

# Chapter 16

## Creating Action Space: Small-Scale Fisheries Policy Reform in South Africa

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**Abstract** The main argument of this chapter centers on whether formalizing governance processes and drafting a small-scale fisheries policy will decrease vulnerability and improve the livelihoods of small-scale fishers. Findings suggest that with no one organization representing fishers in the communities of Struisbaai and Arniston along the southern coast of South Africa, the space is wide open for the elite (rights holders) to capture the benefits. The inability to access rights through formal channels has forced a situation where many fishers resort to poaching, even within the marine protected areas (MPAs). The analytical framework draws on concepts related to the institutional dimensions of fisheries governance; the formal and informal action space for developing a new small-scale fisheries policy for South Africa; and the vulnerability of fishers with weak agency. Data were collected mainly through qualitative methods from key informants, focus group interviews, household interviews, and participatory observations at the local community level.

### 16.1 Introduction

The main argument of this chapter centers on whether the governance processes involved in drafting a small-scale fisheries policy and the declaring of marine protected areas (MPAs) will reduce vulnerability and improve fishers' livelihoods.

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### 16.1.1 *Conceptual Framework*

The conceptual framework draws on the concepts of fisheries governance and the formal and informal nature of “action space” in the context of developing a new small-scale fisheries policy for South Africa. Barberton and Kotze (1998) place their understanding of action space in the broader political context, and use the notion as a metaphor for the reform process in South Africa that symbolizes new possibilities and new opportunities for the poor through the democracy. These alternatives for the poor are created through the new governance structures and organizations to shape the social, economic and political reform processes.

Formal provisions of the Marine Living Resources Act (MLRA) (Act No.18 of 1998) created opportunities more for the elite than the poor to access fishing rights in the post-apartheid era from 1994 to 2006. This left the *bona fide* fishers outside the formal allocation process (Isaacs 2003, 2006; Isaacs and Hara 2007; Isaacs et al. 2007). The formal provisions also include the impact of marine protected areas on adjacent fishing communities; e.g. Arniston and Struisbaai.

Formal action space will be explained in the context of broader governance processes, which dictate the formal action space for drafting a small-scale fisheries policy, this time with the participation of civil society and community representatives who previously formed part of the informal action space in voicing their discontent with the formal rights allocation process. Informal action space refers to the marginalized, poor and vulnerable fishers’ with organizational structures, and their abilities to implement small-scale policy to alleviate poverty.

This chapter situates the concept of action space within the institutional dimension of governance process and structures, to address poverty and reduce vulnerability of the poor and marginalized fishers. The works of Scott (1985, 1990), Ostrom (1990), Agrawal (2002), Wilson et al. (2003), Jentoft (2006), and Paavola (2006) are all useful in understanding and situating these concepts. The qualitative methodology focused on research through fieldwork, and the findings are presented by case studies followed by analysing the key themes. The discussion brings together the findings and conceptual framework by highlighting the politics involved in formalizing the informal, and how institutions are created and recreated to suit the needs of the elite.

More specifically:

- To what extent has the new action space created by the drafting of the small-scale policy made fishers less vulnerable?
- What formal and informal institutions were created to manage the resource?
- To what extent have marine protected areas and the rights allocation system impacted on the livelihoods of fishers in local communities such as in Struisbaai and Arniston?

The conclusions look into the implications of elite capturing; poaching in marine protected areas; the impact from the lack of institutions representing fishers; and what effects these have on the small-scale policy. Finally, recommendations are offered for areas of further research.

### ***16.1.2 Formal Action Space***

South Africa has a long history of commitment to marine protected areas, dating back to 1964 with the proclamation of the first marine protected area in Tsitsikamma. MPAs in South Africa are guided by a number of legislations, but their mandate is in the Marine Living Resources Act (MLRA) of 1998 (Act No. 18 of 1998; section 43) – namely, to conserve species and ecosystems, to rebuild fisheries stocks and to facilitate proper management of an MPA through reducing potential conflict between competing uses.

Parts of the National Environmental Management Protected Areas Act of 2003 (Act No. 57 of 2003) also apply to MPAs; e.g. protected areas should have integrated consultative management and cooperative governance, promote ecotourism and yield benefits to local communities, while still prioritizing the conservation of biodiversity.

The National Environmental Management Biodiversity Act of 2004 (Act No. 10 of 2004), provides for regular assessment of the nation's biodiversity, protection of threatened and endangered species and ecosystems, and where applicable, assists local communities to benefit from biodiversity through activities including sustainable use and bioprospecting.

Finally, the Integrated Coastal Management Act of 2009 sets out frameworks for consultation, particularly where part or most of an area is not contiguous to a terrestrial protected area.

In South Africa, there are currently 20 declared MPAs, with 3 more having been formally proposed. One of these, Cape Agulhas, is located next to one of the case study sites, Struisbaai. These current MPAs offer a degree of protection to 20% of the coastline, and a high level of protection to approximately 9% of the habitat. The statuses of certain coastal marine stocks, in particular line fish, are very poor in South Africa, with a number of stocks regarded as endangered. Fishing access, to some degree, occurs within 12% (of the overall 21%) of South Africa's coastline that falls within MPAs.

Recognition of the need to secure that traditional communities obtain an equitable share of the benefits of protected areas is a well-entrenched principle in the legislative framework. The same is true for recognizing traditional rights; and the need to ensure that the communities participate in, and benefit from, these areas. This is particularly so for the terrestrial areas covered by the Protected Areas Act but less so for the MPAs, as the MLRA is not specific on these aspects (Sunde and Isaacs 2008). The MLRA allocates rights on an individual basis to commercial, recreational and subsistence fishers. Fishing communities are not recognized as rights holders, and neither are the artisanal fishers.

The emphasis on social and economic justice was important in bringing about a paradigm shift in conservation in South Africa leading to attempts to balance conservation and development needs. A more inclusive approach of community-based conservation gained ground as the solution to exclusive state control. However, the marginalization of the small-scale sector within fisheries policy and management in

this country, in general, spills over into the management of marine protected areas. This contributes to the further exclusion of these fishers and undermines their traditional livelihoods.

With the advent of the new democracy in 1994, the Reconstruction and Development Plan (RDP) supported equitable redistribution of resources, especially to those communities who derive a livelihood from the sea. Governance structures must be in place to assist people with access and management of resources. However, South Africa had a well-established fishing industry; and to maintain its competitive nature at the same time, the state had to redistribute access rights equitably to existing and potential new entrants. Reallocation of fishing rights was soon construed as a means of creating a space for all previously disenfranchised individuals and groups, but not necessarily in a way that the impoverished fishers and coastal communities would benefit. The goal of reallocating fishing rights was to transform the sector based on gender and race; not to alleviate coastal poverty (Isaacs et al. 2007).

Those fishers who did not fit into the formal rights allocation process formed part of the informal category of fishers, and they were defined by the Marine Living Resources Act 18 of 1998 as subsistence fishers. Hence, the Department of Environmental Affairs and Tourism (DEAT), through their line agency Marine and Coastal Management (MCM), allocated Individual Transferable Quotas (ITQs) to commercial right holders, and subsistence and interim rights to individuals mainly as a social relief programme to poor fishers. The informal fishers and communities on the west coast of South Africa were discontented with the ITQ rights allocation system and decided to challenge this system legally.

In 2004, the Artisanal Fishers Association, Masifundise, and the Legal Resources Center, with the support from academics, launched a class action suit against the Minister of the Department of Environmental Affairs and Tourism (DEAT). This case, *Kenneth George and Others vs. the Minister*, used the Constitution and the Equality Act (2004) to litigate on the social and economic impacts of the reform process (allocation of fishing rights). This case was to be heard in the Equality Court. In April 2007, the claimants of *Kenneth George and Others* agreed to put the case on hold, provided that the small-scale fisheries and subsistence policy would be reassessed with broader participation and input from various stakeholders.

### ***16.1.3 Informal Action Space***

Before 1994, there was no formal space for poor fishers to access rights, and they used the recreational permits to fish and harvest species in the open access area. The fisheries sector has been industrialized since the early 1900s, and the resources are fully utilized, which means that the reallocation of access rights is much more limited.

In the coastal communities of Struisbaai and Arniston (the case study areas of this chapter), those individuals with the necessary social, political and human capitals (i.e. the elite), were able to succeed in the formal action space in accessing fishing rights.

The vulnerable poor groups (i.e. the subordinates), without the necessary capitals failed to do so and are without rights. They form part of the crew on the boats of rights holders.

The works of Scott (1985, 1990) help to understand the complexities of the informal action space – through his notion of hidden transcripts; and the onstage and offstage performances of actors. Scott (1990, p. 4) argues that members of the subordinate group construct hidden transcripts as they congregate *offstage*, to speak and act outside the purview of the elite. Because these private conversations are unknown by the elite (in terms of their existence and content), subordinates can speak more freely without fearing the consequences of being overheard. This freedom results in a hidden transcript, somewhat conspiratorial in nature. The hidden transcript provides a means for subordinates to covertly express their antagonism toward the dominant, and to strategize their actions, while overtly complying with the rules of the dominant outside of their hidden transcript.

Scott's (1985, 1990) concepts of “onstage” and “offstage performances” can help understand how the poor exercise and structure their acts of defiance (e.g. poaching for abalone in marine protected areas) against the formal fishing rights application process. His work on hidden transcripts helps to relate the acts of the marginalized poor fishers as agency from below, according to fishers in Arniston:

We poach during the night and day. Spring tide, during full moon is the best time to go for abalone as we are able to see. We take whatever we see. We do not have any other options, no fishing rights, and no restricted areas to fish. We know it is illegal, but we are struggling to survive.

In South Africa, the poor and marginalized fishers have weak agency, they have few assets and are capital poor, with low numeracy and literacy skills. These fishers also fit into Hogan and Marandola's (2005) conceptualization of vulnerability, by describing them in the context of the social disadvantages they experience, which makes them products of poverty. Here, the concept of vulnerability is situated in the social, political and economic processes, creating a useful tool to analyze the socio-economic vulnerability of SA small-scale fishers.

In Hogan and Marandola (2005, p. 458), the Economic Commission for Latin America researchers identify that: “If left to the mercy of the market of opportunities – the citizen is without rights and is forced to negotiate assets and empowerments, according to his or her management capacity.” Furthermore, vulnerability is therefore expressed as restriction of rights, whether economic, political or social. It is here where poverty and exclusion come in – the restriction of the right to dignity, to health, decent housing, to be respected, to be allowed political participation, to be represented, to speak and to be heard.

According to the livelihoods framework, as described by Leach et al. (1999), success depends on the resilience of the households, their access to resources and their ability to shape and reshape institutions. This could imply that the new action space created by the drafting of the small-scale policy will generate benefits to those with the necessary agency, assets and skills. Hence, the nature, design and dynamics of locally based institutions to manage the implementation of the new small-scale

policy are critical to the marginalized and vulnerable fishers, and the ability to effectively deal with the escalating poaching activities.

### ***16.1.4 Formalizing the Informal – Drafting of the New Small-Scale Fisheries Policy in South Africa***

In November 2007, DEAT committed to address access rights to poor fishers through developing a small-scale fisheries policy, which, as of the date of this chapter, is still under development. The court challenge of drafting a new small-scale policy resulted in formalizing the informal. The governance processes involved in declaring marine protected areas is another form of formalizing the action space, which has impacts on the livelihoods of the “informal” actors. The new draft for small-scale policy made no mention of marine protected areas and the impacts on coastal livelihoods.

The creation of a new small-scale fisheries policy is an instrument to bring the hidden transcripts to formal space or, in other words, formalizing the informal. The formal processes include forming alliances (same as above) to put pressure on the government (court application) to recognize the poor fishers who were left outside the formal allocation system; and to show their discontent with the formal ITQ rights allocation process. The governance processes involved in getting the MCM to recognize small-scale fishers, and to develop a small-scale fisheries policy for South Africa resulted in the informal action space becoming formal.<sup>1</sup>

## **16.2 Institutional Dimensions of Fisheries Governance**

Agrawal (2001, p.1653) states: “The local community efforts to manage and govern resources depends on four sets of variables: (a) characteristics of resources; (b) nature of groups that depend on the resources; (c) particulars of institutional regimes through which resources are managed; and (d) the nature of the relationship between a group, and external forces and authorities such as markets, states and technology.” According to the works of Ostrom (1990) and Agrawal (2002), governance functions relate to the rules that provide for exclusion, create entitlements, regulate users, provide for monitoring of the resource and structure participation and decision-making.

Jentoft (2006) argues that diversity, complexity, dynamics and vulnerability are key structural properties in governance systems. Wilson (2003) states that since formal and informal institutions are always changing – even when such changes are not dramatic shifts in written laws and basic organizational structures, marginal changes are happening through evolving interpretations and shifting degrees of compliance.

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<sup>1</sup> See Sect. 1.2 for what happened with the out-of-court settlement and small-scale policy processes.

These constant changes are formed by competitive processes in which different groups seek to push institutions in the directions they desire (Wilson 2003). This statement is also supported by Leach et al. (1999, p. 12): “Social actors alter their behavior to new social, political and ecological circumstances”... hence, “institutional flexibility and dynamism are essential.” They also warn us that some institutions claim to promote collective good, and then reproduce exclusion and marginalization of certain actors. Institutions are thus shaped by politics and power.

Paavola (2006) argues where there are conflicts over environmental resources, the choice of an institution is a matter of social justice more than efficiency. Here, “social justice includes the values and motivators of agents’ influence, and what is considered just in a particular institution” (Paavola 2006, p. 96). Hence, the legitimacy of environmental decisions or governance outcomes involve both distributive and procedural justice, which include recognition, participation and distribution of power. “Distributive justice matters in a broad sense to whose interests and values will be realised by the institution; whilst procedural justice plays a role in justifying decisions to those whose interests and values are sacrificed to realise some other interests and values” (Paavola 2006, p. 97).

Paavola’s arguments on social justice are useful in situating action space created by the informal actors through the litigation process. Social justice is key in legitimizing the allocation of rights to those who were excluded from the ITQ process; and could possibly lead to reducing poaching activities, provided access in marine protected areas is considered.

### 16.3 Methodology

Struisbaai and Arniston, along the southern cape coast of South Africa, were selected for this study. The selection criteria were based on their small-scale fishing activities, the low technology gear, the species they target, their dependency on marine resources, their poverty and unemployment levels, and that they reside next to or within a marine protected area. The methods used were qualitative in nature, and included the use of participatory observations, the use of key informants, four focus group interviews and 15 selected household interviews. Fieldwork was conducted over a period of 2 weeks in November 2008; 2 weeks in May 2009; and 1 week in March 2010. Interviews were with fishers, traditional line-fish rights holders, boat owners and entrepreneurs.

In each community, a focus group meeting was held to introduce the study and to discuss the key issues around governance and management of the resource, such as conflicts. Subsequently, 15 in-depth household interviews were conducted. The study also made use of key informants to assist with arranging interviews, and to serve as contacts when not conducting fieldwork. The study was guided by an interview schedule around the themes of governance, local institutions, small-scale policy awareness and process, and the impacts of MPAs on livelihoods. The interviews addressed a number of specific questions such as: (1) What do people perceive to be

the main issues that small-scale policy should consider? (2) What are the resource constraints and conflicts? (3) How were they able to resolve conflicts over scarce resources? (4) What is their relationship to (if any), or problems with large-scale operators? (5) What explains their successes and failures?

## 16.4 Case Studies

South Africa has many settlements along the West Coast, dependent on harvesting marine resources, either for sale or directly for human consumption. Although most of these settlements were established around the processing industry, people in the two communities presented in this chapter, Struisbaai and Arniston in the Southern Cape region of the Western Cape Province (Fig. 16.1), have traditionally fished for sale and subsistence. From the time the waters adjacent to these communities were declared marine protected areas, their livelihoods have been negatively impacted,



**Fig. 16.1** Field sites along the southern cape of South Africa. The two communities where research was conducted – Arniston and Struisbaai – are in close proximity to the southernmost point in Africa, Cape Agulhas of the Western Cape of South Africa



leading to the increase of poaching. Sunde and Isaacs (2008) argue that in MPAs with adjacent small-scale coastal communities, it is imperative for management to consider local and indigenous knowledge and management practices in the zoning process. Currently, fishers do not acknowledge the findings of scientists, as they were not consulted. They also enter the MPA area regularly to harvest in the no-take zones. A multiple uses zoning approach can provide high levels of protection for specific areas, while allowing sustainable harvesting activities to occur in other zones – thereby separating out conflicting uses.

Isaacs (2003) argues that the formal action space created by the MLRA failed to respond to the fundamentally heterogeneous social, political and economic nature of fishing communities in South Africa, particularly neglecting the importance of creating institutional structures to interface with poor communities. With the informal action space becoming formal with the drafting of the small-scale policy, the need for locally based institutions to implement policy is imperative. This is no less true for the governance of MPAs.

The two communities where research was conducted are in close proximity to the southernmost point in Africa, Cape Agulhas of the Western Cape of South Africa. In Arniston, the population is 1,373 with 458 households; whereas Struisbaai has a population of 2,052 with 1,588 households. The majority of the fisher households fall in the low-skilled category with basic literacy and numeracy skills. The unemployment rates in both areas are staggeringly high, at 61.5%. Twenty percent of the households in the two communities are on the government welfare system; and 85% of the households earn less than 426 US dollars per month (Cape Agulhas Municipality's Draft Integrated Development Report 2009/2010).

Income generating activities are mainly seasonal with fishing as the most important source of livelihood followed by farm work and domestic cleaning services. Other livelihood activities include harvesting of sour figs to make preserves, and berries to make cleaning wax. These species are now in protected areas and 100 permits were allocated to women in Struisbaai who either sell to buyers from Cape Town or makes fig preserves for the local market. In Struisbaai and Arniston, poor people have to cope with both land and sea protected areas. In both areas, the women form part of the government public works initiative *Working for the Coast*.<sup>2</sup>

Both Struisbaai and Arniston are important tourist destinations for international and domestic tourists. Yet, tourism opportunities rarely filter through to fisher households. Fishing trips are organized by entrepreneurs from outside the area who recently moved to Struisbaai. At the harbor, fish is processed and sold, but no colored rights holders are involved. In Arniston, some fisher households are involved in lodgings, crafts, and restaurants to cater to incoming tourists. These opportunities are individually operated by households.

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<sup>2</sup>*Working for the Coast* is a Department of Environment and Water Affairs initiative to address coastal poverty. Workers are paid 8 US dollars a day to clean the coast from debris, rubble and waste.

### 16.4.1 *Struisbaai*

Fishing in Struisbaai (and Arniston) can be traced to the first nations *KhoiSan* through the use of *vyfers* (fish traps) in the intertidal zone. Species such as elf (*Pomatomus saltatrix*), harder (*Liza richardsonii*), kolstert (*Diplodus sargus capensis*), strepie (*Sarpa salpa*) and galjoen (*Dichistius capensis*) were caught in these traps. The traps were maintained by clans and families, and women would harvest, gut, cut and cook. As part of the MPA community development program, there is a proposal to rehabilitate the fish traps and allocate to fishers to diversify their livelihoods from harvesting in restricted areas. The fish harvested in the traps will only be for subsistence. However, fishers in Struisbaai do not agree with this initiative, as they need to sell their harvest and engage in commercial activities to sustain their families. Currently, they are interested in using faster boats to target high-value species.

Many fisher families who reside in Struisbaai were evicted from an area called Skipskop, for the use of Armscor (now Denel) as a weapons testing ground. Currently, the area forms part of the de Hoop marine protected area declared in 1989.<sup>3</sup> Fishers recollect the abundance of marine resources they harvested in the open access inshore zone to sustain their livelihoods. Since 1998, a new fisheries policy was enacted, which contains new regulations on all inshore resources. Fishers now have to have permits to harvest species, which before were accessed openly for subsistence. Furthermore, they have to comply with regulations in terms of quantity, size and area restrictions. Although marine and coastal scientists make it clear that these restrictions are based on scientific research, fishers feel they were not consulted and local and indigenous knowledge was not considered to be relevant.

In the past, line-fish species used sail boats in the inshore zone to target multiple species. Currently, most of the fishing activities in Struisbaai during summer target yellow tail and cape salmon. In winter, beach seine was used to catch harders (*L. richardsonii*) – the main fishing activity and source of livelihoods. Before, the stock was sold to local businesses in Bredasdorp and carted on horses. Processing methods such as drying and salting were common to provide protein during winter. Since 1994, rights allocation was informed by an ITQ approach and the supply of raw fish began to be sold at the Cape Town market for higher prices. Traditional methods of drying and salting were therefore lost to the more lucrative demand for fresh fish in the greater Cape Town market.

### 16.4.2 *Arniston*

Arniston is in close proximity to the Armscor, now the Denel missile testing grounds; and when testing happens (four times a year), the boat onshore is compensated

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<sup>3</sup>Both the MPA and weapons testing site were declared at the same time in 1989, and fishers used to fish in these zones.

R4800, if at sea R7500, which gives the fisher R200 for the day. Fishers still criticize the rationale for a missile testing site in a marine protected area. They claim that: “The sounds disrupt the spawning, and influence the growth of juveniles.” They also say that: “Testing not only impacts on fishing areas, but also livelihoods.” Fishers call this fishing area “dead sea.”

Currently, individual rights were allocated in west coast rock lobster, hake, abalone, line fish and wild oysters. However, these rights do not provide economic opportunities for women or fishers, as most of the species are harvested outside the area, and it is expensive to transport crew from the area to the fishing ground.

In the past, fishers used beach seine to target harders (*L. richardsonii*), which they salted, dried and sold to local farmers. The harders are locally known as *bokkoms*, and provide protein to farm workers in the Western Cape Province. Processing methods of salt dried harders and other species were common during winter. In 2006, no beach seine permits were allocated to Struisbaai and Arniston. With no winter species allocated in the area, many fishers and local authorities experienced a negative impact on the income, and an increase of poverty levels.

Angling, beach seine and fish traps were traditional sources of subsistence during winter. In both communities, fishers and rights holders echoed the need to reinstate the beach seine rights. They also raised concerns about the price increases of the recreational permits from the 2010/2011 season of 500%. Fishers use the recreational permits for angling. They state that the exorbitant increase in permit tariffs will result in fishers resorting to illegal fishing.

In Arniston, *Kassiesbaai* refers to the colored fishers who reside in the traditional stone and thatch roof houses. In 1932, a *visserunie* (fisher committee) was established to manage the land allocated to the community. The committee’s main function was to deal with basic services to households and to pay property tax to the community. Each title deed is privately owned, and the owners pay their services and property tax to the committee, who in turn pays to the municipality. The committee has been working for several generations and often recruits new and younger members. The old fisher stone houses with thatch roofs were proclaimed as a South African Heritage site. This proclamation does not, however, mean much to the community, as they do not get any income from tourism.

The committee does not discuss any issues relating to rights allocation, permits, poaching, etc. Further, the committee has not capitalized on the tourism opportunities. However, fishers are providing accommodations in fisher households, craft centers, family restaurants and two mobile “fish and chips” outlets at the harbor. The committee feels they need to ask visitors for a fee for viewing their houses and for taking pictures of the homes. There has also been some talk about establishment of a tour guide for visitors; but none of these initiatives have been implemented. A challenge for the committee to diversify tourism opportunities is that each household is privately owned, and this adds to the difficulty in developing proposals and funding as a community. One fisher alludes to, “the running of the fisher union to that of a church and not as an economic interest.”

### ***16.4.3 Mismatch Between Policy and Practice***

In Struisbaai, there are 6 ski boats and 16 chukkies (motorized wooden boats) with a crew of 8 fishers on each boat. The allocation of permits is based on Total Allowable Effort (TAE). Regulations are also based on the number and size of the boats. Marine and Coastal Management (MCM) would like to decrease the effort on the line-fish species, and to decrease the number of boats to 450 due to the resource constraints.

Chukkie boat owners argue that they need to convert their motorized boats to ski boats due to the distance to the fishing grounds, and the time it takes to get there. According to them, they need to cover 15 nautical miles offshore from Struisbaai harbor, and with the chukkies it can take up to 5 h. Fishers indicate that the fish are no longer within the 4 mile inshore zone, but have moved to deeper waters due to ocean temperature changes. They also blame the commercial pelagic boats targeting the food (anchovy, sardine and mackerel) of yellow tail and cape salmon. The pelagic boats are moving to their areas to harvest anchovy, sardine and mackerel, which is what the yellow tail and cape salmon feed on.

Rights' holders and fishers in Struisbaai agree that the Territorial User Rights Fisheries (TURF) system promoted by the small-scale fisheries policy will not work for them. They explained: "We are hunters and the fish we target are migratory so we should be too." They therefore want access to other areas, to target line fish. With ski boats, they can fish from the 5–8 mile zone, and even reach the 20 mile zone and also other areas. In Arniston, the rights holders and fishers are content for now to continue fishing with the chukkies in the 3–8 mile zone, provided MCM allows them to harvest inside the MPA.

In Struisbaai, the biggest issue for rights holders and boat owners is the urgency to convert their chukkie permits to ski boats. The main motivation for doing so is economics. According to the chukkie rights holders, the white rights holders were allowed to harvest with ski boats, and they yield around R200,000 per week in the season. The crew on the boats earn to the maximum of R3,000 per week for a period of 8 weeks, as yellow tail and cape salmon are sold raw for R20–30 per kg domestically. The chukkie rights holders are aggrieved by the amount of money the mainly white boat owners earn. For example, 500 tonnes of yellow tail, which equates to R10 million, were harvested in 2008, and mainly by ski boats.

In 2006, as part of the new permit regulations (given to rights holders in the traditional fish sector), boat owners were required to place a Vehicle Monitoring System (VMS) onboard. The VMS costs between R3,700 and R8,000, and R300 per month for air time. This was too expensive for the rights holders, and in Struisbaai they decided to protest against the installation of these units. In 2006 and 2007, they applied for an exemption to implement the VMS, which was granted; but in 2008, they were unsuccessful, yet they continued to fish. Masifundise supported the rights holders with their application due to the costs involved. In March 2008, MCM sent a team of inspectors to Struisbaai to investigate if permit holders had installed VMS systems on their boats. Fish were confiscated and fishers were arrested and fined up to R2,500. Soon thereafter, with the support from Masifundise, fishers showed

their discontent through a peace march, and subsequently moved to blocking the harbor. The fishers also spoke to the local councillor and to MCM regarding their situation.

The rights holders and fishers in both fishing communities also argue for local economic development to focus on poverty alleviation. For this, they need access to land, Hazard Analysis and Critical Control Points (HACCP) infrastructure and markets. They want to move to ski boats, and to extend their harvesting area. According to one chukkie rights holder, the boat and fishing zone restrictions are, “keeping us behind from benefitting from the economic development. We need and want to go big with the promise to share. We need speed.”

The relationship between crew and boat owners is also uncertain as fishers indicated that they are not sure of a job; one day they work and the next day they can lose their place on the boat, and this is entirely within the power of the skipper. They feel exploited and vulnerable as they do not have a right of permit to fish, and all the power is given to the skipper. All fishers have gone through survival training, and according to them this makes them legitimate fishers. The crew and rights holders work according to the principle of a 50/50 split of the earnings.

The 50% that goes to the rights holder includes the maintenance of the boat, fuel and bait. The remainder is split between the crew of eight. Fishers feel that a few people monopolize the value chain, and that they are being exploited as the price per kg ranges from R12 to R30/kg. Rights holders are not transparent, and fishers feel exploited yet desperate for work. They would like a more collective system of allocating rights; modernization of their boats; to be able to fish more species and in other zones (i.e. targeting snoek); they want a more transparent market structure; that fishers get more benefits from the value chain; and state subsidized modernization of boats. Fishers are strongly critical of commercial line-fishers from Cape Town who are allowed to harvest in their area using modern technology (speed boats). This means that within 1 week, they harvest tonnes of fish. If they (traditional line-fishers) were the only fishers allowed to harvest yellowtail and cape salmon during the summer season, they would have more fishing days.

#### ***16.4.4 Role of Women***

The role of women in fishing communities needs to be understood within social and cultural contexts (Fig. 16.2). Their customary role is mainly to support their husbands/partners in the pre- and post-harvesting activities associated with line fish and beach seine. The women in Struisbaai and Arniston used to gut and wash fish until fishers decided they can get more money by gutting and cleaning it themselves on the boats. They also assisted their spouses in maintaining the fish traps. Today, only one fisher continues to maintain the use of fish traps.

Rights holders, fishers and women in both communities have different perspectives on the role of a small-scale fisheries policy to guide management, rights allocation,



**Fig. 16.2** The creation of a new small-scale fisheries policy is an instrument to formalize the informal fisheries, and promote the role of women in the post-harvest activities. Picture taken by Mafaniso Hara

zones and species. They all agree that pronouncements on new MPAs and accessing MPAs should be part of the small-scale policy.

### **16.4.5 Governance Structures**

In both communities, local organizations are constantly being created and recreated to suit the needs of the fishers. There is no one organization that speaks on behalf of the whole community. This also seems to be convenient for some rights holders as they plan which organization to address their specific needs to at the time. This is mainly what the elite rights holders do, while the fishers without rights have no voice. Although there is representation in both communities from the following organizations – Masifundise, Coastal Links, Arniston *Vissersunie*, Confederation of South Africa Trade Union (COSATU) and Struisbaai *Vissersforum*, it was difficult to find one community organization representing the needs of all the fishers.

In Arniston, the *vissersunie*'s role is mainly to protect the heritage of their land rights and traditional fisher houses from outsider investment. In the past, they used to deal with fisheries issues; but over the last 20 years, the conflicts between different family groups has led to fishers not identifying with this body. In 2002, the Masifundise NGO expanded their focus of advocating land rights to include the

rights of traditional fishers who have been excluded from the formal allocation process. The organization promotes the need for fishers to be organized and mobilized to fight for human dignity and livelihood rights.

In 2004, Masifundise launched Coastal Links to strengthen local leaders' knowledge on fisher rights, gender, allocation regimes, management systems and developments in the drafting of the new small-scale fisheries policy through regular workshops in various regions. In Struisbaai, there is a mismatch between the traditional line-fish rights holders and what Coastal Links promotes. Rights holders are clear: "We want to convert traditional line-fish permits to ski-boats." This is contrary to what Coastal Links promotes, which are TURFs and traditional methods of harvesting.

However, in Arniston, Coastal Links has gained many members through the allocation of interim relief rights,<sup>4</sup> and it seems they are making more impact on those who were left outside the formal allocation process. "We would have still been without fishing rights had it not been for the work of Coastal Links," according to a fisher interviewed. Coastal Links represents 70 members of the Arniston community, and this includes young people, women and fishers on the interim relief permits.

Struisbaai *Vissersforum* was established in October 2007 comprising six rights holders. In 2008, the municipality of Agulhas indicated their support to the forum, but rights holders felt they would lose their independence and would be absorbed in municipal structures.

In November 2009, after President Zuma visited the region to listen to the issues facing fishing communities, it was recommended to establish a fishing desk to address problems facing fishing communities. Subsequently, through the local authority, both Struisbaai and Arniston created fisher forums that will have a direct link to the office of the Minister of Agriculture, Forestry and Fisheries. Local authorities have also created livelihood opportunities through government road works, subsidies through the VMS system, and they have established nutritional centers during winter to address poverty alleviation.

The rights holders in both communities use the governance structures in the following ways. Masifundise and Coastal Links in Struisbaai seem useful when they need to organize a protest, i.e. VMS and to get media attention. A Masifundise protest assisted in placing a moratorium on installing VMS in March 2008. They used the local councillor and municipal manager to access funding to purchase the VMS system.

In 2009, the Industrial Development Corporation of South Africa (IDC), through the local government, subsidized all rights holders with installing the VMS system (more details below). Fishers advocate poverty relief during winter in poor households. In 2008, each poor household received R435 in food vouchers.

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<sup>4</sup>In May 2007, just before the inquiry in the Equality Court was due to begin, the Minister of Environmental Affairs and Tourism agreed, with the consent of all parties, to find a long-term policy solution for more than 1,000 traditional artisanal fishers. The agreement later became an order of the court, providing for relief mechanisms to allow fishers to subsist, and reserving 120–140 t for poor fishers.

In 2009, nutritional centers were established in both communities to provide one warm plate of food daily during winter. The local authority used the newly formed ANC fishing desk to lobby for the reinstatement of their abalone rights. In January 2010, abalone rights were reinstated in Arniston.

### ***16.4.6 Marine Protected Areas and Fisher Livelihoods***

Arniston resides within the Arniston Marine Reserve, while there is a process of declaring Agulhas an MPA, which will affect fishers in Struisbaai. Many fisher households were removed from Skipskop and Ryspunt, 60 km and 50 km, respectively, from Struisbaai (Fig. 16.1). These areas form part of the de Hoop MPA and Arniston MPA declared in 1989. Many fishers claim that fishing in the MPA is their historical right, and that they have not derived any economic benefits or compensation for this move. Furthermore, since the 1970s, the fisheries department has strategically declared their fishing areas as part of marine reserves; and from 1989, they have been allocated only small areas to harvest. In Arniston, fishers state that: “It does not make sense to fish in the same place every day for 20 years; we will only deplete the resource.”

Currently, the best fishing areas are within the MPA, and fishers enter the restricted areas regularly. Although it is mandatory to have VMS on the fishing boats, they view it as a policeman, and switch it off when entering restricted areas. Fishers generally feel that MCM is practicing double standards, more keen on protecting the resource than their livelihoods. “How will they replace our fishing grounds?”

In Arniston, fishers’ state: “If the MPA is there to protect the marine resources, how can you test weapons in the protected zone? In our area, they are keen to protect the weapons and the fish, but not the fishers and fishing communities.” Fishers also question why recreational ski boats are allowed to enter their fishing grounds. “The MPA had a negative impact on the livelihoods to the community. The MPA makes us criminals in our own fishing grounds.” In both communities, people questioned why MCM is over-regulating marine resources. As one fisher in Arniston puts it:

There are too many permits and regulations – during apartheid we had open access to resources in the inshore fishing zone. Then we were more free, there was a sense of community and values of sharing, helping each other.

### ***16.4.7 Poaching***

The many new restrictions and permits have given rise to increased poaching activities. The costs of permits, registration, taxes and fuel make the allocation unviable and have also led to poaching. In both communities, there are fishers who poach for



subsistence. In recent years, there has also been an increase in youth getting involved in poaching abalone, especially at night. This has also led to an increase in criminal activities in the communities. According to fishers, the poaching of abalone is getting out of control, especially with the younger men who are unemployed. Fishers attribute the rights allocation process, no-take zone in MPAs, the lack of livelihood opportunities and a means of accessing quick and easy money for the younger generation as reasons for the unmanageable state of poaching.

In a focus group interview with fishers who often access the MPA and fish under-size species, there were echoed a number of requirements that need to be in place before they will comply with regulations and participate in the management of the resource. One of the most critical issues is to have open access in the de Hoop marine reserve – a traditional harvesting area which has been a no-take zone since 1989. They feel that scientists regularly conduct research in their fishing zones, but do not include local and traditional knowledge into their research. They would like scientists to engage and consult fishers and communities when conducting research and provide information on the stock assessments.

Currently, scientists are making recommendations to MCM that impact on their livelihoods which they view as “unfair, unjust, unequal.” Fishers call for a review in the size restrictions of certain species that could be used as food security, especially during the winter season. When MCM communicates new regulations to communities, it should be in their local language, which is Afrikaans.

When the question was posed if the community will be able to manage the resource, allocate access rights, have access to and harvest sustainably in MPAs and address the poaching, fishers stated that it would be difficult. Poaching has become too big for them to deal with, as organized crime is involved. It has become dangerous because gangs use firearms to access abalone. However, they think that management would have to include the poachers in the allocation of rights in order to make them comply with the regulations.

## **16.5 Discussion**

### ***16.5.1 Small-Scale Fisheries Governance***

The informal action space within the small-scale fishery governance system has been occupied mainly by marginalized groups, and fishers who have been constrained by social disadvantages, lack of assets, limited communication skills and low numeracy and literacy skills. Some of these groups have shown their discontent with the governance system by embarking on litigation against the formal rights process.

A national task team representing fishing communities, NGOs, academics and government officials has now developed a new small-scale policy. The Department

of Agriculture, Forestry and Fisheries<sup>5</sup> (DAFF) is in the process of following up suggestions from the task team, and consulting with various stakeholders before finalizing it into an official policy document. The task team is promoting collective rights, multi-species allocation and Territorial User Right Fisheries, in a co-management system.

This is contrary to the mainstream ITQ model adopted by DEAT in implementing long-term fishing rights in 2006. However, the government and many rights holders in the inshore zone are not in agreement with the task team on collective rights allocation.<sup>6</sup> It was decided that further and broader consultation with existing rights holders on allocation regimes for the small-scale policy will be necessary before a decision will be taken. In Struisbaai, there is a mismatch between policy and practice; i.e. what the rights holders and fishers would like to see in the small-scale policy.

First, fishers say the allocated species are not found in this area. Second, fishers want to migrate with the fish – move from one zone to another. Since they are traditional line-fishers, they have restricted zones; but commercial line-fishers<sup>7</sup> with speedboats from greater Cape Town and the West Coast regions are allowed to fish tonnes of yellowtail and cape salmon during the season. They operate in the zones allocated to traditional line-fishers. If the small-scale fisheries policy could prevent commercial line-fishers to harvest in traditional line-fishers' zones, then they would have more fishing days. Third, Struisbaai fishers want the west coast rock lobster to be part of the multi-species allocation. Fourth, they want to modernize their vessels to target fish in the 15–18 mile zone. In Arniston, fishers are satisfied to fish in the 3–8 mile zone provided the MPA is open for sustainable harvesting. Finally, rights holders are holding onto the ITQ system, while fishers without rights would like to move to more collective rights allocation. It is clear that fishers are asking for a mix of the two approaches; they prefer a hybrid rights allocation model for the small-scale fishery.

### ***16.5.2 Formal and Informal Institutions***

Leach et al. (1999) state that access rights to natural resources are shaped by institutions and, at the same time, institutions are confirmed and reshaped repeatedly by livelihoods. In Struisbaai and Arniston, a number of local organizations are constantly

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<sup>5</sup>In April 2010, Marine and Coastal Management split into the two ministries, Department of Environment and Water Affairs and Department of Agriculture, Forestry and Fisheries (DAFF). All the policies, regulations, allocations, management and administration of fisheries will be under the auspices of DAFF.

<sup>6</sup>This was stated in the small-scale fisheries policy workshop with stakeholders on 7 and 8 May 2010.

<sup>7</sup>In Struisbaai, only traditional line-fish permits were allocated with the long-term rights in 2006. However, commercial line-fish permit holders are allowed to migrate from greater Cape Town and the West Coast to target yellowtail and cape salmon.

being created and recreated to suit the needs of the fishers at the time. Although Arniston has had an established *Vissersunie* since 1932, this body currently only deals with the land rights and services to the community. Due to the intergenerational conflicts and family splits, fishers do not recognize this body as truly representative of their needs and interests.

Coastal Links, the community-based organization which links to Masifundise, forms part of the litigation process against the long-term rights allocation process. They have gained more members through the allocation of the interim relief permits in Arniston. The Struisbaai *Visserforum* (Fisher forum) only represents the rights holders and not the fishers. Since the forum is an initiative of the local municipality, its independence from local authorities is questioned. Coastal Links and Masifundise (NGO) were used to stage a protest march in Struisbaai to place a moratorium on VMS on boats; whereas the African National Congress (ANC) fishing desk<sup>8</sup> and Masifundise were used to lobby for the reinstatement of abalone rights in Arniston. The elite (rights holders and community representatives to NGOs) are constantly scheming on which organization would best serve their needs. In some cases, more than one institution would be used to achieve their goals, i.e. VMS on traditional hand line boats. However, when an organization is established at the local level, the nature and structure of the organization are often set by the elite to serve their needs, and effectively exclude poor fishers with weak agency.

Not having a representative body to deal with fisher struggles, management, development and conservation at the local community level seem to be in the best interests of the rights holders. My findings also indicate that there is a constant struggle between the rights holders (elite) and crew (subordinate), to the extent where the latter feel exploited. The crew would like to move to a more collective system of rights; while it is in the best interests of the rights holders to keep the current ITQ system.

Fishers show their discontent with the system, local elite, regulations and MPAs through poaching. Hence, the action space for small-scale fishers created by the new democracy in South Africa is constantly created and recreated depending on the agency of the groups and individuals. Those with no agency, the vulnerable, marginalized, unskilled and unorganized will resort to what I (with reference to Scott (1985, 1990)) have called “hidden transcripts” and “weapons of the weak” (i.e. poaching). Agrawal and Gibson (1999) also warn us of elite capturing with devolutions of rights and responsibilities, which indirectly reduce access to the poor. What Webster and Engberg-Pedersen (2002) say about lack of political agency of the poor is also true for small-scale fishers in Struisbaai and Arniston:

While the political agency of the poor in some cases remains only potential – it remains a central element in the process of poverty reduction... The political agency of the poor can be qualified in three ways. First, the poor constitute a very heterogeneous category, only in

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<sup>8</sup>The ANC majority party in government formed a group of representatives from local, district and provincial officials to sit on the ANC fishing desk. The goal of this group is to address the issues facing fishing communities along the southern cape.

extremely rare cases acting in a collective and co-ordinated manner. Secondly, political actions of marginalised groups may have indifferent or detrimental consequences for other poor people, due to the highly structured world of poverty. Finally, the informal, elusive, sometimes questionable nature of the poor's political agency, as land disputes are not only taken to various authorities for settlement, but are also characterised by violence, poisoning and witchcraft accusations (Webster and Engberg-Pedersen 2002, p. 257–258).

Poverty alleviation, inclusive development and environmental protection should be central themes in fisheries policy (Wilson 2003). The fisheries governance process should recognize the economic struggles over allocation of resources and political struggles over management decisions. Moreover, the politics of fisheries governance depends on who participates in working together to achieve common fisheries policy goals. Participation can be achieved through mobilizing one's own stakeholders group to achieve narrow goals, and as a mechanism for holding management systems accountable (Wilson 2003).

The creation of a new small-scale fisheries policy is a necessary step toward addressing poverty in coastal communities in South Africa. It has also created space for fishers to hold management structures accountable for the impacts of long-term rights allocation. However, it is crucial for fisher communities to benefit, especially the marginalized poor; and to create local community institutions that address poverty. Co-management of the marine resources is what government, NGOs and CBOs are advocating in the draft of the small-scale fisheries policy. The question remains whose responsibility it is to create these institutions.

### ***16.5.3 Livelihoods and MPAs***

Conservation of marine resources and creation of sustainable livelihoods in coastal communities has been hotly debated in South Africa. However, fisheries managers are simultaneously strongly influenced by fisheries science and the promotion of a strict precautionary approach. In the last few years, fisheries management in South Africa has adopted an ecosystem management approach to fisheries, and declared 20% of the coast as MPAs.

The way the tension between the conservation and social justice imperatives shapes the management of MPAs in South Africa needs to be understood in the context of the vulnerability, structural poverty and livelihood needs of coastal communities in South Africa (see Gustavson et al. 2009). The work of Almudi and Kalikoski (2010, p. 231) in Peixe Lagoon in Brazil contributes to the academic debates about the “incompatibility of no-take protected areas and livelihoods of traditional peoples where they coexist”; and, “there is an urgent need to share control (of marine reserves) with the most vulnerable.” The World Summit on Sustainable Development in 2002 promoted the link between conservation, social equity and poverty reduction. Experiences from the Philippines indicate that integrating conservation with promotion of livelihood opportunities adds to the MPA success (Tobey and Torell 2006).

The planning and implementation of MPAs require solid knowledge from ecological as well as socio-economic and cultural disciplines. The use of traditional knowledge is also critical, in addition to science in designing MPAs, which meet the dual objectives of generating local benefits and preserving biodiversity (see Almudi and Kalikoski 2010; Berkes 1999; Tobey and Torell 2006). Gelcich et al. (2009) adds the importance of meaningful local fisher communities' input into MPAs. Sarkar (1998) stresses the importance of traditional societies continuing to exist, as they have developed cultural practices of resource use that maintain their cultural values and local biodiversity.

The use of a mix of modern science and traditional knowledge is imperative in the allocation of fishing rights, agreeing on fishing gear, and regulating fishing activities. This will increase community participation, heighten awareness of benefits from effective management (and co-management) regimes, increase the likelihood that biodiversity conservation and fisheries management will be achieved and thereby increase the efficiency of management decision-making (Sunde and Isaacs 2008).

Research in fisheries in South Africa has been scientifically biased with a concentration on bio-ecological research and very little in terms of social science and human ecology research. With the resurgence of the fortress conservation approaches to protecting biodiversity, South Africa's constitution and democracy created an enabling environment for legislative and strategic frameworks to find consensus between conservation needs and developmental needs of South African citizens.

However, the political will and commitment to implement this must be conveyed to the marine science community; with a fundamental paradigm shift facilitated so that a partnership between local fisher communities and fisheries scientists can be established. The implementation of integrated research projects that harness the indigenous knowledge of the fishers; secure participation; and demonstrate the tangible benefits of MPAs will contribute enormously to gaining support for the objectives of the MPA authorities (Sunde and Isaacs 2008).

MPAs and permit restriction have negatively impacted on the livelihoods of fisher households, especially during winter.<sup>9</sup> Fishers echoed the role of marine scientists in informing MCM management regulations without the fishers in their studies. Since the scientists have impact on the amount and size of the fish that can be harvested, this also impacts on fishers' livelihoods.

Fishers recollect how, in the past, the inability to access rights through formal channels and the quick and easy money to be gained, forced many fishers to resort to poaching, even within the MPAs. With size regulations in place, they are unable to harvest what they traditionally used for their own consumption to subsist. In Arniston, fishers are convinced that the weapons testing sites have had a negative consequence for the habitats and breeding of fish. They question why no research has been done on how this impacts on their livelihoods. Fishers also feel that their local and traditional knowledge of the area is not considered by scientists conducting research.

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<sup>9</sup>During summer, fishers mainly harvest migratory species such as yellowtail and cape salmon.

A study by Dennis (2009) found that although fishers in the area understood the importance of protecting marine resources, they are excluded from the conservation and research processes in their fishing zones. Their families have fished in areas for generations and their local knowledge could potentially be beneficial to the research and management processes. Yet, this knowledge is not perceived as relevant by government or others who are involved in the design of the MPAs.

When authorities declared a MPA in traditional access areas of communities, they did not compensate communities for their loss. Neither did they provide communities with viable and sustainable employment alternatives or mechanisms that would reduce vulnerabilities or curb unsustainable harvesting practices. Access to MPAs was restricted, which led to the loss of livelihoods and to low compliance. Many fishers were left with no other alternative than to continue to fish as usual. With very little to no economic opportunities for younger fishers in the area, they resort to harvesting abalone illegally as a means of earning easy money.

In Arniston, fishers are concerned that with abalone poaching, there is now more disposable cash available among the young who resort to abuse of alcohol. With no co-management arrangement assisting MCM; the permit-, species- and zone restrictions in the traditional fishing grounds of small-scale fishing communities; no consultation with fishers with implementing new restrictions; declaring marine protected areas; and imposing restrictions on high-value species such as abalone and west coast rock lobster in their area; all pose tremendous challenges on development of a suitable management framework. It is clear that the current MPA model in South Africa has not been effective, and fishers are increasing their poaching activities.

According to Almudi and Kalikoski (2010), no-take MPAs are incompatible with fisher livelihoods. Fishing communities need long-term rights to resources to be in place before a system of shared decision-making, rule creation, monitoring and enforcement between fishers and authorities would be a possibility. Hence, new legislation for MPAs and small-scale fisheries policy needs a paradigm shift and alignment of social equity, conservation and economic development of affected communities.

## 16.6 Conclusions

The drafting of the new small-scale fisheries policy in South Africa has created an enabling environment for fisheries that has helped them to formalize their role and struggles in the governance process. The new policy has recognized artisanal fishers as a group, and it seems that the policy will adopt a collective rights system where appropriate, such as TURF zones, community-based management structures and multi-species allocation. However, these gains at the policy level are not necessarily what fishers in Struisbaai and Arniston want most in practice, and this will most probably be the case in many other small-scale communities around the coast.

To address the mismatch between policy and practice, certain conditions need to be in place; locally based management structures that are attuned to the relationship

between poverty reduction, environmental sustainability, and the allocation of resources. Also essential is a community structure that promotes social justice and accommodates marginalized poor fishers and commercial rights holders. The small-scale policy should therefore guide the management plans of local communities, and this should be adaptable to the local setting and conditions. Policy should consider a hybrid system of rights allocation.

The ITQ-based approach of a one-size-fits-all model has failed in poor communities over the past 15 years, and has resulted in the elite capturing the rights at the expense of the poor. A cooperative system to manage the processing and marketing of inshore resources should be considered, especially with high-value species that target the export market. This would ensure value chain benefits to the community. The action space for women in the post-harvest activities should be strengthened. DAFF should secure fisheries rights and develop a management policy for MPAs that would benefit local communities. There needs to be clear and strong linkages to the current draft small-scale fisheries policy, especially in the southern cape area where poor communities reside adjacent to MPAs. With the low numeracy and literacy levels of many fishers, there is a need for adult basic education when training fishers or communicating new regulations and policy. To achieve these conditions, more state involvement and support would be necessary, i.e. directed funding from local government for infrastructure to fish harvesting, processing and marketing.

The current ITQ allocation framework has been biologically biased, and allocation decisions were strongly influenced by the general reform processes in South Africa to achieve equity on the race and gender fronts. With regard to poverty alleviation, interim relief measures were, in many instances, allocated ad-hoc to give in to political pressures from fishing communities.

To be more successful in alleviating poverty, promoting local economic development and achieving environmental sustainability, a paradigm shift is clearly needed. There should be trans-disciplinary teams created, comprised of scientists, social scientists and economists, etc. to address these problems and feed their research into management decisions. Moreover, inputs from fishers, based on their local and indigenous knowledge, should form an important part of this process.

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