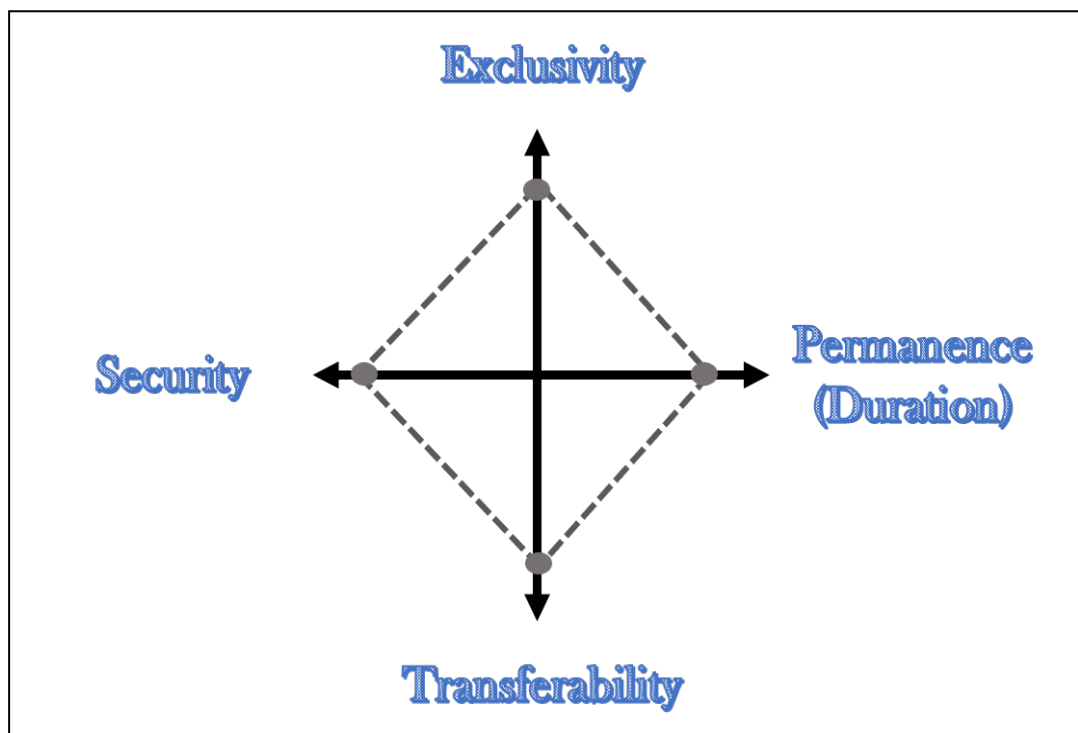


A Review of International Experiences in the Security of Tenure in Fishing Rights



A Report Prepared for the South African Deep-Sea Trawling Industry Association

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Executive Summary

The primary legislation governing marine fisheries in South Africa is the Marine Living Resources Act No. 18 of 1998 (MLRA), as amended in 2014. Section 18(6) of the MLRA provides that: "All rights granted in terms of this section shall be valid for the period determined by the Minister, which period shall not exceed 15 years, whereafter it shall automatically terminate and revert back to the State to be reallocated in terms of the provisions of this Act relating to the allocation of such rights."

The Department of Forestry, Fisheries and the Environment (DFFE) is considering revising and updating the MLRA, and the South African Deep-Sea Trawling Industry Association (SADSTIA) has been invited to comment on possible changes to be made. An important issue for SADSTIA is the current duration of fishing rights, which SADSTIA considers to be too short for the deep-sea trawl fishery because of the very significant capital investments required for rights holders to participate meaningfully in it. The replacement costs of vessels, ranging from between R8 million and R80 million for a small vessel and up to R290 million for a large vessel, give an indication of the scale of investment required.

The primary goals of commercial fisheries are to ensure sustainable use of the fishery resources and ecosystems while enabling fisheries to operate in a socially and economically optimal way. Limiting access to a fishery through a system of fishing or use rights has been found to be essential to achieve those goals and to avoid over-exploitation of fish stocks, excess fishing capacity and economically inefficient fisheries. The most important properties of fishing rights are exclusivity, security, transferability and permanence, or duration. Permanence/duration, subsequently referred to as duration, is the primary focus of this review, cognisant of the fact that considerations of security and duration may to some extent be interrelated.

The impacts of duration on achieving the goals of fisheries and fisheries management are well understood. Longer-term rights provide rights holders with stronger incentives to invest in a fishery in order to maximize efficiency and obtain optimal value for the products, and also to ensure long-term sustainability of the resources. The potential disadvantages of long-term rights relate mainly to the perceived reduced flexibility they can create for governments to adjust the composition of the rights holders and the nature of the rights, should they desire to do so for social, economic or ecological reasons.

The incentives for responsible and efficient fisheries that longer-term rights create for right holders are, nevertheless, extremely important, and a widely recognized principle on the duration of rights is that they should be allocated "for sufficient length to encourage stewardship and appropriate investment by shareholders and associated industries. This can be achieved by allocating in perpetuity and/or for significant periods of time with a strong assumption of renewal, provided rules are adhered to" (Bonzon et al., 2010). At the same time, in some cases there may need to be a trade-off between the duration of rights and opportunities for change. In such cases, an appropriate balance may have to be found between the provision of sufficient duration to provide the security needed for investment in a fishery and responsible behaviour, and provision of adequate opportunity for adjustments to rights allocations as may be required.

The validity of that principle, the need for adequate duration, is well demonstrated in several case studies from around the world. As many of those cases have rights that are transferable, it is sometimes difficult to differentiate between the impacts of duration and those of transferability on the behaviour and performance of right holders. However, where transferability is allowed, for example with individual transferable quotas (ITQs), duration underpins the value of transferability, and the importance of duration can still be discerned in these cases.

Fishing rights in several of the case studies examined here are held in perpetuity, including Australia, Iceland and New Zealand. Similarly, in Norway, fishing concessions, which apply mainly to the offshore fishery, are granted indefinitely. New Zealand introduced its ITQ system at the time when the country was trying to encourage development of the local fishery in its newly established exclusive economic zone (EEZ), and the system was intended to encourage the development of local capacity to harvest offshore resources, which had previously been fished mainly by foreign nations. In Canada, fishing privileges are not formally issued in perpetuity and may be granted annually, but rights holders can have high confidence that they will always be renewed, which gives them some of the characteristics of property rights (Burke and Brander, 2000).

Even in these cases, there cannot be absolute certainty that the rights will be valid in perpetuity as, for example, governments may change, bringing in new approaches, or changes in abundance or distribution of stocks may require changes to the system of rights. Such uncertainty is probably unavoidable, but the records of development in the fisheries of these countries demonstrate that that uncertainty has been sufficiently low to give rights holders high confidence in the duration of their rights and encourage substantial investment in and commitment to them.

The United States of America (USA) has a different system in place, with rights limited to a maximum of 10 years, but complemented by a legal commitment that the rights will be renewed except under exceptional circumstances. The Magnusson Stevens Act of the USA stipulates that "A limited access privilege ... is a permit issued for a period of not more than 10 years that— (1) will be renewed before the end of that period, unless it has been revoked, limited, or modified ...".

This has created an environment in which rights holders have had the security and commitment to be able to invest in the fisheries, leading to the accomplishment of economic rationalization and development, as well as sustainable use. That legal commitment to renewal contrasts markedly with the attitude to renewal specified in section 18(6) of the South African MLRA, which provides that: "All rights granted in terms of this section shall be valid for the period determined by the Minister, which period shall not exceed 15 years, whereafter it shall automatically terminate and revert back to the State to be reallocated in terms of the provisions of this Act relating to the allocation of such rights."

In Namibia, rights are valid for a period of seven, ten, 15 or 20 years, depending on the category of the fishery and other considerations. An important motivation for longer duration of rights is to enable fisheries there to compete on international markets, which requires commitments to and investment in ensuring that the product chain as a whole is economically efficient, and that the quality of products is sufficiently high to meet market demands. Fishing rights in the Peru anchoveta fishery, issued for 10 years, appear to be the weakest in terms of duration amongst the countries with well-established and implemented fishing rights systems reviewed here. Peru is currently in the process of developing a national fisheries policy that is intended, amongst other goals, to enable the fishing industry to be more competitive and sustainable but it is unclear whether that will include changes to the duration of fishing rights.

The examples of China, Ghana and Thailand include efforts to limit access, predominantly to reduce over-exploitation of resources, but implementation of the relevant regulations is reported to be weak. As a result, they do not provide useful insights on the properties of duration of rights. Their experiences reinforce the fact that a failure to control fishing capacity with an appropriate and effective rights system will almost certainly lead to over-capacity in the fisheries, economic inefficiency, over-exploited resources and high levels of illegal, unregulated and unreported (IUU) fishing.

From the above examples, it is clear that duration and security underpin the attitudes and behaviour of rights holders. In the countries reviewed here with indefinite duration: Australia, Iceland, New Zealand, Norway and Canada (British Columbia), as well as in the USA with its high expectation of renewal, high confidence in long or indefinite duration by right holders has led to improvements in efficiency, better quality of products, higher security in the typically competitive markets for seafood products, and greater job stability and security. Some of the developments have been a consequence of the ability to transfer rights, which encourages efficiency, but that has been underpinned by a sense of long-term security in those holding and buying rights.

It is clear from the theory behind user rights and from the examples presented here that rights of sufficiently long duration are essential for giving right holders a sense of commitment to and responsibility for developing economically efficient and sustainable fisheries. Where there are also other goals for a fishery, such as social goals, supplementary regulations can be put in place to achieve those without compromising on the duration.

If changes in the structure of rights holders are being planned or envisaged by governments, whether for political or ecological reasons, the inflexibility of long-term rights may be perceived by them as being a disadvantage. However, in such cases, the uncertainty that the possibility of change brings to right holders and the impacts it will have on their commitment and ability to invest in the fishery needs to be recognized by the government. Where change is anticipated that uncertainty can be reduced by i) ensuring that any planned transitions and the deadline for achieving them are clearly articulated and adhered to; and ii) the government intentions on renewal of existing rights and the criteria for renewal are similarly transparent and adhered to.

In other cases, where a fishery is mature and no further substantial changes to the number and composition of the body of rights holders are considered necessary, adherence to the principle that shares should be allocated for sufficient length to encourage stewardship and investment by rights holders is essential for responsible development of fisheries and maximizing the benefits. In the case of a capital-intensive fishery, such as the South African deep sea trawl sector, the rights need to be long enough, or there needs to be sufficient confidence in renewal, to provide incentives for rights holders to invest in the fisheries and thereby promote local economic development; to encourage their meaningful participation in the fisheries; provide confidence and stability for SMMES to develop; for rights holders to have the confidence to create job opportunities and be able to retain staff, and for rights holders to be partners in ensuring the responsible and sustainable use of fishery resources.

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Disclaimer

National policies and regulations addressing fishing rights are frequently complex, with different approaches for different fisheries, and they also change over time as countries learn by experience. While considerable effort has been put into ensuring that the information presented here is accurate and up to date, it is possible that, in some instances, nuances and qualifications, and updates, to laws and regulations have been missed. Nevertheless, the relevant and important principles that emerge from this review are considered to be accurate and reliable.

Purpose of the review.

SADSTIA has been informed that DFFE intends to revise and update the MLRA and is considering its position in relation to the Act and recommendations it will put forward for consideration in the revision. One of the most important issues for SADSTIA is that Association members consider that the current 15-year duration of the rights pertaining to this fishery is too short for the local deep sea trawl fishery because of the capital investments required for rights holders to participate meaningfully in it (as envisaged by the MLRA and the 2021 policy on commercial fishing rights).

This review is intended to provide information relevant to that issue by examining the likely impacts and implications of different duration periods on the performance and viability of capital-intensive fisheries, such as the deep-sea trawl fishery. Performance is assessed in terms of objectives and requirements highlighted in the MLRA objectives and allocation policies, including the need to achieve optimum utilisation and ecologically sustainable development; economic growth; employment creation; promotion of equitable access to and involvement in all aspects of the fishing industry; minimising economic disruption such as job losses; encouraging investments in processing and marketing infrastructure in areas that are economically depressed; and promoting meaningful participation in the fishery by all right holders.

The examination of the implications of duration is done in two parts: a) consideration of the expected performance of fisheries with different durations of rights as reported in theoretically based studies available in the scientific literature; and b) evidence available from practical lessons learned from different nations and fisheries around the world that have tried and reported on experiences with length of tenure.

The South African Deep-Sea Trawl Fishery¹

The South African deep-sea trawl fishery, hereafter referred to as the hake deep-sea trawl fishery (HDST), targets two species of hake, deepwater hake *Merluccius paradoxus* and shallow-water hake *M. capensis*. It is the most valuable fishery in South Africa with a sales revenue of R4.3 billion in 2019, accounting for about 45% of the combined value of all commercial fisheries in the country. Approximately 5 400 people are permanently employed in the fishery and another 1 200 are seasonally employed, with an additional 5 800 indirectly employed in servicing the HDST in different ways.

Fishing for the two species of hake is regulated primarily by setting an annual total allowable catch (TAC), of which 85% is caught by the HDST. That portion is divided amongst the 37 rights holders making up the fishery. Between 2021 and 2023, in the recent rights allocation process undertaken by the Department of Forestry, Fisheries and the Environment (DFFE), these rights holders were granted 15-year rights.

The fishery operates mainly on the edge of the continental shelf in water deeper than 300 metres,² which requires ocean-going vessels, as well as advanced processing plants to generate the products required to meet consumer demands and preferences. It is therefore a very capital-intensive fishery, involving 27 freezer trawlers and 26 wetfish trawlers, which in combination have a value of R3.6 billion. Processing facilities add R4 billion to that, giving a total investment in the fishery of R7.6

¹ Unless otherwise indicated, information in this section is taken from the Briefing Document prepared by SADSTIA in July 2024 for the incoming Minister of Forestry, Fisheries and the Environment; SADSTIA Factsheet 1 on the socio-economic contribution of the fishery; and SADSTIA Factsheet 5 on investment in the fishery.

² MSC. <https://fisheries.msc.org/en/fisheries/south-africa-hake-trawl/#:~:text=Trawled%20hake%20is%20South%20Africa's,42%20countries%20around%20the%20world> .

billion. The approximate replacement costs of the vessels range from between R8 million and R80 million for a small vessel and between R63 million to R290 million for a large vessel. Additional information on the structure and economics of the HDST fishery is available and well known to SADSTIA (e.g. the 2020 Economic Study of the Hake Deep-Sea Trawl Fishery and the Implications for Future Fishing Rights Allocation Policy³) and is not repeated here.

It is therefore clear and well-demonstrated that engagement in the fishery requires major capital investments, as well as substantial working capital. As a result of the size of these capital requirements, fishing rights must be long-term in nature.

The Current Arrangements for Fishing Rights in the HDST

The primary legislation governing marine fisheries in South Africa is the MLRA. Under the MLRA the allocation of rights and other aspects of the governance of fisheries is conferred on the Minister of the department responsible for fisheries. In fulfilling those responsibilities, the Minister is required to give due regard to the objectives and principles listed in section 2 of the Act. Those include, amongst others, achievement of ecologically sustainable development of marine living resources; utilisation of marine living resources for economic growth, employment creation, protection of the ecosystem, and addressing historical imbalances in the fishing industry.

Section 18(6) of the MLRA provides that: "All rights granted in terms of this section shall be valid for the period determined by the Minister, which period shall not exceed 15 years, whereafter it shall automatically terminate and revert back to the State to be reallocated in terms of the provisions of this Act relating to the allocation of such rights."

The General Policy on the Allocation of Commercial Fishing Rights: 2021 stipulates in paragraph 8.10 "Duration of right" that commercial fishing rights will be granted in all the sectors for a period not exceeding 15 years. It is further stated that the duration (for a specific fishery) will be determined through taking into account, *inter alia*, the level of transformation in the fishery, the capital intensity of the fishery, the need to encourage further investment and economic growth, current knowledge of the biological status of the target species, and the performance of participants in the fishery.

In the case of the South African deep-sea trawl fishery, the rights granted are valid for a period not exceeding 15 years, after which the rights will "automatically terminate and revert back to the State to be reallocated in terms of this policy" (Policy on the Allocation and Management of Commercial Fishing Rights in the Hake Deep-Sea Trawl Fishery:2021).

The 2021 Policy on commercial fishing rights in the HDST lists the following specific objectives to be addressed during the allocation of fishing rights in that fishery:

- 4.1 broaden access to the Deep-Sea Trawl fishery to the extent possible while minimising economic disruption (such as job losses) to the existing fishery;
- 4.2 promote transformation through efficient allocation of fishing rights to historically disadvantaged persons (which shall include the designated groups; youth, women, people with disabilities and military veterans) and broaden meaningful participation (increase participation, value-creation, and linkage) of these groups;
- 4.3 promote the interests of applicants who rely heavily on the Hake Deep-Sea Trawl sector;

³ 2020 Economic study: <https://www.sadstia.co.za/wp-content/uploads/2023/06/HDST-Economic-Impact-FINAL1.pdf>

4.4 promote local economic development through encouraging investments in processing and marketing infrastructure in areas that are economically depressed;

4.5 promote meaningful participation in the fishery by all Right Holders and eliminate paper quotas through discouraging restrictive catch and/or joint venture agreements (agreements where a third party conducts all catching, processing and marketing over the entire duration of the right);

4.6 promote SMMEs; and

4.7 promote job creation and retention.

The theory behind user or access rights in marine fisheries

Basic principles

Rights-based fisheries management has been a response to the global problem of open access fisheries, which have been found to result, almost inevitably, in over-exploitation of fishery resources and ecosystems and serious economic inefficiency that, in combination, have medium and long-term negative consequences for social and ecological well-being. Even if an open access fishery is managed by catch limits to avoid over-exploitation, unless the number of boats allowed to participate in the fishery is also limited, the economic viability of the fishery is likely to be threatened by the unrestricted number of vessels allowed to fish (e.g. Charles, 2009). A classic example of this was the USA Pacific halibut fishery. Until 1994, it was an open access fishery regulated by a TAC, a combination that led to a race to fish by about 3500 vessels to catch the TAC within a season of five days. In 1995, an individual quota system was introduced that enabled vessels to optimise timing and duration of their fishing for their quota (Hilborn et al., 2005).

Hannesson (2005) argues that in commercial fisheries the goals are to protect the productivity of stocks and to harvest them in an economically efficient way that does not involve more boats than are required, boats that are inadequate or inefficient, or too many people. Hannesson gives the second goal as maximising economic efficiency but in many fisheries around the world that is broadened to a socio-economic goal of providing not only economic efficiency but also provision of reasonable livelihoods, which is likely to require trade-offs between maximising livelihood opportunities on one hand and maximising economic efficiency on the other. There is also another set of stakeholders to consider, the consumers and markets, whose interests, as Hannesson points out, are best addressed by obtaining the best possible products from the sea.

In his review of rights-based fishing in Iceland and Norway, Hannesson (2005) suggests that the best way to achieve sustainable and economically efficient fisheries would be to convert ownership of fish stocks into private property. If that was done, according to Hannesson, the owners of those fish stocks would, in self-interest, strive to maintain their stocks in a sustainable and productive condition and to exploit them as efficiently as practically possible. While this is a widely held view, based on theory and experience in free-market economies, it has rarely, if ever, happened in practice in marine fisheries because of both ideological and practical reasons. Ideologically, marine fish stocks are generally seen as belonging to the people of a country and there is a common reluctance by the public and politicians to hand them over, even at a price, to private owners. That principal, of public ownership of marine resources, is reflected in fisheries laws in many countries. In South Africa, it is implicit in, for example, the requirement in the MLRA for the Minister to have regard for “the need to conserve marine living resources for both present and future generations” (MLRA, section 2. (b)). Similarly, the 1996 New Zealand Fisheries Act includes as a purpose of the Act “maintaining the potential of fisheries resources to meet the reasonably foreseeable needs of future

generations” (Fisheries Act 1996, Part 2, section 8 (2) (a)), while in Peru, the Constitution states that rights over natural resources cannot be allocated indefinitely (Aranda, 2009), and the USA maintains fishery resources as common property resources (Hannesson, 2005).

Practically, in addition to the challenges of assigning ownership of stocks that may straddle local and national boundaries, Hannesson points out that the economic incentive to conserve fish stocks only prevails if harvesting them sustainably provides a better return on investment than depleting them for short-term gains. A short-term view, or high enough discount rate, for private owners, coupled with low or uncertain productivity of stocks, can result in over-exploitation and depletion being a preferred economic option rather than striving for longer-term sustainable use. The goals of private owners are therefore not always, or fully, consistent with the values the public holds for fishery resources. This is even more apparent when considering the public values for the wider ecosystem and biodiversity, which are impacted by fisheries and fisheries management choices. As a result, most if not all coastal governments retain the common property (as distinct from access) nature of marine fishery resources and retain a role as guardians of those resources (Hannesson, 2005). In designing the nature and properties of access or user rights in fisheries, governments are or should be striving to find an appropriate balance between those two needs: providing fishers and the fishing industry with the incentives to harvest resources in a sustainable, economically-efficient way, while empowering government to fulfil their responsibilities to the public to ensure that those resources are used sustainably and in the best interests of the public.

Characteristics of access rights

Access or user rights in fisheries have six characteristics: exclusivity, duration, divisibility, transferability, flexibility and security, of which exclusivity, duration, transferability and security have been described as the most important (Figure 1). Exclusivity refers to the ability of the right holder to exclude others from interfering with their right, and security to the confidence that a right holder can have that they can keep that right without interference. Transferability refers to the extent to which a right can be traded with others. Duration is the theme of this review and refers to the time for which the right is valid and during which the holder has the benefits of exclusivity, security and, when allowed, transferability (Arnason, 2000; Aranda, 2009; Charles, 2009).

In an example of three countries: Iceland, New Zealand and Norway (from Arnason, 2000), at the time of publication New Zealand scored highest across all four criteria, and Norway was weakest, particularly in terms of duration and transferability (Figure 2). As can be seen in the case studies of those three countries presented in the next section of this report, Norway has made several changes since 1999 that would have increased the score on transferability and probably also duration, but New Zealand probably still scores the highest on duration, with greatest legal certainty on the perpetuity of access rights there.

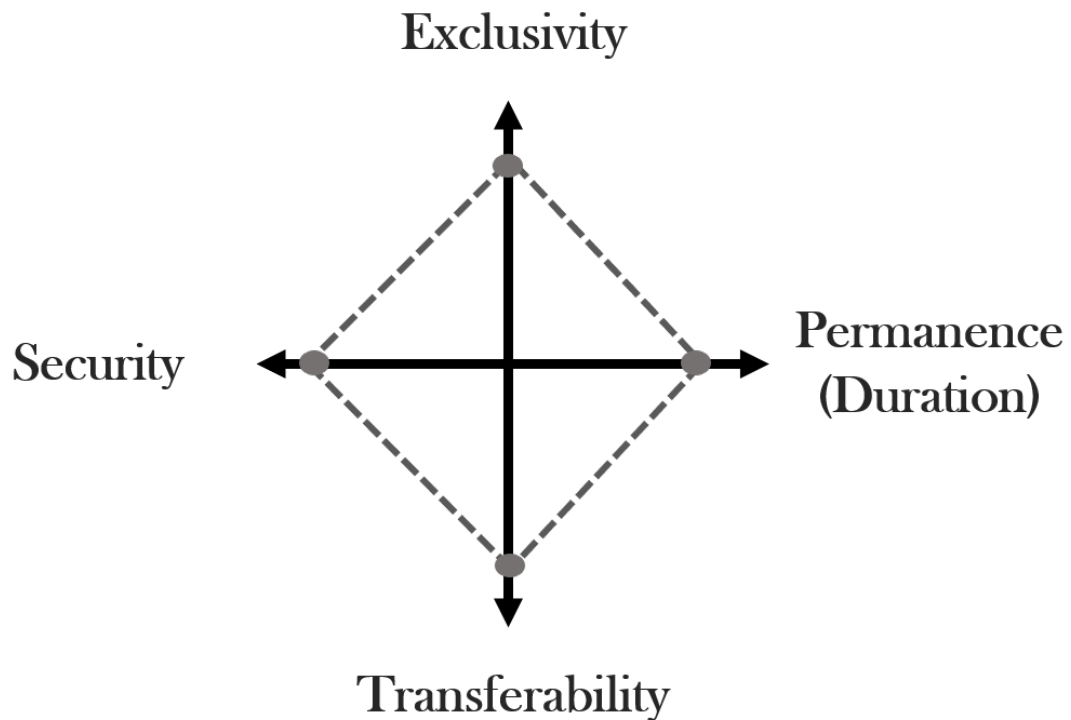


Figure 1. The four key characteristics of a fishing right. A strong property right would score highly on all four axes, as shown by the dotted line (after Arnason, 2000).

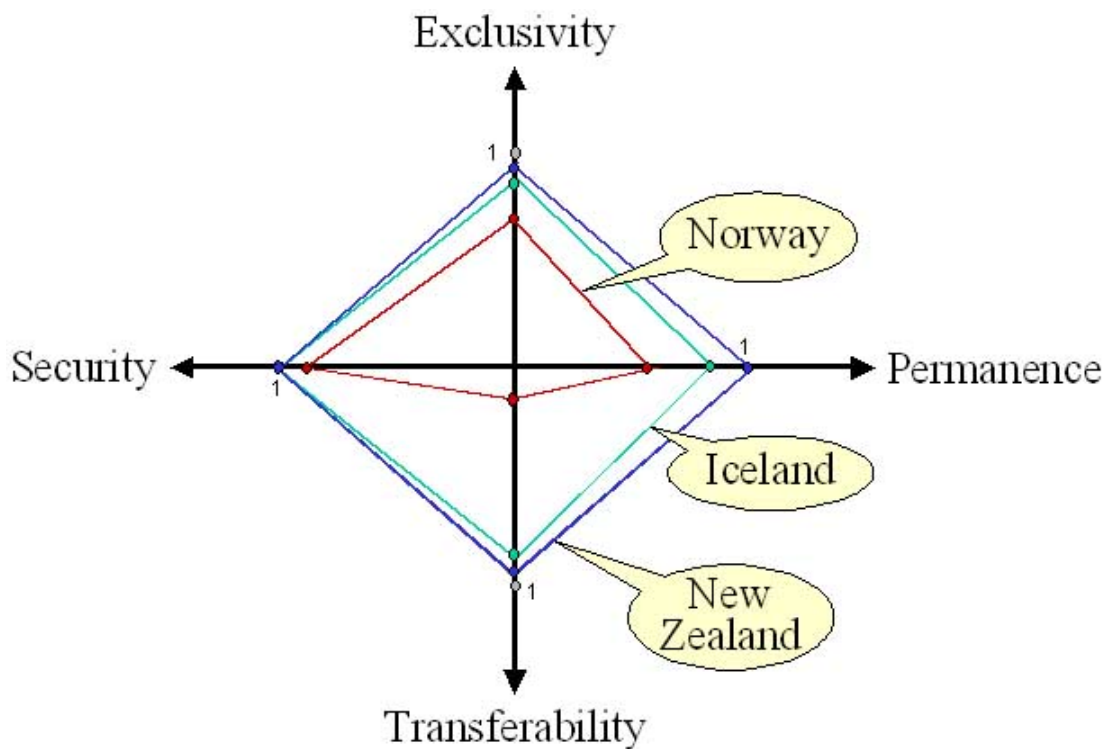


Figure 2. The strength of fishing rights in three countries, as examples. Strength on each axis is measured on a scale of 0 to 1. Copied from Arnason (2000): scores are based on the situation at the time of publication.

Security and duration are distinct characteristics but are inter-related. Even if fully secure, a holder of a short-term right will only have that security for a short period and will therefore feel and be less secure in a fishery than if they held the same right but for a considerably longer period. It is well understood in fisheries management and economics that the length of tenure of fishing rights, such as catch shares or quotas, influences the confidence a right holder has in their future in the fishery. Longer-term rights provide a greater incentive to invest in a fishery and to contribute to the health and productivity of the fish resources through good compliance with regulations (e.g. Charles, 2009; Bonzon et al., 2010).

Anderson (2000) lists four basic options:

Fishing rights can be:

- assigned permanently;
- assigned for the duration of a management plan;
- assigned for fixed periods but subject to renewal if the holder meets specified criteria;
- assigned temporarily to start with but made permanent after a specified trial period.

The duration of a right in a fishery can affect two core aspects of the behaviour of a holder of that right. The first is their attitude to conservation of the resource and their role as stewards, and the second is the incentives to invest in a fishery. The two are inter-related in that a decision to forgo catch in the short-term in order to facilitate growth or maintenance of the resource for the future is a form of investment (Costello and Kaffine, 2008).

Bonzon et al. (2010) state that the duration (or tenure) of a right sends a signal to the right holder that their future in the fishery is strongly related to their actions today. If a stock maintains high biomass and productivity as a result of good science and management, including compliance with regulations, the holder will benefit from an increase in catch share or quota. Conversely, if a stock declines, their catch share will also decline. While ecosystems and stocks within those ecosystems are variable and influenced by several different factors, some beyond the control of managers and fishers, the behaviour of fishers, good or bad, is an important contributory factor. Bonzon et al. (2010) state that one of the key principles in the design of a catch share scheme should be:

“Allocate shares for sufficient length to encourage stewardship and appropriate investment by shareholders and associated industries. This can be achieved by allocating in perpetuity and/or for significant periods of time with a strong assumption of renewal, provided rules are adhered to.” (Bonzon et al., 2010)

That principle incorporates the strong synergy, or complementarity, between the duration of a right and the probability of renewal. Even if the duration is limited, for example to 10 years as in the case of the USA, if the right holder can have high confidence that it will be renewed for another 10-year period, the effect is similar to a longer-term right. In a modelling study, tested on examples of a spiny lobster and an abalone fishery in Baja California, Mexico with 20-year rights, Costello and Kaffine (2008) demonstrated the importance of the likelihood of renewal on the attitudes of right holders. They found that limited tenure contracts (20 years in this case) can encourage economically desirable behaviour and a sense of stewardship but that uncertainty about renewal can lead to a short-term perspective that, in the absence of adequate government control, creates an incentive to mine the resource.

On the other hand, longer-duration rights can reduce the flexibility of fisheries managers or government to reallocate rights to achieve specific social or political goals (Charles, 2009). An

important example of this is the impact that the duration of rights has on the opportunity for new entrants to come into the fishery. If rights are transferable, new entrants can, in principle, purchase catch shares or quota on the market but if the rights are not transferable, or transferability is rigidly controlled, that option may not be open to them. Under these circumstances, there is a direct trade-off between duration and opportunities for change within the set of rights holders and the policy may need to find an appropriate balance between providing sufficient security to give good incentives for responsible behaviour and investment in the fishery and providing opportunity for new entrants to resources that belong to the public as a whole (Bonzon et al., 2010).

Longer-term rights can also limit the ability of governments to adjust to substantial changes in resource abundance or distribution that cannot be accommodated by proportional adjustments to quotas within the existing system, should that need arise. One approach to addressing such a problem is through buyback schemes in which governments reduce fishing capacity by purchasing access rights (e.g. Pascoe et al., 2019) but the costs of that could be prohibitive. The USA makes allowance for such an eventuality by giving the authorities the power to revoke rights if, amongst other reasons, an access rights system is found to have jeopardized the sustainability of the stock or the safety of fishermen” (Magnusson Stevens Act 303A (b) (2), also see case study on the USA below).

Case studies

Examples from eleven case studies are reported on. Most of the examples, were selected because they cover large, well-managed fisheries with well-established and well-known systems of rights. Those are Australia, Canada, Iceland, Namibia, New Zealand, Norway, Peru and the United States of America. Most of those countries have different approaches to access rights for different fisheries, for example between offshore and inshore fisheries, and in those cases this review has focused on fisheries that are broadly comparable technically and economically to the South African hake fisheries, and for which there was sufficient relevant information. The three other case studies, China, Ghana and Thailand, were selected to get a wider geographical and geo-political spread. There is legislation on access in all three of those but with only limited implementation. The legal approach and state of implementation is reported briefly below but not considered further in the overall synthesis.

Several of the countries reviewed use individual transferable quota systems (ITQs) and most of the rest make at least some allowance for transfer of rights. When reviewing the economic impacts of an ITQ system, and to some extent the biological impacts, it is difficult to separate out the effects of duration from those of transferability, and there do not appear to be studies that have attempted to do so. The two are linked but the duration of the rights will play a substantial role in the attitudes of the right holder to the economic development of their enterprise and the sustainability of the resource, just as it does in the holder of a non-transferable right. The biggest difference in impacts between unrestricted or lightly restricted transferable rights and non-transferable rights, all other properties being equal, is likely to be in terms of consolidation, which will inevitably occur when rights are transferable, unless restrictions are in place to limit it.

Australia

Australia implemented ITQs in the Southern Bluefin tuna fishery in 1984 and by 2019 there were 46 ITQ fisheries and 5 ITE (individual transferable effort) fisheries in the country, consisting of State and Commonwealth fisheries (Pascoe et al., 2019). The ITE fisheries are mainly prawn trawl fisheries. ITQ/ITE fisheries at that time accounted for about 60% of the country’s total production by capture

fisheries (Pascoe et al., 2022) and Australia is considering applying ITQs in more commercial fisheries in the future (Pascoe et al., 2019).

The ITQ system in place there is similar to that used in other countries, involving the allocation of an individual share of the TAC in a fishery (described by Pascoe et al. (2022) as a quasi-property right). The right is tradable through sale and buying or short-term transfer. All commercial fishing rights in Australia are reported to be held in perpetuity (Fisheries Management Act 1991 (Appendix 1); Bonzon et al. 2010).

A review by Pascoe et al. (2019) found that there was only limited evidence available on which to explore the impacts of the ITQ system but that the available information suggested that ITQ fisheries performed better than non-ITQ fisheries in most cases. They also found that single-species ITQ fisheries performed better, overall, than multispecies ITQ fisheries. The review did not identify any problems related to the sustainability of stocks. Most stakeholders consulted considered that the introduction of ITQs and IEQs had negatively impacted social aspects and governance. Highest concern was around the high costs of quotas and the problems this created for potential new entrants. The cost of quotas as an obstacle to new entrants is obviously a feature of the transferability of the rights rather than their duration.

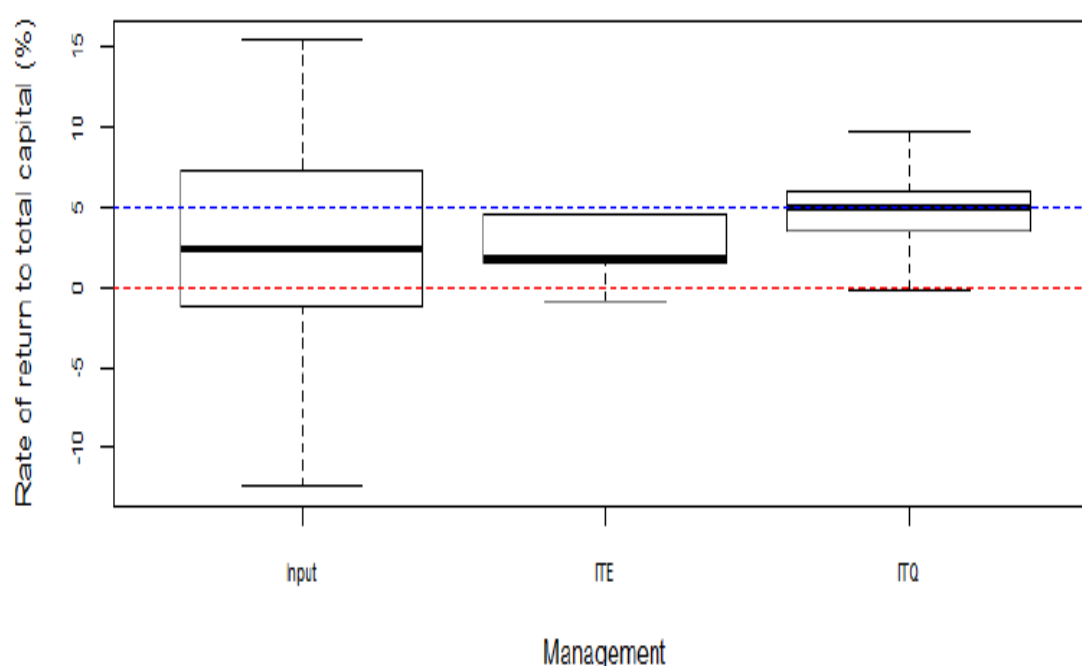


Figure 3. Percentage rate of return on capital by type of management control (Input, ITE and ITQ). Red dotted line shows break-even point, and the blue dotted line indicates the average long run risk-free normal return (copied from Pascoe et al., 2019).

The only quantitative results on economic performance provided in that report were for South Australia, which is the only state that routinely provides economic performance reports. Those indicated that earnings in relation to total boat capital (which included the value of licence and quota as well as capital value of boats) for most fisheries were less than the 'normal rate of return'. For fisheries falling within the ITQ system, the median rate of return was equal to the long-term risk-free rate but was less than that rate for ITE and input controlled fisheries (Figure 3).

In Western Australia, in 1999, there were approximately 35 limited entry fisheries managed by a range of input and output controls. In the period 1973 to 1999, the value of fishing licenses increased rapidly as a result of i) the depreciation of the Australian dollar and changes in long-term foreign exchange rates that encouraged exports of seafood to Japan and the USA; ii) new fisheries management regulations that allowed longer-term adjustments in fleet capacity, and iii) flexibility in management arrangements that enabled the industry to maximise its efficiency within the constraints of sustainable fishing. All those factors and better access to loans from banks and lending institutions led to a generally profitable and financially secure industry (Rogers, 2000). According to that study, the success of fisheries in Western Australia was also an important driver of boat construction in the state, which at that time became the main centre for boat construction for the whole country.

The consequences of transferability and duration (in perpetuity) on investment and economic performance are confounded to a large extent in these examples, but duration clearly had an important impact in its own right and also underpinned the property and benefits of transferability, which would have been less effective if the duration of rights was shorter.

Canada

Canada has a long and diverse coastline, with corresponding diversity in the nature of its fisheries. The Canadian federal government has jurisdiction over marine and inland fishery resources but the provinces have jurisdiction over property rights. In accordance with the Canadian Fisheries Act (Appendix 1), the Minister of Fisheries and Oceans is mandated to issue licenses and make allocations but the Act does not specify how decisions on those matters should be made and allows for differences, adaptation to change and experimentation. This has meant that, in practice, details of access and allocation have mainly been addressed in administrative policy (Burke and Brander, 2000).

The term “fishing privilege” is used to indicate fishing rights but those privileges have some of the characteristics of property rights, even though not recognised as such in legislation. According to Burke and Brander (2000) fishing privileges have a measure of exclusivity, reinforced by the issue of individual quotas and limitations on the number fishing licenses available. In addition, there is *de facto* security of tenure. The law allows for suspension of licenses for violating regulations but this has hardly ever happened even in the case of serious violations. Licenses and quotas can, in practice also be traded. The legal requirement is that a fisher who is leaving the fishery should hand over their license to the government, which will then decide what to do with it. However, Burke and Brander point out that the policy also states that the licensing authority should follow the advice of the departing fisher on who should receive that license or permit, which means that a specified transfer can take place, even if the sale of the rights is not permitted.

Burke and Brander (2000) reported that there had been an increase in vertical integration in the fisheries sector and that vertical integration and increasing implementation of individual quotas (IQs) had been complementary: implementation of IQs in a fishery provided the incentive for improved planning and organization, and integrated operations were more likely than others to recognise the benefits of IQs and support them. Their report did not go into any detail on the economic impacts of the IQ system of user rights other than to report that fisheries under that system were generally showing signs of prosperity with some exceptions such as the East Coast groundfish fishery, in which the Atlantic cod stock had collapsed in the early 1990s.

Bonzon et al. (2010) describe the IQ, or catch share programme, in place for the British Columbia Integrated Groundfish Programme. Catch shares were implemented first in the sablefish fishery,

followed by the halibut fishery and others and the Integrated Groundfish Programme was implemented in 2006, encompassing the halibut, sablefish and groundfish trawl programs and the commercial hook and line fisheries for rockfish, lingcod and dogfish. The program was made permanent at the start of the 2010/2011 season, covering more than 70 species, of which 30 are managed through quotas, and includes all commercial fisheries for groundfish. The goals of the Programme are, as a priority, the conservation and protection of fish and fish habitat, followed by compliance with regulations, secure and stable access for fishermen, fairness to individuals and groups, promotion of historical participation, economic viability, the best use of the fish for economic, social and cultural needs, and assuring public access.

It involves a species-based privilege that represents a secure share of the total catch for several species. Trading is allowed but the rules regulating trading differ according to gear and species. A Schedule II Species category C licence⁴ needs to be renewed each year, regardless of whether or not fishing takes place, in order to keep the privilege and be eligible for a license the following year. Privileges for the sable, halibut and groundfish trawl fisheries are granted each year with a 'very strong presumption of renewal' (Bonzon et al., 2010).

At the time of publication of the report (2010), the Programme had only been in place for a few years but Bonzon et al. (2010) stated that it was meeting the goals successfully. They reported that catch limits were almost always respected, bycatch rates had been reduced, and revenues and profits had increased. In addition, season lengths had increased, and jobs were more stable. Those successes appear to have been continued and the 2024 report on the Programme commented that the commercial groundfish fishing sector, including harvesting, processing, retail and distribution, was not only benefitting the business owners but also contributing directly and indirectly to the economy through provision of jobs and expenditures on supplies and services. In 2022, there were 330 active vessels, down slightly from 359 in 2012, and the total landed value of the groundfish fisheries in 2022 was approximately 150 million Canadian dollars. The wage bill that year was more than 30 million Canadian dollars (Fisheries and Oceans Canada, 2024).

China

In 2022, Chinese fisheries accounted for nearly 15% of total global production, nearly double that of Indonesia, the second largest producer (FAO, 2024) and, in 2016, there were approximately 9.4 million fishers engaged in marine and inland fisheries. Unsurprisingly, fisheries management in China is probably one of the most complex arrangements, if not the most complex, globally (Huang and He, 2019). The Fisheries Law of the People's Republic of China was adopted in 1986 and represents the start of efforts to manage the country's fisheries formally. According to Huang and He, nearly a thousand national and local fisheries laws, regulations and rules have been developed since then.

A fisheries license system was implemented in 1979 and was included in the 1986 Fisheries Law and the 2000 amended version. The issuing of licenses is intended to be based on the status of fisheries resources and the total allowable catch. However, Huang and He (2019) state that that requirement is rarely followed in practice.

In 1999, China adopted a "zero growth" policy that aimed to maintain fisheries yield overall at the 1998 level, as a component of the strategy to improve the conservation and management of the country's resources. In 2002, a subsidy programme was introduced to encourage decommissioning

⁴ Commercial fishing for Lingcod, Spiny Dogfish, Rockfish, Halibut, Sablefish, Skate, Sole and Flounder, Tuna, and Pacific cod by hook and line gear; specifically, longline, jig, and troll. <https://www.pac.dfo-mpo.gc.ca/fm-gp/licence-permis/docs/commercial-licence-permis-ref/scheduleII-I-annexII-eng.html>

of fishing vessels and to subsidise relocation of fishers. In contrast, the expansion of offshore fisheries and development of distant water fisheries was encouraged.

That was followed, in 2017, with a policy of ‘negative growth’, which aimed to limit or reduce the number and power of fishing vessels. This has marked China’s approach to access to fisheries since then, with the focus on reducing fishing capacity dominating the attitude to security of rights. Management of fisheries effort in China is based on input control (the license system; limitations on number of vessels and gears; the exiting and relocation system for fishers; and vessel decommissioning) and output control. Output controls are primarily a TAC system, driven by the zero growth and no growth policies. The focus over the last two decades and more on reducing effort must have introduced considerable uncertainty into the fisheries sector but that is likely to be mitigated in many cases by inconsistent or absent implementation, as in the case of the licensing system.

Ghana

Ghana is not one of the top producers in marine fisheries around the world, but the sector is nationally important. Average annual production between 2010 and 2017 was approximately 315 000 tonnes, accounting for 70% of total fish supply in the country. The fishery consists of small-scale, semi-industrial and industrial sectors, of which the small-scale sector accounts for about 70% of total marine fishery production and supports the livelihoods of approximately 1.5 million people. The industrial sector accounts for approximately 28% of marine production and consists of trawl, shrimp and tuna vessels (Doku, 2018).

It was included in this review as a nationally important and reasonably well studied, example. However, the available information indicates that, while Ghana has some legal requirements in place to limit entry in its commercial fisheries, those are not being implemented in practice (Taking Stock: Ghana, 2023; Appendix 1). There are no regulations that limit the number of semi-industrial vessels and, while there is a legal requirement to register small-scale vessels, it is not taking place. Semi-industrial and small-scale sectors therefore appear to be effectively open access (Taking Stock: Ghana, 2023).

The example of Ghana therefore does not provide cases or experiences relevant to this review and is not considered further.

Iceland

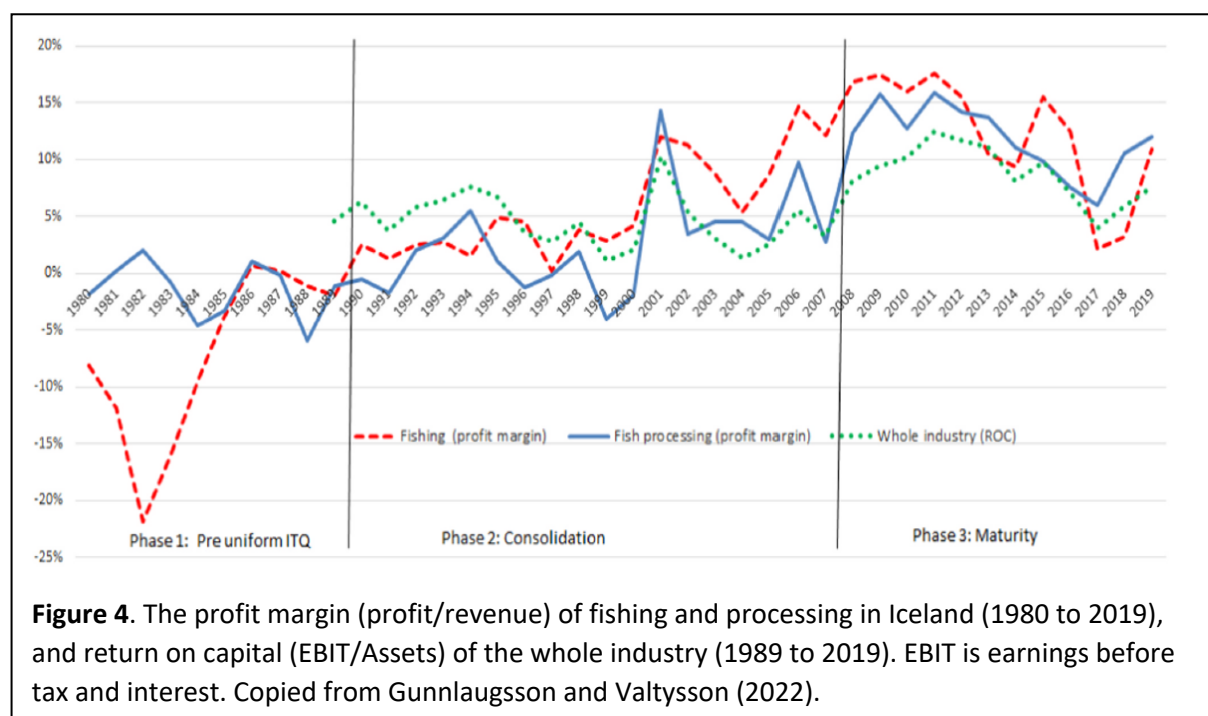
ITQs have been used in Iceland for over 30 years. The fishery for Icelandic herring was the first to be brought under an ITQ system, in 1979, and in 1990 a uniform system was introduced in which an ITQ system is used for most of the country’s fisheries. As with most countries using some form of catch-share programme, the right holder has what is called a permanent quota share in Iceland, which gives the holder the right to a fixed proportion of the TAC. That share is tradable and can be bought or sold permanently or leased for a year (Gunnlaugsson and Valtýsson, 2022). While the right is theoretically permanent, there has been some uncertainty about whether that would apply in practice, with the possibility that the ITQ system could be revoked at some stage. However, after a change in government in 2013, fears of that decreased and Runolfsson (2024) reported that since then there has been confidence in the durability of the rights.

Gunnlaugsson and Valtýsson (2022) point out that consolidation of fishing rights in Iceland has been controversial and is seen as having had negative consequences by many politicians in the country. In order to address those complaints, Iceland has put measures in place to control it. In 1998 a “quota” ceiling was implemented that stipulates that a quota holder may not hold more than 12% of the

total quota by mass, and there are also quota ceilings on holdings on individual species, 20% for most but 35% for some. In 2020, the 10 largest companies in demersal fisheries held 52% of the quota and eight companies hold more than 92% of the quota for most species in the pelagic fishery.

The rights system appears to have resulted in the expected biological benefits: the biomass of Iceland's fish stocks increased from 2008 during what has been described as the maturation phase, as the fisheries adjusted to the system.

Another important development in the fisheries since the introduction of ITQs has been an increase in vertically integrated companies that fish for, process and sell their own products. Such companies hold most of the rights in demersal fisheries and nearly all in the pelagic fisheries. Gunnlaugsson and Valtýsson (2022) suggest that the increase in vertically integrated companies is because control of the whole value chain enables them to provide a steady supply of products to the market. There has also been an improvement in the quality of the products and value addition.



The profit margins of fisheries in Iceland have grown considerably since the introduction of the ITQ system in 1990. The profit margins in both fishing and processing increased gradually during what is referred to as the consolidation period, from 1990 to 2007. By the start of the maturity phase, from 2008 to 2009, the consolidation of fishing rights and rationalization of the structure of the industry had been largely completed. During that phase the average annual profit margin in fishing was 12.3%, and 11.8% in processing, substantially higher than the negative or close to zero margins prior to 1990 (Figure 4).

As stated in the introduction to the case studies, these improvements are strongly linked, directly and indirectly, to confidence in the indefinite duration of the rights.

Namibia

Fisheries represent one of Namibia's major resources and the sector makes important inputs to the country's economy and employment. The sector is predominantly export-oriented (Chiripanhura and Teweldemedhin, 2016).

In Namibia, between 1994 and 2001, the duration of fishing rights included periods of four, seven or 10 years depending on which category the fishery fell into (MFMR Namibia, 2013). MFMR Namibia (2013) states that the changing dynamics and increasing complexity and maturity of fisheries in the country together with the need to ensure the sector could compete on world seafood markets, led to a decision to increase the duration of rights, which were extended to seven, ten and 15 years, depending on category, also with the introduction of a fourth category of 20 years (MFMR Namibia, 2013). A right to fish can only be transferred with the Minister's permission (Appendix 1).

The criteria for 20-year rights are given as (Section 5.1, MFMR Namibia, 2013):

- "i. Any right holder that employs a total of 2,000 Namibians or more on land and at sea on a permanent basis qualifies for this term.
- ii. A right holder should at least value add 75% of the allocated quota.
- iii. The 20 year term may be granted to a right holder which is at least 80% Namibian owned and owns 60% shares in a factory and or vessel(s).
- iv. The 20 year term may be granted to a right holder which [is] 100% Namibian own[ed], with a 25% share in a larger venture."

In the hake fishery, government encourages the practice of landing wet fish ashore, rather than processing at sea, because that is considered to provide onshore employment. It achieves that with a policy that 70% of the quota must be used for onshore processing and 30% can be processed onboard for export.

Chiripanhura and Teweldemedhin (2016) reported that after an initial increase in the value of fish and fish products between 1990 and 2003, from less than ND 500 million to over ND 2000 million, the value declined between 2003 and 2008, to approximately ND 1 600 million, but increased again over the next few years to reach approximately ND 2 000 million by 2012. Employment increased over this period from about 2 784 people in 1991 to 13 000 in 2011.

That generally positive picture, however, would appear to be masking some policy-driven problems in the sector. Kirchner and Leiman (2014) considered that aspects of government policy were confounding the goal of improved efficiency, particularly in the hake fishery. They suggested that the Namibianization policy and efforts to achieve greater local control of the hake fishery led to excess fishing effort and a decrease in the abundance of hake to a level below an economic optimum. Despite these problems, the government continued to encourage new investments in the industry, and pursued an inconsistent rights allocation policy, with fragmentation of quota holdings. As a result of these approaches, according to Kirchner and Leiman (2014), there was a fall in the sense of stewardship amongst right holders, presumably related to them not having confidence in the security and value of their rights.

In considering possible solutions to address those problems, Kirchner and Leiman (2014) argued that the allocation process lacked transparency and the criteria for allocation were not clear, which limited the rents that the fishery could attain. Achievement of high resource rent can be realised if quota is directed to the most efficient operators, but some rights holders considered that a lack of efficiency, or incompetence, was frequently rewarded. The hake fishery in Namibia is complex and those authors also point to a number of other causes of economic inefficiency, concluding that

insufficient stability and security in the fishery present a serious obstacle to improving efficiency, a finding that is also pertinent to the underlying question of this review on achieving an optimal duration for access rights.

Notwithstanding these criticisms by Kirchner and Leiman (2014), the fishery was certified by MSC in 2020, and no substantial problems were identified in the most recent audit, in May 2024.⁵

New Zealand

In 1986, New Zealand introduced ITQs into the management of 26 of the most important fisheries (Connor, 2001). The motivation for using an ITQ system included a need to control the rapidly expanding effort in the country's inshore fisheries and as a means to allow domestic interests to build capacity for fishing in the offshore fishery and capture the rents from those resources. Prior to that, the offshore fishery had been dominated by foreign interests.

Before the introduction of the ITQ system, the right to fish was granted through a fishing permit that was issued by the Ministry, with specified conditions. The Fisheries Act 1983 (see Appendix 1) included a new definition of a "commercial fisherman" that excluded part-time fishers, of which there were 1 500-1 800 at the time, thereby substantially reducing the number of fishing entitlements, but with little impact on fishing effort. Following on from the Act, ITQs, in the form of the New Zealand Quota Management System (QMS), came into effect in 1986, covering 26 species divided into 153 management stocks (Conner, 2001; Lock and Leslie, 2007). The ITQs gave the rights to harvest the resources but a fishing permit was still required to gain access to the resources. ITQs were granted in perpetuity and, at that time, were designated in absolute live weight (i.e. not as a proportion of TAC). Problems with fixed allocations soon became apparent and in 1990 the system changed and ITQs were designated as a proportion of a TAC instead of an absolute amount, as is the case with quotas for hake and other species in South Africa.

In order to qualify for quotas in the offshore fisheries, the applicants needed to be able to demonstrate that they had the ability to access the fishery and that they had the investments in processing required to process the catch. The legal characteristics of ITQs in New Zealand establish them as private property in the form of the right to harvest from a stock, but not in the stock itself.

When the QMS was introduced, officials considered that it did not impact on Maori rights. However, the Maori people challenged this, stating that the QMS was in conflict with the Waitangi Treaty, which had granted the Maori rights to fishery resources. The objections from the Maori were largely resolved through arrangement for allocations of quota in the disputed fisheries, as specified in the Treaty of Waitangi Settlement Act 1992.

Another change was made to the system in 2001 when annual catch entitlements (ACE) were introduced (Lock and Leslie, 2007). ACE are entitlements that are given to quota holders every year based the share of the total held by them. Lock and Leslie (2007) explain that this was not a major departure from the previous arrangement but did establish a clear separation between the right to harvest an amount of fish and the ownership of the resource in the future. That made it easier for holders to sell their current entitlement (rather than leasing their quota for a specified term) but keep their long-term ownership of the right.

⁵ MSC Surveillance Report, May 2024.

<https://cert.msc.org/FileLoader/FileLinkDownload.aspx/GetFile?encryptedKey=f453gy2gOaPnBXQpl3wMCr/Heryzum3dUBZYewswmwT7SmOT6OLVHwoaElZ9hxq>

The 1996 Fisheries Act did not introduce any major changes to the QMS and ITQ arrangements but made some changes and was clearer on the process for allocations.

A feature of ITQs is that, unless regulated, they can result in aggregation of large proportions of quota by few, or even single, rights holders. In New Zealand this is prevented by placing limits on the percentage of holdings allowed, referred to as maximum holding limits. Under the 1986 Amendment Act, the limit was set at 20%, apart from species listed in Schedule 1A of the Act (mainly deep water and mid-depth species) for which the limit was 35%, and rock lobster, for which it was set at 10%. In the 1996 Fisheries Act, the default aggregation was raised to 35% and for species listed in the Fifth Schedule (similar to the previous Schedule A) the maximum holding limit was 45% of the quota. Lock and Leslie (2007) explain that the increased limits were in recognition of the high investments needed to operate in these fisheries.

In an appraisal of the impacts of the ITQ and QMS system in New Zealand, Conner (2001) reported that ITQs provided greater security to rights holders that enabled them to become more competitive in the marketplace and to optimise their operations and obtain the maximum benefits from the resources, particularly in offshore fisheries. Conner also concluded that the ownership of exclusive rights and level of security brought about by the system increased the security of supply, which is particularly important in the international market, and points out that, while New Zealand exports make up a relatively small portion of the global fish supply, the fishing industry has been very successful in selling its products to large and competitive international markets.

In 2010, approximately 100 species and species groupings fell under the QMS system, equal to over 70% of New Zealand's total catch. More than 20 years after implementing the system, the approach was meeting its economic goals. Between 1996 and 2009, the value of the country's commercial fisheries increased from an estimated USD 2 billion to more than USD 2.8 billion. In addition, the approach has led to recovery of many of the resources and according to Bonzon et al. (2010), at that time nearly 70% of the stocks falling within the QMS system were at or near the target levels.

Norway

Norway was ranked 10th in the world in terms of production by marine capture fisheries in 2022, with an annual catch that year of nearly 2.5 million tonnes, three percent of the global catch (FAO, 2024). About 9 500 full time and 1 300 part-time fishers are employed in the sector (Abe et al., 2024).

In 1950, about there were about 86 000 fishers and 33 000 fishing vessels engaged in the sector but a combination of technical improvements in the efficiency of boats, gear and other equipment and general economic development in the country, resulted in a reduction to less than 17 000 fishers and 13 250 vessels by 1998. Catching capacity was maintained despite that reduction and, at the turn of the century, capacity was considered too high for the available resources. As a result, a number of input controls were implemented (Williams and Hammer, 2000).

The primary objectives of the Norwegian fisheries policy are to maximise the profits through striving for the highest possible rate of return from the sector by efficient use of the resources, and also to strive for a social and economic optimum in terms of the total benefits for the people of Norway. South Africa's policy goals are similar to this in many respects. Participation in commercial fisheries in Norway is restricted through control of entry into the fishery, as well as the standard range of input and output controls. The policy in Norway is that ownership of vessels and the right to catch the country's fishery resources is restricted to fishers. The criteria that must be met to be registered as a fisher include, for example, that a fisher must have participated in a fishery for at least three of

the previous five years. Registration is required for ownership of a fishing vessel (Williams and Hammer, 2000).

Regulation of the number of vessels is achieved through two types of control. Those are concessions, applying mainly to offshore vessels, and permits, which apply mainly to coastal vessels. Concessions are granted indefinitely and permits for one year but, in practice, the annual permits are routinely renewed and can therefore be considered to be indefinite as well. Catches are regulated by setting a TAC, which is divided between the different vessel groups fishing for that stock and, within each group, into individual vessel quotas (IVQs).

Williams and Hammer (2000) reported that the combination of limited access and the granting of an annual portion of the TAC, which is held in perpetuity, is considered by the industry and individual fishers to be a right. Further, the properties of that right have led to a system of transferability. A government proposal to implement an ITQ system in Norway was rejected, mainly because of a general view of Norwegian society that the right to benefit from access to fishery resources should be limited to those who actually fish. The idea that anyone is entitled to that right and can benefit from it, without being a fisher, is therefore rejected. The transferability system that has developed as a result is described by Williams and Hammer (2000) as being one of individually transferable access, rather than ITQs. Hannesson (2005) compared the systems in Norway and Iceland and similarly described that in Norway as being fishing concessions combined with individual vessel quotas and that of Iceland being an ITQ system.

As has occurred in most other fisheries in which limited access was introduced through a system of long-term rights, the ability to trade in concession capacity resulted in a major restructuring of fleets in the Norwegian purse seine fleet particularly, which underwent a rapid decrease in the number of small purse-seine vessels after the system became established. The system was less effective economically in the groundfish and shrimp trawler groups, however. At that time, transfers could also be made in those fisheries but had to go together with the vessel and, unlike the small pelagic fisher, the size of vessel quotas was not linked to the hold capacity of each vessel, which meant that there was less scope for fleet rationalisation (Hannesson, 2005).

The coastal cod fishery in Norway consists of vessels ranging from small to large, using handlines, gillnets, longlines and Danish seines. In that fishery, the measures described in the previous paragraph encouraged fishers to buy larger boats in order to get higher quotas. That and the high costs of decommissioning schemes to reduce overcapacity in the fishery resulted in government considering a more market-based method to control capacity, and in 2004 a system of quota exchange, referred to as the structural quota system, was started. Under that system fishers could add quota from one vessel to that of another, as long as both vessels were in the same regulatory group (regulatory groups were based on vessel length). With some modifications to the details, the system remains in place for the coastal cod fishery in Norway.

The system, in particular the transferability it allows, the value of which is related to the indefinite duration of rights, has been determined to have corrected, in part at least, the failure to achieve fleet rationalisation noted by Hannesson (2005) and has resulted in a reduction in the number of vessels in the fishery and increased efficiency, with some concentration towards larger vessels and fewer vessel owners (Abe et al. 2024).

Ekerhovd and Gordon (2024) examined trends in profitability and productivity in the purse seine fishery under the individual vessel quota system between 1994 and 2013. They found increasing prices for outputs over that period played a key role in driving good revenues and profits but that

those higher output prices were, in part, a result of the system. Incentives created by the individual quota system, of which duration is a basic foundation, encouraged changes. In that fishery, a particularly important change was investment in increased refrigeration capacity, which allowed for improved quality of the catch, a higher proportion being sold for human consumption, and therefore higher prices. Ekerhovd and Gordon (2024) stated that the investment in capital structure is linked to the IVQ program and therefore that the higher prices are a long-term benefit of the rights. The major change, according to those authors, occurred in 1996, when regulations were implemented allowing (with restrictions) transfer of quota between vessels. Those regulations effectively acknowledged that ownership of a license and quota had a financial value. That value was recognized by the banks and thereby capital could be accessed. Ekerhovd and Gordon (2024) correctly identify transferability as being the key factor in that change, but without the long, indefinite duration of rights in Norway, rights would inevitably be seen to have a lower value and impacts of transferability on investment would have been proportionately smaller.

Peru Anchoveta Fishery

The fishery for anchoveta *Engraulis ringens* in Peru is the largest fishery in the world in terms of annual catch, and places Peru high up in world rankings in terms of annual catch. In 2022, Peru was ranked third, after China and Indonesia, with a catch of nearly 5.3 million tonnes, of which just over 4.1 million tonnes was anchoveta.

Overcapacity in the fishery was a serious problem at the turn of the century and needed to be addressed. The government proposed an ITQ system in 2002 but there was considerable political opposition to that approach and the idea was dropped. In 2008, the decision was made to introduce a rights-based management approach, which was done in the form of individual vessel quotas (IVQs). An ITQ system had been widely opposed because of fears that it would lead to concentration of rights in a few hands. The IVQ system met those concerns because it did not allow for transferability but was therefore likely to be less efficient as a means to reduce the over-capacity in the fishery. The IVQ system was enacted through the Reglamento del Decreto Legislativo n° 1084 Ley sobre Límites Máximos de Captura por Embarcación ('Maximum Capture Limits per Vessel', see Appendix 1). As of 2010, the fishery consisted of 1 200 purse seine vessels. Those included the large-scale fleet, made up of 608 vessels, most of them steel, with fish hold capacity of more than 120 m³. The other 592 boats were constructed of wood, with hold capacity of between 30 and 119 m³ (Aranda, 2009).

Under the IVQ system, the overall TAC is allocated to individual vessels and allocations are based on a combination of historical catch and hold capacity for the large-scale fleet and entirely on historical catch for the wooden fleet. The IVQ rights are valid for 10 years and are not transferable but if a vessel is scrapped, the right can be allocated to other vessels that belong to the same owner.

Aranda (2009) reported that with 10-year rights, some of the right holders would have been reluctant to undertake major investments because of uncertainty about changes within that period. The concern was being addressed by the implementation of a voluntary Contract of Compromise of Permanence, which guaranteed that the management system would not be changed within the 10-year period. That does not extend the period but provides greater security for the holder within it. The Peru Constitution stipulates that rights over natural resources cannot be granted indefinitely, and a 10-year period together with the Contract of Compromise was considered to provide sufficient incentive to rights holders to invest in restructuring the fleet.

No information could be found on the likelihood of renewal when the rights were due to expire, apart from the statement in Aranda (2009) that the government would be able to review the IVQ

approach and modify it as may be required. Peru is currently developing a national fisheries policy, with a view to improving the competitive ability of fisheries in the market and also to improve sustainability,⁶ which may include changes to the nature and duration of fishing rights.

Thailand

Marine fisheries in Thailand play an important role in the socio-economy of the country, producing approximately 1.3 million tonnes in 2017. The sector overall involves a high diversity of caught species, different gears, a range of vessel sizes and types, and supports over 170 000 fishers (including marine and inland fisheries), of whom 82% were migrant workers. Kulanujaree et al. (2020) reported that until recently, the fishery had effectively been open access, resulting in over-exploitation of resources, overcapacity, and unauthorized fishing inside and outside Thailand's waters. Conditions on many Thai fishing vessels were widely reported to be violating human rights, with many reports of abuses of crew.

Starting from about 2015, Thailand embarked on an effort to comply with Sustainable Development Goal 14, which includes ensuring sustainable utilisation of fish stocks, and in that year brought into effect the Royal Ordinance on Fisheries, with an amendment of the Ordinance in 2017. The Ordinance required that fishing rights have to be aligned with the maximum sustainable yield of the resources and the capacity needed to achieve that.

In order to operationalise that requirement, the fishery resources were split into three categories: demersal, pelagic and anchovies, and two regions: the Gulf of Thailand and the Andaman Sea. MSY was estimated for each category, from which the TAC was determined, and a corresponding number of fishing licenses issued by the National Fisheries Policy Committee. Fishing licenses were valid for two years. It is not clear how the TAC was translated into allowable effort or how that was converted to number of licenses, but the primary control could have been the allowed duration of fishing rather than altering the number of licenses according to TAC.

The implementation of the regulations did achieve a reduction in fishing effort and, in their publication of 2020, Kulanujaree et al. concluded that Thailand was on "the right path" in addressing the problems of overcapacity, overfishing and unregulated fishing. Other reports indicate that there have also been indications of resource recovery, for example, that the catch per unit effort (CPUE) in the Andaman Sea increased from 11 kg/hr to 20 kg/hr between 2017 and 2021, and that in the Gulf of Thailand from 33 kg/hr to 45 kg/hr.⁷

However, the changes also prompted protests by the commercial sector, which argued that the Royal Ordinance regulations had led to lower wages and efficiency as well as 'ruinous' fines.⁸ Objections from the commercial sector to the current regulatory requirements that are most relevant to this review include removing the minimum penalty thresholds for IUU violations, removing restrictions on the number of licenses a person can hold, increasing the allowed number of fishing days per trip and unblocking nearly 1 000 licenses that had been blocked in 2015,^{7,8} all of which would lead to considerable increases in fishing effort.

⁶ Peru preparing national fisheries policy. <https://www.seafoodsource.com/news/premium/environment-sustainability/peru-preparing-national-fisheries-policy-in-addition-to-modifying-existing-fisheries-law> and <https://weareaquaculture.com/politics/promoting-fisheries-and-aquaculture-a-priority-for-new-peruvian-government>

⁷ Joint Civil Society Statement Concerning Thailand's Fishing Sector at a Critical Crossroads, October 2023. <https://www.manushyafoundation.org/thailandsfishingsector>

⁸ Srettha's fisheries approach exposes broader policy failures. <https://eastasiaforum.org/2024/09/16/sretthas-fisheries-approach-exposes-broader-policy-failures/>

In response to pressure from the sector, in February 2024 the Thai government voted unanimously to relax the regulations in order to relieve pressure on the fishing industry. That action has prompted widespread protests from other stakeholders in the fishing sector including business owners, non-governmental and civil society organizations who hold the view that giving in to this pressure and doing away with key regulations would 'return Thai fisheries to a culture of economic and sexual exploitation'^{7,8}

Thailand appears to be in a state of considerable disarray over fishery regulations and access rights and does not provide any lessons of value for this review, other than the well-known pitfalls of open access and unregulated fisheries.

United States of America

The USA has one of the biggest marine fisheries in the world, ranking fifth in terms of annual production in 2022, with a total catch of over 4.2 million tonnes. Catch share programmes were introduced in USA fisheries in 1990, first in the surfclam and quahog fisheries, followed by the wreckfish fishery in 1992. As of 2016, catch share programmes were in place in 16 fisheries in the country (Brinson et al., 2016). The Magnuson-Stevens Fishery Conservation and Management Act (MSA) is the primary fisheries law in the USA. Under the Act, limited access privileges, federal permits, provide the right to "harvest a quantity of fish expressed by a unit or units representing a portion of the total allowable catch of the fishery that may be received or held for exclusive use by a person" (MSA 109-479). Under the Act, the duration of access cannot exceed 10 years, but it is also stipulated that access "will be renewed before the end of that period, unless it has been revoked, limited, or modified as provided in this subsection". The reasons given for revoking, limiting or modifying limited access privileges are failure to comply with relevant terms of a management plan, including conservation requirements, or committing a prohibited act as described in SEC. 307 of the Act (MSA SEC. 303A, see Appendix 1).

Government also has the power to revoke a system of limited access, privilege or quota share "if the system is found to have jeopardized the sustainability of the stock or the safety of fishermen" (MSA 303A (b) (2)). Further, revoking, limiting or modifying any of these systems "shall not confer any right of compensation to the holder" (MSA 303A (b) (2)).

The objectives in introducing these catch share programmes differed amongst the different fisheries and regions but, as in many other countries, a primary objective in the introduction of systems of user or access rights was the reduction of fishing capacity in over-subscribed fisheries. Brinson et al. 2016 identified the following objectives as being common to many of them:

- Reduce capacity
- Lengthen fishing season
- Increase product quality
- Increase ex-vessel price
- Lower costs
- Increase efficiency
- Improve profitability
- Improve vessel safety
- Maintain diverse fleet/small vessels
- Share consolidation
- Community impacts
- New entry/windfall profits

- Effects on support sectors
- Impacts on other fisheries
- Reduce gear conflicts
- Use of quota by non-fishers

While those objectives do not include incentives or disincentives to invest, the economic objectives amongst them are indirectly relevant to this review, i.e. increase product quality, lower costs, increase efficiency and improve profitability. Brinson et al. (2016) used a multi-factor index (MFP) that integrates changes in the product value, the product mix, costs and efficiency to investigate the performance of the catch-share programmes.⁹

In comparing indicators for these objectives for the period immediately prior to the adoption of the catch share programme and the status in 2012 or 2013, Brinson et al. (2016) found that the programmes had been effective in reducing capacity, with a decrease of 24% in the number of active vessels across all fisheries in the first year of the programme and an average rate of decline of 5.1% in the number of active vessels per year since then. The revenue was higher in 2013 than in the baseline period for 9 of the 16 catch share fisheries. For the ten fisheries for which a baseline MFP could be calculated, eight showed increased productivity between the baseline period and 2012. Increases ranged from 19% in the Red Snapper and Grouper-Tilefish fisheries to 132% in the Pacific Sablefish fishery. MFP was 3% lower in the Northeast Multispecies Sectors fishery (but 26% higher in 2011) and 36% lower in the Shoreside Whiting Fishery as a result of lower catches (Brinson et al. 2016).

Examining one of these fisheries in more detail as an example, Bonzon et al. (2010) looked at the process and performance of the Alaska Halibut and Sablefish Fixed Gear fishery. The fishery takes place in federal waters off the coast of Alaska and involves fixed gear vessels of between 35 and 60 feet (11 to 18 m) in length that include longline catcher vessels and catcher-processor vessels. The 2008 catch had a value of USD 245 million. In common with many fisheries, overcapitalization was a major problem and, as raised earlier, by the 1980s the fishery was only open for a few days, during which vessels competed in an Olympic race to catch fish. In order to address the many problems that this created, an individual fishing quota (IFQ) programme was introduced in 1995.

The goals in implementing the programme included a number of biological, economic and social goals, which included maintenance of the historic fleet structure (a mix of large and small vessels), discouraging speculative entry into the fisheries and rewarding participants who invested in the fishery. Brinson et al. (2010) reported that the programme had been successful, that stocks were not overfished, and overfishing was not taking place, and dockside revenues had increased since the introduction of the programme, which had also resulted in fishers having more stable and profitable employment.

The catch shares are described in that review as being granted ‘indefinitely’ to the initial participants, which would seem to be in contradiction with the legal restriction on access rights as being not longer than 10 years. This is not explained further but it is assumed that the high expectation of renewal, as indicated in the MSA, is taken into account in the use of the term ‘indefinitely’. The shares can be revoked for non-compliance with regulations and managers could

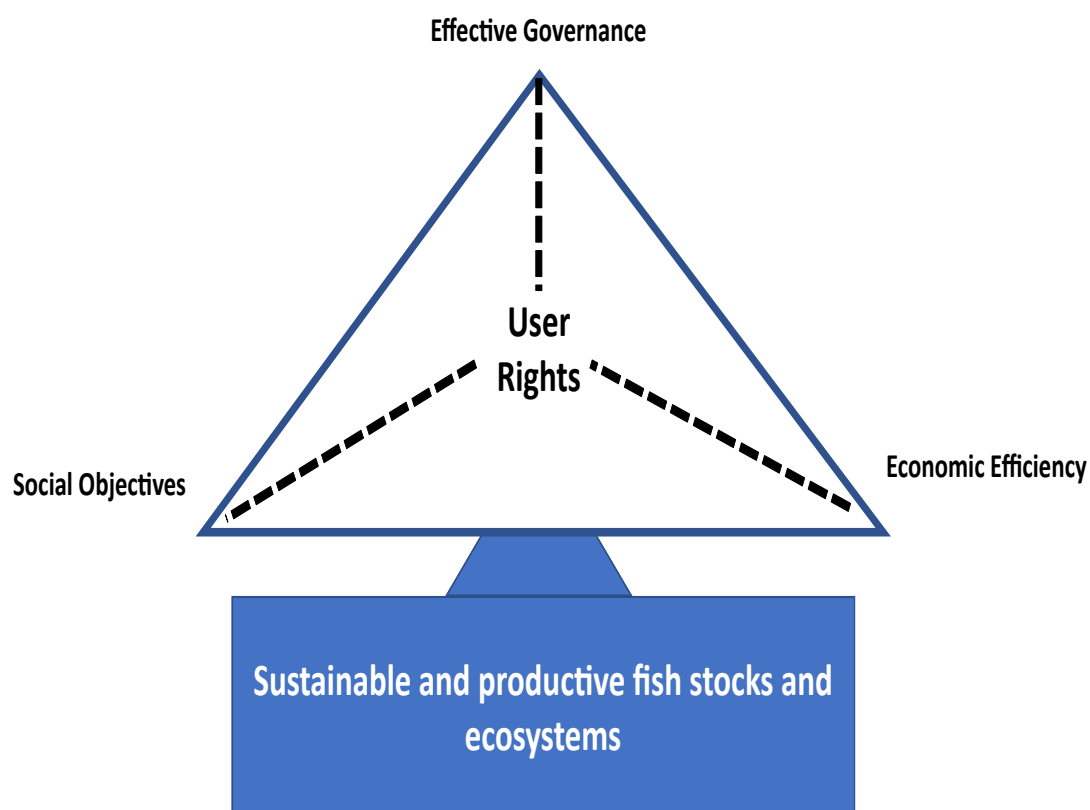
⁹ MFP is defined as the ratio of aggregated outputs to aggregated inputs. Capital, labour, energy, materials and services are included as costs (inputs). Thunberg et al., 2015.

change or end the programme through the necessary processes if required. Permanent or temporary transfer of shares is allowed under specified conditions.

Insights from the case studies

The primary goals of commercial fisheries are to ensure sustainable use of the fishery resources and ecosystems while enabling fisheries to operate in a socially and economically optimal way (Figure 5). The obligation to ensure sustainability of resources is typically entrenched in national law, as it is in South Africa, as well as in international law and agreements, and therefore should underpin any system of use rights. A further requirement is to make sure that the system applied is enforceable and encourages compliance with regulations by right holders. As long as those two prerequisites are being satisfied, the properties of a user rights system can be adapted to favour preferentially social goals, economic goals or, as is probably most common, a compromise between the two (Figure 5).

Figure 5. The foundation and goals of a user rights system in fisheries.



The most important properties of fishing rights that can be adjusted to achieve these goals are exclusivity, security, transferability and permanence, or duration (Figure 1), of which permanence/duration (referred to here as duration) is the focus of this review. In further discussion of duration below, it is assumed that security and exclusivity of rights are assured throughout their duration.

The general impacts of duration on achieving the underlying goals of fisheries management are well understood and common knowledge amongst managers, fishers and other stakeholders. Longer-term rights provide right holders with stronger incentives to invest in a fishery in order to maximize efficiency and obtain optimal value for the products, and to ensure long-term sustainability of the

resources. Participation in governance and compliance with regulations is therefore likely to be greater with long-term rights than with short-term rights.

The potential disadvantages of long-term rights relate mainly to longer-term governance and achievement of political goals, such as equity in social or geographical distribution of right holders and opportunities for new entrants, and the flexibility of governments to be able to respond to substantial change in resource productivity and, sometimes, distribution.

A good, local example of the latter problem can be found in the South African West Coast rock lobster fishery. The exploitable biomass of the resource is currently estimated to be at close to one percent of its original biomass, and the fishing capacity to be far in excess of what is required for the current TACs. As a result, quotas for many right holders are not financially viable (Eggers et al., 2024). The current rights were issued after the allocation process in 2015 and are valid for 15 years. For better or worse, that limits the potential ability of the state, until about 2030, to rationalize rights allocations to adapt to the lower biomass and TACs of recent years, should they decide to do so. In an ITQ or IEQ system, which would allow for transferability, the market could address that problem, but that could generate outcomes at odds with the goals of the MLRA, such as equity in access.

In that particular instance, longer duration (and limited ability to sell or transfer rights) could be seen as a disadvantage, but such extreme circumstances are unusual in well-managed fisheries and, as a basic principle Bonzon et al. (2010) recommend that shares should be allocated “for sufficient length to encourage stewardship and appropriate investment by shareholders and associated industries. This can be achieved by allocating in perpetuity and/or for significant periods of time with a strong assumption of renewal, provided rules are adhered to.”

They complement that principle, noting that there is a trade-off between duration of rights and opportunities for change, with the guidance that there may need to be an appropriate balance between ensuring sufficient duration to give the security needed for investment in a fishery and responsible behaviour, and providing adequate opportunity for new entrants to fishery resources.

The case studies presented in the earlier section of this report provide useful examples that demonstrate the validity of the Bonzon et al. (2010) guidance in practice. A complicating factor when evaluating the experiences of the case studies in terms of duration, is that most of the research into the performance of access rights systems and the available reports consider the combined effects of duration and transferability, generally focusing more on transferability. However, duration underpins the value of transferability and there is therefore an assumption, or knowledge, that the duration in those cases is sufficiently long that it is not a major consideration. As such, the importance of duration can still be discerned from this set of case studies.

Fishing rights in several of the case studies are held in perpetuity, including Australia, Iceland and New Zealand. Similarly, in Norway, fishing concessions, which apply mainly to the offshore fishery, are granted indefinitely (Williams and Hammer, 2000). New Zealand introduced its ITQ system at the time when the country was trying to encourage development of the local fishery in its newly established EEZ, and the rationale behind the system, and long-term rights, was to encourage local interests to develop the capacity to harvest offshore resources (Connor, 2001), which would have required investment in the fishery. In Canada, the law appears to stop short of declaring that fishing privileges are issued in perpetuity but, for example, in the British Columbia Integrated Groundfish Programme, while privileges are granted annually, there is a ‘very strong presumption of renewal’

(Bonzon et al., 2010). As a result of this, Burke and Brander (2000) reported that fishing privileges in the Programme have some of the characteristics of property rights.

Even in these cases, there is some residual uncertainty, for example in Iceland there have been concerns in the past that the ITQ system could be revoked at some stage. In the USA, managers can change or terminate a programme if required by circumstances, in which case they would need to follow specified processes. Despite such residual uncertainty, which is probably unavoidable with the variable nature of marine ecosystems and resources, the records of development in the fisheries of those countries demonstrate that uncertainty has been sufficiently low to encourage substantial investment in and commitment to the fisheries.

The United States of America has pursued a somewhat different approach compared to the above examples, with rights limited to a maximum of 10 years, but that is complemented by the legal commitment that the rights will be renewed except under exceptional circumstances. As noted by Brinson et al. (2010) and Bonzon et al. (2010), this creates an environment in which right holders have been able to have a commitment to and investment in the fisheries, which has led to accomplishment of economic rationalization and development, as well as sustainable use and other goals related to responsible fisheries.

The stipulation in the MSA in the USA that "A limited access privilege ... is a permit issued for a period of not more than 10 years that— (1) will be renewed before the end of that period, unless it has been revoked, limited, or modified ..." contrasts markedly with the attitude to renewal specified in section 18(6) of the South African MLRA, which provides that: "All rights granted in terms of this section shall be valid for the period determined by the Minister, which period shall not exceed 15 years, whereafter it shall automatically terminate and revert back to the State to be reallocated in terms of the provisions of this Act relating to the allocation of such rights."

While, based on previous experience, South African rights holders may have some confidence that their right will be renewed for another period after expiry, the wording of the MLRA is a stark reminder to them and potential investors, that there are no guarantees that it will. In addition, there is typically a delay between expiry of a current allocation and confirmation, or denial, of success in the next round. That also contrasts with the USA commitment to renew 'before the end of the period'.

The example of Namibia is also relevant here, in particular the decision in 2013 to extend the maximum duration of fishing rights from 10 to up to 20 years. An important motivation for increasing the duration of the rights was to enable fisheries in the country to compete on international markets. That requires commitments to and investment in ensuring that the product chain as a whole is economically efficient, and that the quality of products is sufficiently high to meet market demands. The position in the Namibian hake fishery may have changed since the critique by Kirchner and Leiman (2014) was published, but their observations at the time remain relevant in relation to duration and security of rights. They reported that the criteria for allocation were not clear, and the process was not transparent, suggesting also that some holders considered that 'incompetence' was rewarded in the allocation process. All those factors would undermine confidence and the sense of security amongst other holders, which would likely act as a deterrent to investment and weaken the incentives for responsible behaviour. When rights are not held in perpetuity, clear criteria, a transparent process and confidence that good performance and compliance with the criteria will be rewarded when a rights period comes to an end are essential for a longer-term sense of security.

Fishing rights in the Peru anchoveta fishery, issued for 10 years, appear to be the weakest in terms of duration amongst the countries with well-established and implemented fishing rights systems that are reviewed here. Aranda (2009) commented that rights holders in that fishery were concerned about the security of their rights within the 10-year period. The Voluntary Contract of Compromise of Permanence was enacted to give them a greater sense of security within that 10-year period, to encourage them to make substantial investments in the fishery but did not extend it. Peru is currently reported to be in the process of developing a national fisheries policy that is intended, amongst other goals, to enable the fishing industry to be more competitive and sustainable.¹⁰ As of a year ago, the process was about to start with investigations into what will be required to achieve the different goals of the policy. No further information could be found on whether that could include changes to the duration of fishing rights but, from the observations of Aranda (2009), it seems likely that it will.

The examples of China, Ghana and Thailand, which were included in this review to give reasonably broad geopolitical coverage, serve as reminders of the consequences of failing to limit access to fisheries and to provide those with access with a sense of security within a fishery and of stewardship towards it. As demonstrated in those cases, the consequences include over-capacity, economic inefficiency, over-exploited resources and high levels of IUU fishing.

As stated above, it is difficult to disentangle the effects of transferability from those of duration when looking at incentives for investment and development in the case studies, but it is clear that duration and security underpin the attitudes and behaviour of rights holders. In Iceland, the introduction of ITQs, with high confidence in their indefinite duration by rights holders, has led to greater vertical integration, which would have entailed investments, enabling greater security in the markets for products and an associated improvement in product quality and value additions. New Zealand has seen a similar result from its ITQ programme, where the security of tenure for rights holders enabled the sector to compete very successfully in the international market. Implementation of an individual quota system in the purse seine fishery in Norway also led to increased investment in the sector, particularly in increasing refrigeration capacity, which led to improved quality and a higher proportion of catches being used for human consumption. In the British Columbia groundfish programme, the implementation of individual quota systems, effectively in perpetuity, encouraged rights holders to strengthen their planning and become more organized, also including an increase in vertical integration and leading to greater prosperity and more job stability in the fisheries (Burke and Brander, 2000; Bonzon et al., 2010).

There could be concerns at government level that creating conditions for investment and economic rationalization could lead to large scale job losses and concentration of rights in the hands of a few holders, to the disadvantage of those who were unable to compete successfully for whatever reason. That would be likely to occur in an ITQ system with more or less unconstrained ability to trade but, in practice, totally or largely unconstrained transferability is rare and probably non-existent. All the case studies have some legislation in place to avoid these eventualities, which is relevant to duration as well as transferability. For example, caps on the quota shares allowed by right holders as described in the Iceland and New Zealand case studies are common. In Norway, where the primary objectives of the fisheries policy are not only to get the highest rate of return from its resources but also to obtain the best social and economic returns for the benefit of all Norwegians, the country has a policy of limiting access only to those who actually fish, as

¹⁰ SeafoodSource. <https://www.seafoodsource.com/news/premium/environment-sustainability/peru-preparing-national-fisheries-policy-in-addition-to-modifying-existing-fisheries-law>

demonstrated by recent participation in the fishery. In New Zealand, the Treaty of Waitangi Settlement Act, provides for the fair access of the Maori people to the country's fishery resources, and in Namibia, the policy requiring that the bulk of catches in the hake fishery is landed and processed ashore is intended to maintain and encourage local employment. These serve as examples of how wider political goals can be addressed within a rights system, while still providing sufficient duration to comply with the principle of Bonzon et al. (2010).

Conclusions

The impact of duration on the attitudes of rights holders and on the flexibility to make adjustments by managers and policy-makers that would be expected from theory, and simple reasoning, are borne out by the experiences in practice across different countries and fisheries around the world. Rights of sufficiently long duration are essential for giving right holders a sense of commitment to and responsibility for developing economically efficient and sustainable fisheries. Supplementary regulations can be put in place where social goals are also important and need to be protected.

The drawback from a governance perspective is that longer durations give less flexibility to governments to make changes to the number and structure of right holders in a fishery, should the need arise. That is likely to be a concern for governments when transitions in the structure of rights holders are envisaged or underway or when biomass and productivity are forecast to decline, or increase, for example under climate change. In such cases, it needs to be recognized by governments that uncertainty amongst right holders on the duration of their rights will be translated into a reluctance to invest and a reluctance by banks and other financial agencies to make money available for investment. That uncertainty can be reduced through i) ensuring that any planned transitions and the deadline for achieving them are clearly articulated and adhered to; and ii) the government intentions on renewal of existing rights and the criteria for renewal are similarly transparent and adhered to.

Where transitions are not a factor, i.e. where a fishery is mature and no further substantial changes to the number and composition of the body of rights holders are considered necessary, adherence to the principle that shares should be allocated for sufficient length of time to encourage stewardship and investment by right holders is essential for responsible development of fisheries and maximising the benefits. In terms of the objectives underlying the allocation of rights in the deep sea trawl sector,¹¹ the rights need to be long enough, or there needs to be sufficient confidence in renewal, to provide incentives for rights holders to invest in the fisheries and thereby promote local economic development; to encourage their meaningful participation in the fisheries; provide confidence and stability for SMMES to develop; for right holders to have the confidence to create job opportunities and be able to retain staff, and for right holders to be partners in ensuring the responsible and sustainable use of fishery resources.

As can be seen from the case studies, that can best be achieved either by issuing rights in perpetuity or issuing rights for a fixed period, for example 10 or 15 years, but including a legal obligation to renew those rights (before expiry, as in the USA) subject to compliance with clearly specified and defensible requirements, and in the absence of exceptional circumstances such as serious, medium to long-term deterioration in the state of the fishery resources.

¹¹ See Policy on the Allocation and Management of Commercial Fishing Rights in the Hake Deep-Sea Trawl Fishery:2021

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Appendix 1. Summary of Rights in Selected Countries

Summary of the nature and duration of fishing rights in selected countries, as indicated in their national legislation and other references. Only domestic rights are considered here, not rights for foreign vessels to fish in a country's EEZ. Information on the relevant acts and the latest versions was obtained from the FAOLEX database (<https://www.fao.org/faolex/country-profiles/en/>)

Country	Act	Nature of access	Duration	Other comments
Australia	Fisheries Management Act 1991 No. 162, 1991. Includes amendments up to: Act No. 154, 2020	Statutory fishing right. Can specify particular quantity of fish, catch share, specified proportion of fishing capacity, time allocations, etc (section 21). ITQ or ITE access systems are in place in many State and Commonwealth fisheries (Pascoe et al., 2022).	A fishing right remains in force either for a fixed period as specified, or "if no such day is specified, until cancelled or surrendered or it otherwise ceases to have effect, under this Act" (section 22 (4)).	Bonzon et al. (2010) report that catch shares are allocated in perpetuity in Australia.
Canada	Fisheries Act. R.S.C. 1985, c.F-14. Current to June 20, 2024	Minister of Fisheries and Oceans is mandated to issue licenses and make allocations. In practice, access and allocation details mainly addressed in administrative policy (Burke and Brander, 2000).	The Canadian Minister of Fisheries retains the right to cancel or reissue licenses at any time based on performance (Bonzon et al., 2010). In practice, licenses are rolled over every year (Gislason, 2006, referred to in Bonzon et al., 2010).	Holders of fishing privileges have <i>de facto</i> security of tenure (Burke and Brander, 2000). In the British Columbia Integrated Groundfish Programme, a licence must be issued every year but they are granted every year with very strong presumption that they will be renewed (Bonzon et al., 2010).
China	Fisheries Law of the People's Republic of China 1986 (with amendments up to 2013)	Licensing system and limitations on number of vessels and gears. 1999 Zero Growth and 2017 Negative Growth policies	Issuing of licenses intended to be based on the status of fisheries resources and the TAC but rarely followed in	Focus since the turn of the century has been on reducing effort. However, implementation has been inconsistent or absent, including in the licensing system (Huang and He, 2019).

		intended to limit or reduce fishing effort introduced.	practice (Huang and He, 2019).	
Ghana (domestic industrial and semi-industrial fishing vessels)	Act 625 Fisheries Act 2002. Fisheries Regulations, 2010 (L.I. 1968). Fisheries (amendment) Regulations, 2015 (L.I. 2217) – mainly deal with foreign fishing.	A license is required to use commercial or semi-industrial vessel to fish (Fish.Reg. 2010, section 2. (1)). A license is valid for species of fish and method of fishing, as specified in the license (Fisheries Act section 74.) Transfer of a license is only permitted under specified conditions and with permission (Fisheries Act section 75).	License is valid for period not exceeding one year (Fisheries Act section 74) but can be renewed on application subject to conditions determined by the Fisheries Commission (Fisheries Act section 73)	Despite legislative requirements, Ghana has not had a formal system to limit entry into commercial fisheries. In 2012 a moratorium on new entrants was introduced to reduce number of vessels but in January 2023, only 19 of the 76 registered industrial fisheries had applied for a license. There are no regulations that limit the number of semi-industrial vessels (Taking Stock: Ghana, 2023).
Iceland	Fisheries Management Act 1990	ITQ system used for most of Iceland's fisheries. Right holders have catch share entitling them to share of quota. Share is tradable.	Catch shares are allocated in perpetuity (Bonzon et al., 2010).	Right is theoretically permanent but in past have been concerns that ITQ system could be revoked. At present, confidence amongst holders that right is permanent (Runolfssen, 2024).
Namibia	Marine Resources Act, 2000 Policy Statement (Guidelines) for the Granting of Rights to Harvest Marine Resources and the Allocation of Fishing Quotas, 2013	Requires granting of a right to harvest marine resources for commercial purposes. No right to fish may be transferred to another person without permission from the Minister (section 42).	The Act states that the right will be valid for the period prescribed, or otherwise for a period to be specified by the Minister (section 33). In the 2013 Policy Statement (MFMR Namibia, 2013) the duration is given as 7, 10 and 15 years, and a fourth category of 20 years.	Kirchner and Leiman (2014) reported concerns about lack of clarity on criteria for allocation and lack of transparency in allocation process in hake fishery. Hake fishery certified by MSC in 2020.

New Zealand	Fisheries Act 1983 Fisheries Act 1996. Version as at 23 December 2023	Quota is a share of the TAC and is based on provisional catch history. Quotas are transferable. Must hold a fishing permit to be eligible for a quota (FA 1996: section 32).	ITQs are issued in perpetuity (Lock and Leslie, 2007). Fishing permit issued for a period not exceeding 5 years (FA 1996: section 91).	Sections 91 and 93 of FA 1996 indicate that renewal of a permit is automatic unless the permit has been suspended or there are legal reasons why it should be. Bonzon et al. (2010) also report that catch shares are allocated in perpetuity in New Zealand.
Norway	Act No. 37 of 2008 relating to the management and conservation of living marine resources (Marine Living Resources Act). Act related to the right to participate in fishing and hunting (Participation Act), 2000. Version as at 24 August 2021.	For certain fisheries a vessel requires a commercial permit in order to participate. In other cases a 'quota may be allocated to a natural or legal person', who may need to be registered in a separate register (section 12).	No additional information in the MLR Act. Norway Participation Act 2000 states that commercial permits are only granted to those with a recent history of participation and are linked to the occupation of fishing or hunting (section 6). No time period given for licenses, only the reasons for revocation (section 11). Transfer of shares or ownership in a vessel requires Ministry authorisation (section 9).	Norway uses a concession system for its purse seine, groundfish and shrimp trawling fleet. Concessions are held by vessels and receive quotas, catch shares, that are calculated in different ways for the different fisheries. Concessions together with the boat can be traded (Hannesson, 2005). Concessions are granted indefinitely and permits for one year but are routinely renewed and can also be considered to be indefinite (Williams and Hammer, 2000).
Peru (anchoveta)	Ley General de Pesca No. 25977, 1992 (General Fisheries Law). Reglamento del Decreto Legislativo n° 1084 Ley sobre Límites Máximos de Captura por Embarcación	A "Permiso de Pesca" is required to fish (Art. 43). Decree 1084 established an individual vessel quota allocation (IVQ) scheme. Rights are non-transferable.	Validity of rights is 10 years. Contract of Compromise of Permanence guarantees that the management system will not be changed in 10 years (Aranda, 2009).	Fishing permits may expire and thus become invalid if vessel does not report fishing effort for more than two years, or for failure to pay fishing fees (Taking Stock: Peru, 2021). Preparations underway for development of a new policy - https://www.seafoodsource.com/news/

				premium/environment-sustainability/peru-preparing-national-fisheries-policy-in-addition-to-modifying-existing-fisheries-law
Thailand	Royal Ordinance on Fisheries B.E. 2558 (2015) Royal Ordinance on Fisheries (No.2) B.E.2017.	A fishing license required by anyone who wants to engage in commercial fishing. The license pertains to a vessel and gives details of the fishing activities allowed (section 36, 2015 Ordinance). The 2015 Ordinance specified that a fishing license can only be transferred to a relative (section 44). 2017 Ordinance (section 44) allows for transfer to others subject to certain conditions.	The Act does not specify a period of validity but in section 45 states that consideration can be given to reducing the maximum number of licensed vessels if the state of the resource requires it (section 45).	At present, the Thai government appears to be undoing important aspects of the Royal Ordinance in ways likely to lead to increasing over-capacity and higher IUU fishing (see references to news items in section on Thailand).
United States of America	The Magnuson-Stevens Fishery Conservation and Management Act (MSA).	MSA outlines requirements for limited access privilege programs, a type of catch share.	Duration cannot exceed 10 years but “will be renewed before the end of that period, unless it has been revoked, limited, or modified as provided in this subsection; “ (MSA 303A). Systems of limited access, privilege, and quota share can be revoked or modified at any time “including revocation if the system is	Bonzon et al. (2010) states that catch shares in the USA can be allocated for 10 years “with a strong presumption of renewal”.

			found to have jeopardized the sustainability of the stock or the safety of fishermen” (MSA 303A (b) (2)). In the event of revocation, limitation or modification there is no right of compensation for right holders ((MSA 303A (b) (3)).	
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