.06.005

Kaczan, D., Nurhabni, F., Cheung, W., Frölicher, T., Kuswardani, A., Lam, V., Muawanah, U., Puspasari, R., Reygondeau, G., Sumaila, U., & Teh, L. (2023). Hot Water Rising: The Impact of Climate Change on Indonesia's Fisheries and Coastal Communities. In *Hot Water Rising: The Impact of Climate Change on Indonesia's Fisheries and Coastal Communities*. Washington, DC: World Bank. https://doi.org/10.1596/40564

Leduc, A. O. H. C., & Hussey, N. E. (2019). Pay to protect at-risk bycatch species. *Science*, *364*(6438), 342. https://doi.org/10.1126/science.aax2028

Letessier, T. B., Juhel, J. B., Vigliola, L., & Meeuwig, J. J. (2015). Low-cost small action cameras in stereo generates accurate underwater measurements of fish. *Journal of Experimental Marine Biology and Ecology*, *466*, 120–126. https://doi.org/10.1016/J.JEMBE.2015.02.013

Letessier, T. B., Proud, R., Meeuwig, J. J., Cox, M. J., Hosegood, P. J., & Brierley, A. S. (2021). Estimating Pelagic Fish Biomass in a Tropical Seascape Using Echosounding and Baited Stereo-Videography. *Ecosystems 2021 25:6*, *25*(6), 1400–1417. https://doi.org/10.1007/S10021-021-00723-8

MacNeil, M. A., Chapman, D. D., Heupel, M., Simpfendorfer, C. A., Heithaus, M., Meekan, M., Harvey, E., Goetze, J., Kiszka, J., Bond, M. E., Currey-Randall, L. M., Speed, C. W., Samantha Sherman, C., Rees, M. J., Udyawer, V., Flowers, K. I., Clementi, G., Valentin-Albanese, J., Gorham, T., … Cinner, J. E. (2020). Global status and conservation potential of reef sharks. *Nature*. https://doi.org/10.1038/s41586-020-2519-y

Mangubhai, S., Sykes, H., Manley, M., Vukikomoala, K., & Beattie, M. (2020). Contributions of tourism-based Marine Conservation Agreements to natural resource management in Fiji. *Ecological Economics*, *171*, 106607. https://doi.org/10.1016/J.ECOLECON.2020.106607

Mustika, P. L. K., Ichsan, M., & Booth, H. (2020). The Economic Value of Shark and Ray Tourism in Indonesia and Its Role in Delivering Conservation Outcomes. *Frontiers in Marine Science*, *7*, 261. https://doi.org/10.3389/fmars.2020.00261

Pigou, A. C. (1920). *The Economics of Welfare*. Macmillan. http://pombo.free.fr/pigou1920.pdf

Quinlan, J. R., O'Leary, S. J., Fields, A. T., Benavides, M., Stumpf, E., Carcamo, R., Cruz, J., Lewis, D., Wade, B., Amato, G., Kolokotronis, S. O., Clementi, G. M., & Chapman, D. D. (2021). Using fisher-contributed secondary fins to fill critical shark-fisheries data gaps. *Conservation Biology*, *35*(3), 991–1001. https://doi.org/10.1111/cobi.13688

Rickard, S. J. (2022). Interests, Institutions, and the Environment: An Examination of Fisheries Subsidies. *International Studies Quarterly*, *66*(2). https://doi.org/10.1093/ISQ/SQAC003

Schuhbauer, A., Chuenpagdee, R., Cheung, W. W. L., Greer, K., & Sumaila, U. R. (2017). How subsidies affect the economic viability of small-scale fisheries. *Marine Policy*, *82*, 114–121. https://doi.org/10.1016/J.MARPOL.2017.05.013

Selig, E. R., Hole, D. G., Allison, E. H., Arkema, K. K., McKinnon, M. C., Chu, J., de Sherbinin, A., Fisher, B., Glew, L., Holland, M. B., Ingram, J. C., Rao, N. S., Russell, R. B., Srebotnjak, T., Teh, L. C. L., Troëng, S., Turner, W. R., & Zvoleff, A. (2018). Mapping global human dependence on marine ecosystems. *Conservation Letters*, e12617. https://doi.org/10.1111/conl.12617

Shedrawi, G., Magron, F., Vigga, B., Bosserelle, P., Gislard, S., Halford, A. R., Tiitii, S., Fepuleai, F., Molai, C., Rota, M., Jalam, S., Fatongiatau, V., Sami, A. P., Nikiari, B., Sokach, A. H. M., Joy, L. A., Li, O., Steenbergen, D. J., & Andrew, N. L. (2024). Leveraging deep learning and computer vision technologies to enhance management of coastal fisheries in the Pacific region. *Scientific Reports 2024 14:1*, *14*(1), 20915-. https://doi.org/10.1038/s41598-024-71763-y

Shidqi, R. A., Sari, D. R., Alopen, J., Bang, Y. M., Arianto, I., Kopong, P. N. S., TD, V. G., Smulders, E., & Booth, H. (2025). Designing and evaluating alternative livelihoods for shark conservation: a case study on thresher sharks in Alor Island, Indonesia. *Oryx*, 1–12. https://doi.org/10.1017/S0030605324001376

Smith, M. D. (2012). The New Fisheries Economics: Incentives Across Many Margins. *Annual Review of Resource Economics*, *4*, 379–402. https://doi.org/10.1146/annurev-resource-110811-114550

Snyman, S., & Bricker, K. S. (2019). Living on the edge: benefit-sharing from protected area tourism. *Journal of Sustainable Tourism*, *27*(6), 705–719. https://doi.org/10.1080/09669582.2019.1615496

Squires, D. (2010). Fisheries buybacks: A review and guidelines. *Fish and Fisheries*, *11*(4), 366–387. https://doi.org/10.1111/j.1467-2979.2010.00365.x

Sumaila, U. R., Alam, L., Abdallah, P. R., Aheto, D., Akintola, S. L., Alger, J., Andreoli, V., Bailey, M., Barnes, C., Ben-Hasan, A., Brooks, C. M., Carvalho, A. R., Cheung, W. W. L., Cisneros-Montemayor, A. M., Dempsey, J., Halim, S. A., Hilmi, N., Ilori, M. O., Jacquet, J., … Pauly, D. (2024). WTO must complete an ambitious fisheries subsidies agreement. *Npj Ocean Sustainability 2024 3:1*, *3*(1), 6-. https://doi.org/10.1038/s44183-024-00042-0

Sumaila, U. R., Ebrahim, N., Schuhbauer, A., Skerritt, D., Li, Y., Kim, H. S., Mallory, T. G., Lam, V. W. L., & Pauly, D. (2019). Updated estimates and analysis of global fisheries subsidies. *Marine Policy*, *109*, 103695. https://doi.org/10.1016/J.MARPOL.2019.103695

Sumaila, U. R., Skerritt, D., Schuhbauer, A., Villasante, S., Cisneros-Montemayor, A. M., Sinan, H., Burnside, D., Abdallah, P. R., Abe, K., Addo, K. A., Adelsheim, J., Adewumi, I. J., Adeyemo, O. K., Adger, N., Adotey, J., Advani, S., Afrin, Z., Aheto, D., Akintola, S. L., … Zeller, D. (2021). WTO must ban harmful fisheries subsidies. *Science*, *374*(6567), 544–544. https://doi.org/10.1126/science.abm1680

Sumaila, U. R., Wabnitz, C. C. C., Teh, L. S. L., Teh, L. C. L., Lam, V. W. Y., Sumaila, H., Cheung, W. W. L., Issifu, I., Hopewell, K., Cinner, J. E., Bennett, N. J., Folke, C., Gulati, S., & Polasky, S. (2024). Utilizing basic income to create a sustainable, poverty-free tomorrow. *Cell Reports Sustainability*, *1*(6), 100104. https://doi.org/10.1016/J.CRSUS.2024.100104

Sumaila, U. R., Walsh, M., Hoareau, K., Cox, A., Teh, L., Abdallah, P., Akpalu, W., Anna, Z., Benzaken, D., Crona, B., Fitzgerald, T., Heaps, L., Issifu, I., Karousakis, K., Lange, G. M., Leland, A., Miller, D., Sack, K., Shahnaz, D., … Zhang, J. (2021). Financing a sustainable ocean economy. *Nature Communications 2021 12:1*, *12*(1), 3259-. https://doi.org/10.1038/s41467-021-23168-y

Teh, L. S. L., Teh, L. C. L., Giron-Nava, A., & Sumaila, U. R. (2024). Poverty line income and fisheries subsidies in developing country fishing communities. *Npj Ocean Sustainability 2024 3:1*, *3*(1), 14-. https://doi.org/10.1038/s44183-024-00049-7

Vickrey, W. (1961). Counterspeculation, Auctions, and Competitive Sealed Tenders. *The Journal of Finance*, *16*(1), 8–37.

Walker, S., & Townsend, R. (2008). ECONOMIC ANALYSIS OF NEW ZEALAND'S DEEMED VALUE SYSTEM. *IIFET 2008 Vietnam Proceedings*, 1–11.

Wosnick, N., Da Costa De Lima Wosiak, C., & Machado Filho, O. C. (2020). Pay to conserve: what we have achieved in 10 years of compensatory releases of threatened with extinction guitarfishes. *Animal Conservation*, 1–3. https://doi.org/10.1111/acv.12651

WTO. (1994). *Agreement on Agriculture, Annex 2*. https://www.wto.org/english/docs_e/legal_e/14-ag_01_e.htm

WTO. (2022). *Agreement on Fisheries Subsidies*. https://docs.wto.org/dol2fe/Pages/SS/directdoc.aspx?filename=q:/WT/MIN22/33.pdf&Open=True

Wunder, S. (2005). *Payments for environmental services: Some nuts and bolts*. http://www.cifor.cgiar.org

Wunder, S. (2013). When payments for environmental services will work for conservation. *Conservation Letters*, *6*(4), 230–237. https://doi.org/10.1111/conl.12034

Wunder, S., Börner, J., Ezzine-De-Blas, D., Feder, S., & Pagiola, S. (2020). Payments for environmental services: Past performance and pending potentials. *Annual Review of Resource Economics*, *12*, 209–234. https://doi.org/10.1146/annurev-resource-100518-094206

Zabel, A., & Holm-Müller, K. (2008). Conservation performance payments for carnivore conservation in Sweden. *Conservation Biology*, *22*(2), 247–251. https://doi.org//doi/pdf/10.1111/j.1523-1739.2008.00898.x