

# Multi-stakeholder process of co-designing small-scale fisheries policy in South Africa

Moenieba Isaacs<sup>1</sup>

Received: 27 January 2014 / Accepted: 21 September 2015 / Published online: 22 October 2015  
© Springer-Verlag Berlin Heidelberg 2015

**Abstract** In 2005, a group of researchers, community-based organizations and lawyers got together with small-scale fishers to launch a class action law suit against the government of South Africa in its allocation system of Individual Transferable Quotas, on the ground that the system was unfair to small-scale fishing communities and threatened their right to practise their livelihoods. This effort resulted in the cabinet adoption of a new small-scale fisheries policy in 2014, with amendments being made to fisheries law (the Marine Living Resource Act 18 of 1998) to accommodate the issues and concerns of small-scale fisheries. Draft regulations and an implementation plan have recently been released, paving the way for the implementation of small-scale fisheries allocations in 2016. These legal and policy shifts are of great significance for small-scale fisheries, both in South Africa and elsewhere, and deserve careful examination. This paper discusses the processes leading to the development of a new small-scale fisheries policy and what has followed since. Specifically, the analysis focuses on a variety of collaborations between scholars from different disciplines; researchers from multiple fields; community practitioners representing diverse professional and community perspectives; and community organizations across local, state, national and international levels. The paper uses a model of change that crosses research and practitioner boundaries based on three key strategies: getting noticed; organizing at scale; and getting a seat at the negotiation table. It also considers the

“transdisciplinary” process of involving all relevant actors in strategic, collective, reflection–action–reflection–action “from below”, which was crucial in the co-designing of this small-scale policy formulation in South Africa.

**Keywords** Small-scale fisheries · Policy · Co-designing · Participatory action research · Transdisciplinary

## Introduction

Fisheries governance in South Africa requires the building of bridges not only between people of different personalities, cultures and politics and across race, class and gender, but also between scholars from different disciplines and research fields. Since the achievement of democracy in 1994, the need to reform the fisheries sector to address inequities and correct the imbalances of the past has been acknowledged. Fisheries scientists have seen the transformation of the fishing sector both as a unique challenge (Isaacs 2006; Raakjær Nielsen and Hara 2006) and as an opportunity to promote transdisciplinary collaborative research in order to overcome this challenge (Paterson et al. 2010).

There have been many policy, legislative and institutional changes since 1994 with the ushering in of a democratic society in South Africa to which research in the marine and coastal environment has responded. However, there has been a resistance within the marine science community to the shift to a more applied and relevant science, and to calls for the continuity of traditional paradigms of disciplinary research in the post-apartheid period (Scott 2013). In the past, marine science was generously funded and scientists could pursue their own interests with little recognition of the broader context of social inequality

---

✉ Moenieba Isaacs  
misaacs@uwc.ac.za

<sup>1</sup> Institute for Poverty, Land and Agrarian Studies (PLAAS),  
University of Western Cape, Private Bag X17,  
Bellville, Cape Town 7935, South Africa

(Scott 2013). Marine scientists and research projects funded by the National Research Foundation have recognized the importance of social science research which is multidisciplinary and interdisciplinary in nature (Sowman et al. 2013). However, in reality the transdisciplinary experiment in South African fisheries reform has remained an academic exercise demonstrating the methodology and challenges that social and natural scientists face when working together.

The value of transdisciplinarity is that it offers an opportunity for research collaboration in post-apartheid South Africa to overcome the seemingly overwhelming social and political challenges (Paterson et al. 2010). Transdisciplinarity, if undertaken with the necessary commitment, provides a framework for developing trust, common vision and common values (Paterson et al. 2010). Key characteristics of transdisciplinary research, according to Kessel and Rosenfield (2008), include:

“Rigor, openness and tolerance are fundamental characteristics of the transdisciplinary attitude and vision. Rigor in argument, taking account all existing data is the best defense against possible distortions. Openness involves an acceptance of the unknown, the unexpected and the unforeseeable. Tolerance implies acknowledging the right to ideas and truths opposed to our own” Article 14 of the Charter of Transdisciplinarity, Kessel and Rosenfield (2008: 226).

This paper refers to another definition of transdisciplinarity that speaks to the need to include all relevant actors, especially non-academic actors, in the process, where social scientists are working with social actors on the developing and co-designing of robust policy formulation and the sustainable implementation of the small-scale fisheries policy of South Africa.

This paper examines the role of transdisciplinarity in the fisheries policy reform and transformation currently taking place in South Africa. It aims to describe the process and highlight lessons that other nations may find useful. Specifically, it looks at different types of collaboration between fishers, community organizations and lawyers. It covers the conceptual underpinnings of participatory transdisciplinary research (Fox 2004; Pohl 2011; Stokols et al. 2003; Stokols 2006; Mobjork 2010; Hackmann and St. Clair 2012) and situates the action research process in the policy arena. A class action case to secure social and economic justice in South Africa for small-scale fisheries is used to illustrate the potential and challenges to co-designing policy, and to explain the process and outcomes of a group of researchers, lawyers, community-based organizations, NGOs working together to implement change in fishing communities along the coast of South Africa.

The paper begins by exploring the theoretical context of the concepts of multidisciplinary, interdisciplinary and transdisciplinary research and moves on to looking at transdisciplinary collaborative research. It draws on the works of Stokols et al. (2003), Stokols (2006), Fox (2004), Mobjork (2010), Pohl (2011) and Hackmann and St. Clair (2012) in examining participatory transdisciplinary research between researchers, practitioners and community representatives. In the discussion, the paper reflects on initiatives that are currently underway in small-scale fisheries, and draws general lessons.

## Methodology

The empirical work for this paper was gleaned through a participatory action research process—where the author formed part of the group launching the class action case in 2005. The author’s Doctoral research was used as evidence for the class action lawsuit and she was a claimant with a supporting affidavit. She was elected on the national task team by community representatives to draft the new small-scale fisheries policy for South Africa. The author was actively involved in raising awareness of the case at national, regional and international forums and conferences of the right to livelihoods and food security of small-scale fishers in South Africa. She collaborates with international research projects such as Too Big To Ignore (TBTI) to support the small-scale fisheries policy implementation process and capacity building of small-scale fisher organizations in South Africa.

An interactive process of strategic, collective, reflection–action–reflection–action “from below” was crucial for the co-designing of small-scale fisheries policy formulation in South Africa, and to constructing “virtuous circles” of authoritative and accountable natural resources governance in reality. Over the past 10 years since the launch of the class action case, the group was constructing “virtuous circles”, a term used by Fox (2004: 3, 6) to refer to the process of “mutual empowerment between institutional reformers and social actors in the public interest”. The “virtuous circles” often take a form of roundtable meetings, workshops, research presentations and focused group sessions on key challenges to the policy.

The paper documents the complexities, diversity and dynamic processes involved in collaborating with multiple societal actors to form a transdisciplinary team and also note the outcomes of this collaboration since the launch of the class action case. This case study is situated in the policy arena where a group of researchers and social actors collaborated in order to address socially (as opposed to academically) relevant issues, i.e. social and economic justice for small-scale fishers in South Africa.

## Theoretical context

Stokols (Stokols et al. 2003; Stokols 2006) states that in promoting integrative and collaborative research that crosses multiple disciplines, a distinction needs to be made between multidisciplinary, interdisciplinarity and transdisciplinarity. According to Rosenfield (1992), multidisciplinary is a process in which researchers from different fields work independently or sequentially, each from his or her own disciplinary perspective, to address a particular research topic. Interdisciplinarity, on the other hand, entails a greater sharing of information and closer coordination among researchers from various fields than in multidisciplinary projects. In both interdisciplinarity and multidisciplinary research, participants remain anchored in their respective disciplinary models and methodologies. However, multidisciplinary approaches maintain and assert disciplinary boundaries (Nicolescu 2005), whereas interdisciplinarity draws from different disciplines in order to work towards a common goal (Rosenfield 1992).

Building on the cross-disciplinary debate Mobjork (2010: 867) is of the opinion that there are three interconnected dimensions based on: “the degree of integration, the scope of the collaboration and the motives behind the research. Cross-disciplinary approaches and disciplines are shaped by a multitude of historical, institutional and societal elements which are changing over time”. This type of research challenges disciplinary boundaries and constructs breakthroughs relevant to theory, policy and practice (Stokols et al. 2003; Stokols 2006). For the most part, however, it is an academic exercise of documenting the constraints and challenges of working in a team to develop shared conceptual frameworks and methodologies, and it rarely includes the practitioners and communities affected by the research.

In recent years the notion of transdisciplinary research that crosses disciplinary and practitioner boundaries has gained traction (Fox 2004; Stokols et al. 2003; Stokols 2006; Mobjork 2010; Pohl 2011; Hackmann and St. Clair 2012), highlighting the differences between academically and socially relevant issues. Pohl (2011: 619) explains that “transdisciplinarity is research that transcends and integrates disciplinary paradigms in order to address socially (as opposed to academically) relevant issues. The rationale for transcending and integrating disciplinary paradigms is that academic knowledge, organized from a disciplinary perspective, has to be re-organized and re-assessed in order to be relevant for addressing socially relevant issues”. Pohl further defines participatory transdisciplinarity to include non-academic actors, either through consulting or through their participation in framing the problem (knowledge production in the context of application). A more

philosophical definition states that “transdisciplinarity adds the search for a unity of knowledge to a concept” (Pohl 2011: 619).

Stokols (2006) classifies three types of collaborations in transdisciplinarity and the contextual circumstances that enable and constrain them:

1. Collaboration among scholars representing different disciplines;
2. Collaboration among researchers from multiple fields and community practitioners representing diverse professional and lay perspectives; and
3. Collaboration among community organizations across local, state, national and international levels.

The basis of transdisciplinarity is the dual collaboration that includes both academia and social actors. This dual collaboration can be in the form of consulting or participation. Consulting transdisciplinarity is a research approach fulfilling the basic requirements of transdisciplinarity in terms of the problem focus, collaboration between researchers from various disciplines and between researchers and practitioners, and evolving methods. In this approach the involvement of non-academic actors in knowledge production is limited, while with participatory transdisciplinarity the social actors (practitioners) are actively involved in knowledge production and their inputs are equally valued. The key difference between consulting and participatory transdisciplinarity lies in the role of the practitioner/social actor (Pohl 2011).

Key to the debate in transdisciplinarity is therefore the extent to which social actors are involved in the co-designing and co-production of knowledge (Mobjork 2010; Hackmann and St. Clair 2012). Stokols (Stokols et al. 2003; Stokols 2006) digs deeper into the debate on consultative and participatory transdisciplinarity by drawing on the methodology of action research to stress the importance of collaboration between research, community members and policy makers. Lewin’s (1951) concept of action research highlights the scientific and societal value of translating psychological research into community problem-solving strategies. Action research, also known as participatory action research (PAR), is a community-based study, a co-operative enquiry, an action science and an action learning (Whitehead et al. 2003). Meyer (2000) contends that action research demands that participants perceive the need to change and are willing to play an active part in both the research and the change process. Researchers work with practitioners as equals, must obtain their trust and must agree on the process of change and outcomes. They serve as facilitators of change, consulting with participants not only on the action process but also on how it will be evaluated. The researchers who draw on the

reality and experience of the practitioners can therefore generate findings that are meaningful to the practitioners. Stokols links action research to transdisciplinary research and coined the term transdisciplinary action research (TDAR). He seeks to better understand the processes and outcomes of research projects that enable and constrain effective transdisciplinary collaborations across scales (Stokols 2006, 2011; Thering and Chanse 2011).

The framework of TDAR creates an enabling environment for studies to extend beyond the socially constructed boundaries of traditional academic disciplines. It encompasses a far wider array of epistemologies or knowledge cultures, ranging from the lived experiences of local residents to the highly specialized knowledge of scientists and the organizational knowledge of community decision-makers. The TDAR framework entails key differences between scientific collaborations, community problem-solving coalitions and inter-sectoral partnerships, all of which are integral facets of TDAR, but they pertain to a varying scale or scope. In developing the framework for scholarship of TDAR, Stokols (2006) suggests three axes:

1. Geographic scale (e.g. local, community, regional and national/global);
2. Analytical scope (e.g. social/environmental and community/policy); and
3. Organizational scope (e.g. intra-organizational, inter-organizational and inter-sectoral).

The complexity of the project depends on the *geographic scale*. The *analytical scope axis* indicates the difficulty of crossing disciplines. The *organizational scope axis* illustrates the increasing management responsibilities of integrating organizational and bureaucratic protocols (Thering and Chanse 2011).

The classification of TDAR collaborations is essentially a programmatic tool that can enable researchers and practitioners to anticipate and manage a variety of conceptual, interpersonal, institutional and environmental circumstances that are likely to affect the scope, complexity and ultimate success of teamwork. The principles of effective transdisciplinary collaborations must be derived on a case-by-case basis through the collaborative field experiences of researchers and practitioners as they occur and are documented over extended periods of time (Stokols 2011; Rios 2011). Based on a number of case studies on TDAR (Carlson et al. 2011; Chanse 2011; Schorth et al. 2011), Stokols (2011: 2–3) suggests adding the *temporal scope* of research–practitioner collaborations by arguing, “The longer the partners from multiple community sectors work together, the more they are likely to achieve and sustain productive collaborative processes and outcomes”. In the South African case, the paradigm shift from ITQ rights allocation to collective rights in the new small-scale

fisheries policy had a temporal dimension to this process. It started in 2005 with the court challenge to the ITQ system, and in 2014 the rights of small-scale fishers are realized in law and March 2016 is the expected date of allocating rights to small-scale fishers.

How is policy perceived in transdisciplinary research? The International Social Science Council (ISSC) (see Hackmann and St. Clair 2012) views the space of robust policy and sustainable implementation as providing new ways of producing knowledge and hence of promoting co-design and the co-production of knowledge across scientific borders and national boundaries, and between so-called research users. According to Hackmann and St. Clair (2012), the ISSC supports research that is “inter-disciplinary: including and working across all disciplines and fields of science; trans-disciplinary: collaborating with multiple societal actors, including decision-makers, practitioners and civil society organizations; and global in nature: working with multiple socio-geographic perspectives and approaches, incorporating communities of practice and epistemic frameworks from all parts of the world” (Hackmann and St. Clair 2012: 9).

### **Interactive fisheries governance: actions from below**

Crucial to the understanding of fisheries reform in South Africa is situating the research within fisheries governance. Fisheries governance refers to “an intricate web of public, private and hybrid institutions interacting in a complex manner to administer and regulate the sector” (Garcia 2009). A more recent development is interactive governance, which views fisheries governance as an interactive framework of the governing system and system that is to be governed (Kooiman et al. 2005). Interactive governance is an analytical approach that starts with the premise that the governance of small-scale fisheries is diverse, complex and dynamic and occurs at different levels of scale. This approach includes an examination of these properties within the natural and social system in understanding how governance works and how successful it can be. Core to interactive governance theory is the concept of “governability”, which considers the qualities of the system-to-be-governed (livelihood and food security rights to small-scale fishers) and the governing system (community representatives, researchers, NGOs and fisheries officials co-designing small-scale policy) in relation to how likely they are to be successfully governed (Kooiman 2003; Kooiman et al. 2005; Chuenpagdee 2011a). The emphasis of this approach is on the quality of interactions when engaging with the major issues facing small-scale fisheries such as social justice, sustainable livelihoods and food security, as in the case of South Africa.

## Case study: co-designing policy with communities

### Background

South Africa has a well-established fishery sector, comprising two components: wild capture fisheries and aquaculture, which is under development. Wild capture fisheries currently include three distinct areas: commercial, small-scale and recreational fisheries, each of which requires specific research and management interventions. The commercial fishing sector can be further broken down into highly industrialized capital intensive fisheries, which generally operate in deep water (e.g. hake trawl and pelagic purse seine fisheries) and near-shore fisheries where both commercial and small-scale fishing activities take place. Near-shore fisheries are more easily accessible and use more traditional types of gear (e.g. line fishery and near-shore rock lobster hoop net fishery).

Marine living resources are mostly fully utilized and many high-value species (e.g. abalone and rock lobster) are over-exploited (DAFF 2014). In 2005, long-term rights were allocated in 22 fishing sectors, with just over 2900 rights holders and about 1788 vessels. Total annual production is more than 600,000 tons, valued at R 5.8 billion, which forms 0.5 % of the Gross Domestic Product. Fisheries are important for the Western Cape Province as they contribute 2 % of the Gross Geographic Product (GGP). The large-scale capital sectors (hake and small pelagics) are capital intensive (in terms of vessels and factories) and dominated by the large fishing concerns. Hake fishing contributes approximately 70 % of the total value of the fishing industry and most of the catches are exported (60 %). In rock lobster, squid, tuna and demersal long-line sectors, almost the total production is exported. The commercial fishing industry currently employs approximately 27,000 people directly and approximately 100,000 indirectly. Small-scale and artisanal fishers have relatively small, low-cost operations, but often fish high-value resources. For coastal areas, marine fishing is important for employment and food security, and small-scale and artisanal fishers have a long history of dependence on these resources. In South African coastal areas, there are approximately 147 fishing communities, 28,338 fisher households and an estimated 29,000 fishers (National Development Plan, NDP 2012).

The Marine Living Resources Act 18 of 1998 guides the conservation of the marine ecosystem, the long-term sustainable utilization of marine living resources and the orderly access to exploitation, utilization and protection of certain marine living resources. It therefore aims to provide for the exercise of control over marine living resources in a

fair and equitable manner to the benefit of all the citizens of South Africa.

### Policy development over time: challenges and opportunities

Before 1994, the South African fishing was controlled by an established industrialized sector that systematically deployed its centralized management structure and influence over science to control fishing access by securing quotas and licences. During apartheid, fishing was an important source of livelihood for poor black populations. Fishers were allowed to fish on recreational permits or informally, as the inshore resources were open-access, and although legally they could not sell their catches, informal markets existed in local communities and formed an important part of the community's food protein source. With the end of apartheid, marked by the country's first democratic elections in 1994, the new African National Congress (ANC) government developed legislation that aimed to uplift impoverished fishing communities by ensuring that they could formally access the marine resources on which their livelihoods depended. Fishing industry reform started with the basic needs-oriented Reconstruction and Development Programme (RDP) in 1994. The new government set itself the task of formulating a fisheries policy that would address popular expectations for a more equitable redistribution of access rights, while at the same time maintaining an internationally competitive fishing industry.

While this new fisheries policy was developed, vested business interests lobbied government for quotas to be distributed according to free market principles, arguing that competitive allocation would safeguard the prospects for international investment and create stability in the industry. In 1996, the government replaced the RDP with the neoliberal macroeconomic policy, the Growth, Employment and Redistribution strategy, which promoted the privatization of resources, market deregulation and trade liberalization. Subsequent development strategies, such as the 2006 Accelerated and Shared Growth Initiative for South Africa and the 2010 New Growth Path, served to entrench neoliberal mechanisms including privatization, subsidy elimination and public sector downsizing. All such policies purported to enhance growth, create jobs and increase equity, particularly by encouraging the development of small black enterprises. The post-apartheid development agenda came to focus on the role of self-help schemes and entrepreneurship among the poor, including, as we shall see, in the fisheries sector (Raakjær Nielsen and Hara 2006; Isaacs et al. 2007; Isaacs 2011a, b, c).

## The main issue

Post-apartheid fisheries reform in South Africa began with high expectations from fishing communities that they would be able to access marine resources and formalize their livelihoods. However, the government implemented National Growth, Equity and Redistribution programmes included conditions for how rights would be allocated to poor fishing communities. The Marine Living Resources Act 18 of 1998 (MLRA) allocated quotas to either commercial or subsistence fisheries and did not recognize small-scale fishers. In order to obtain quotas under these new conditions, fisher organizations (welfare-based organizations, unions and cooperatives) that emerged from the anti-apartheid movement were pressured to entrepreneurialize. This resulted in the community elite restructuring community organizations to capture access rights, and many poor and marginalized fishers losing out on the formal rights allocation process. The South African Government pressured new entrants to privatize without any support or protection from the market—in other words it was a *de facto* requirement that communities had to privatize before they could get ITQs.

The ITQ system therefore commodifies the right to catch wild fish and shellfish, and is primarily concerned with promoting economic efficiency rather than conservation, community welfare or equity (Sumaila 2010; Copes and Charles 2004; McCay 2004). The ITQ system is a form of both privatization and marketization. It requires strong state involvement and limits access to fisheries to a small group of individuals and businesses (Mansfield 2004). This approach has been mainstreamed in many developed countries such as New Zealand, Iceland and Canada, and has recently been promoted by the Confederation of African Ministries' of Fisheries and Aquaculture (CAMFA) in South Africa and Namibia Anon (2010). ITQs were introduced in the late 1980s in South Africa and the rest of the world as a mechanism for economic rationalization that functioned by adapting fishing capacity to resource availability (Isaacs 2012).

As Roy Bross, then chairperson of the South African Deep Sea Trawling Industry Association, commented:

“Transformation [politics] has created a deconcentration of rights to accommodate many new entrants into the fishing industry to achieve equity, and economics [the ITQ system] has created a concentration of rights holders. This happened from 1991 with annual allocations to 2006 with long-term rights allocation and will happen again with the next rights allocation process” (pers. comm. [June, 2012).

Is this because the market system of ITQs cannot allocate rights equitably? Post-apartheid fisheries policy

favoured industry domination in continuing with the use of ITQs and Black Economic Empowerment (BEE) to allocate rights and at the same time expand the number of quota holders, broadening access. However, in practice, these two mechanisms were incompatible from the start: ITQs limit the number of quota holders, while BEE is designed to expand the number of rights holders. The reform has been focused on narrowly based BEE (race and gender composition of organizations) rather than meaningful social transformation, and the expansion and stabilization of the industry have marginalized small-scale fishers whose livelihoods depend on marine resources (Isaacs and Hersoug 2002a, b; Crosoer et al. 2006; Van Sittert et al. 2006; Isaacs et al. 2007). Though reform in fisheries was supposed to lead to the equal distribution of wealth within the broader society, not just amongst a few individuals (Raakjær Nielsen and Hara 2006), the MLRA structure mainstreamed economic competitiveness and favoured established private businesses in a way that created a new local and non-local elites (explained in detail in the case study) that impaired an equitable distribution of fisheries-related wealth.

## Challenges to a broader reform process for small-scale fisheries

As part of the fisheries reform process, the established fishing firms were required to improve their race and gender complements by partnering with Black Economic Empowerment (BEE) firms if they wished to maintain their quotas. The DAFF argued that BEE would fit into the government's broader macroeconomic policy of reducing poverty, the rationale being that ITQ and BEE in established fishing businesses would provide secure, quality jobs based on the government's minimum wage regulatory framework, and that benefits would “trickle down” to vulnerable fishing communities.

The allocation system opened the door to local elites (“rights grabbers”) within communities, who captured the benefits of participation in the industry (fishing rights) at the expense of communities and the marginalized small-scale fishers who were supposed to benefit from the transformation (Isaacs 2011c). Many small-scale fishers were left without fishing rights and therefore no longer had access to the sea. Others were able to exist by working for rights holders in certain sectors at various times of the season, but often had no income during the rest of the year (Sunde 2006).

Transformation created an action space for many new entrants to access fishing rights to achieve equity, without the necessary infrastructure, financial capital and business skills to manage the quota: they had no option but to enter

into catching, processing and marketing agreements with large industrial concerns (resulting in “armchair” fishers). In South Africa, fishers called these businesses “paper quota holders”. The consequence of restructuring was the concentration of rights in the hands of a few rights holders.

Local rights grabbers that had the necessary social and political capital manoeuvred within the new action space to maximize their access to quotas. With the shift to privatize community organizations, they acted as gatekeepers, withholding from the fishers in their organizations crucial information they had received from the DAFF. This strategy was crucial to their success as new entrants in the fishing industry from 1996 to 2000. Successful new entrant fishing firms from 1999 onwards were those that were able to downscale, remove, manoeuvre around or buy out poor fishers from their newly privatized enterprises.

Fisheries reform in South Africa was therefore compromised by allocating rights through the ITQ system, as this created more opportunities for the elite (rights grabbers) than for the poor to access fishing rights in the post-apartheid era. This left the small-scale fishers outside the formal allocation process (Isaacs 2004, 2006; Isaacs and Hara 2008; Isaacs et al. 2007).

The established industry—the existing rights holders—challenged the need for a new small-scale fishing policy and did not support a collective rights allocation system. They insisted that the rights system should be individual.

### Opportunities: human rights-based argument for allocating fishing rights

In response to fisheries reforms, in 2005, the Artisanal Fishers Association, Masifundise and the Legal Resources Centre, with 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”<sup>1</sup>, used the Constitution (1996) and the Equality Act (2000) to litigate against the reform process (ITQ allocation of fishing rights) in the light of its social and economic impacts.

The main argument for this case was based on a human rights approach, focusing specifically on three main rights: the right to be recognized; the right to a livelihood; and the right to food and nutrition. These rights are protected in the South African Constitution of 1996. The claimants

challenged the mainstream ITQ system in South Africa that favoured large firms, Black Economic Empowerment to achieve race and gender equity, and rights grabbers in the fishing communities (local elites). The claimants supported a paradigm shift from ITQs (neoliberal, privatized rights) to a collective rights allocation, a creation of legal entities, a multi-species approach and preferential access to inshore species.

The class action case was the start of a research collaboration between academics, practitioners and fishers started in 2005 at the local scale, with poor, marginalized small-scale fishers, the community-based organizations Artisanal Fisher Association and Coastal Links, the non-government organization Masifundise, researchers and lawyers from the Legal Resource Centre aligned to develop the heads of argument and affidavits, and to launch the class action case. The main goal of the collaboration was to ensure social justice for small-scale fishers through the class action case. In preparation of the court papers, researchers played a key role in providing expert evidence on the impact of the ITQ system on fishers in South Africa. Local researchers worked closely with the Artisanal Fishers Association, Coastal Links, Masifundise and the Legal Resource Centre to develop evidence, and formed a strong alliance to support this case.

The case was to be heard in the Equality Court, but in April 2007, the claimants of Kenneth George and Others (see footnote 1) agreed to put the case on hold, on the condition that the small-scale fishers were allocated interim rights and a new small-scale fisheries policy was developed (Isaacs 2006; Sowman 2006; Sunde 2006; Hauck 2008; Isaacs 2011a, b, c). In 2012 the small-scale fisheries policy was adopted, and in 2013 the Amendment to the small-scale fisheries policy formally recognized small-scale fishers.

### Governance from below

In 2007, an out of court settlement with the Minister of Environmental Affairs and Tourism (DEAT) and Kenneth George and others (see footnote 1) was reached, in which the DEAT<sup>2</sup> agreed to allocate interim rights to fishers who had not been successful in obtaining long-term ITQ allocations in west coast rock lobster and linefish, and agreed

<sup>1</sup> This case refers to the claimants—Kenneth George, Masifundise Development Trust, John Spami Nkuzana, Japie Britz, Norton Dowries, Peter Coraizin, Artisanal Fishers Association versus. The Minister of Environmental Affairs and Tourism Maritinus van Schakwyk (2007). In the Equality Court Held at the High Court Of South Africa (Cape Of Good Hope Provincial Division) FILE NO: EC 1/2005

<sup>2</sup> In 2009 the President restructures the Ministries—the fisheries department was moved to a new Ministry, Department of Agriculture, Forestry and Fisheries (DAFF). Hence, although the court order agreed by the Department of Environmental Affairs and Tourism (DEAT), meant with the shift in Parliament, DAFF had to implement the ruling of the court and oversee the drafting a new small-scale fisheries policy for South Africa.

to draft a new small-scale policy with community representatives.

In the same year, a national small-scale fisheries summit was organized by the Ministry of Environmental Affairs and Tourism with fishing community representatives around the coast to recognize this sector as group that was neglected in terms of long-term rights allocation in 2007. At this meeting a National Task Team (NTT) was formed to draft a new small-scale fisheries policy. The alliance (a group of CBOs, NGOs, lawyers and researchers) that initially launched the class action case formed part of this National Task Team, which also included fisher representatives from all coastal provinces and DAFF officials. In the following year, 2008, the NTT met to begin the process of drafting a new small-scale fisheries policy for South Africa.

Relationships in the task team were complex as roles, responsibilities, mandates and representivity needed to be clarified. As the group worked through the sticky issues of the type of rights allocation, the definition of small-scale fishers, the definition of a small-scale community and the inclusion of customary rights, the task team realized a paradigm shift was taking place both in the process and in the outcome. A participatory process had emerged in which collaboration between community leaders, NGOs, legal experts, researchers and government officials was a key to the drafting of small-scale fisheries legislation.

### Forming national and international alliances

In the shadows of policy development, national and international collaboration around this social and economic justice case for small-scale fisheries gained traction. The advocacy and awareness raising of this case started at the local level with fisher groups (Masifundise, Coastal Links, Artisanal Fishers Association) collaborating with the Confederation of South African Trade Union's (COSATU) fishing desk and the African National Congress fishing desk. The small-scale fishers also aligned with small-scale farmers attending national workshops organized by Trust for Community Outreach and Education (TCOE). The fishers collaborated with regional bodies to highlight the inequities in ITQ allocations in South Africa at the Southern African Development Corporation (SADC), the Benguela Current Commission (BCC) and New Partnership for Africa's Development (NEPAD).

The case also drew strong international support and collaboration with small-scale fishery NGOs such as the International Collective in Support of Fishworkers (ICFS), and the World Forum of Fisherpeople (WFFP) who use the plight of small-scale fishers as an awareness raising and advocacy tool at the United Nations Food and Agriculture

Organization (FAO) Committee on Fisheries (COFI) meetings.

The human rights approach to fisheries management also garnered attention internationally, including that of the FAO unit responsible for drafting voluntary guidelines for the UN, the UN right to food Special Rapporteur Oliver de Schutter, the ICFS and the WFFP. These bodies highlighted the right to livelihoods and food security link to the South Africa's small-scale fishers, making strong links between research, advocacy and policy. The case was highlighted at numerous international academic conferences and also the conferences of the FAO on rights-based approaches and small-scale fisheries. At these platforms, researchers and community-based organizations worked closely together to highlight the consequences of using rights-based ITQ allocations to achieve equity and social and economic justice. The South African small-scale fisheries case study also featured in the Too Big To Ignore (TBTI) network of international researchers, made up of 15 different types of organizations including NGOs across 27 countries linking research, network and advocacy at local, regional and global level.

### Outcomes: a new small-scale fisheries policy for South Africa

The final draft of the small-scale fisheries policy agreed by the National Task Team and DAFF in 2010, the release of the policy 2 years later, and the Kenneth George and others (see footnote 1) court case raised the profile, importance and interest in small-scale fishers in the policy landscape. The release of the draft policy for public comment meant that the NTT drafting the policy ceased to exist, but the core group that initiated the class action case regrouped and initiated a series of round-table meetings. These meetings were held regularly and the group expanded to include representatives of the World Wildlife Fund (WWF) Marine Programme, Masifundise, Coastal Links and other community representatives, legal practitioners, trade union representatives and academic researchers. The main objectives of the round-table meetings were to discuss strategic interventions into key legislation affecting small-scale fishers, which were:

- The release of the new small-scale fisheries policy in 2012
- Draft rights allocations for all the sectors in 2013
- Amendments to the Marine Living Resources Act, 5 of 2014
- Linefish allocations in 2014
- Public submissions to the Parliament Portfolio Committee in 2014



- Draft implementation regulations for small-scale fisheries in 2015.

With the release of the small-scale fisheries policy in 2012, organizations including conservation NGOs, WWF, Fair Trade, Marine Stewardship Council (MSC) and Environmental Monitoring Group (EMG) showed a keen interest in the implementation of small-scale policy.

The outcomes of this case include the new small-scale fisheries policy gazetted on 20 June 2012 and approved by Cabinet, which constituted a paradigm shift from ITQs to a collective system of quota allocation, incorporating the following:

- Fishers and fishing communities will co-manage marine resources with the DAFF at local, district and national levels.
- Rights will be allocated to a community-based legal entity.
- In August 2013, the DAFF started a consultation process with small-scale fishing communities on the implementation plan.
- The fisheries policy (MLRA of 1998) was revised through the Marine Living Resources Amendment Act 5 of 2014 to accommodate small-scale fishers, small-scale communities and small-scale fisheries allocation.

In achieving these outcomes, the group representing research, lawyers, fishing communities and NGOs had meetings with policy makers and provided inputs, as a group and individually, to the policy processes. South African leading council on restitution, customary rights and fishing rights to communities, Mr Henk Smith, advised the group on engaging with the state: “use the space created by the policy to state our discontentment with the process, and then use the alliance to get a seat at the negotiation table, use the media to write an open letter. In essence, we need to use all avenues when engaging with the state—get a seat at the negotiating table and criticize their policies where necessary. Use all the opportunities given to engage with the state” (pers. comm. June 2013).

Stokols et al. (2003) and Stokols (2006) argue for transdisciplinary action research that links the research process with outcomes. This case study on South African small-scale fisheries clearly demonstrates this link in which a process of collaboration between research, community and policy yielded the positive outcome of a new small-scale fisheries policy for South Africa. In this case, there are clear linkages between the process, outcomes, ways in which research links with broader action and the key events of the class action case, and how co-designing the new small-scale policy with government led to the formal recognition of small-scale fisheries.

## Discussion

The South African government has formally recognized small-scale fisheries through a participatory process that led to the policy that was adopted by Cabinet in 2012. The new small-scale fisheries policy promotes a human rights-based approach, food security, co-management and customary practices and allocates multi-species (basket of rights) to community legal entities with a strong development agenda. The Marine Living Resources Act 18 of 1998 is now the Amended Marine Living Resources Act 5 of 2014 to formally recognize the livelihoods of small-scale fishers. In 2015, draft regulations will be released to guide small-scale fisheries, and in 2016 DAFF will release plans to allocate rights to small-scale fisheries. The amendment will enable DAFF to focus on livelihoods, food security, value-chains, local economic development and overall benefits to small-scale fishing communities.

The collective rights system is based on multi-species allocation and also known as a basket of rights will be allocated to a legal entity formed by the community. Co-operatives seem to be the preferred form of legal entity to manage the fishing rights for communities. Women will play a key role in the pre- and post-harvesting sector and will be allocated fishing rights if they are active fishers. This policy makes a key shift to active rights—rights are granted only to fishers who are practicing fishing as a livelihood. Management responsibilities are integrated in the fishing rights system and fishers will play a key role in co-managing the marine resources.

Academic transdisciplinary collaboration research should play a key role in transdisciplinary action research and it is a necessary step in the research process (see Stokols et al. 2003). Challenges that can arise include this type of research remains stuck in conceptual underpinnings and relationship issues, and time being wasted on team building and struggles between disciplines. In addition, if links to community-based organizations and practitioners are missing from collaborative transdisciplinary research, this will interfere with the potential for constructive action.

The case study presented here illustrates a combination of research, advocacy and collective action to achieve social and economic justice for small-scale fishers in South Africa. This case demonstrates how community collaboration with other partners (research, legal NGOs, Unions) can alter the nature of collaboration in significant ways. Contrary to the suggestion by Stokols (2006) that the nature of relationships progress from simple to complex, the collaboration between researchers, NGOs and CBOs at the start of the collaboration started out as complex, as finding a group of people who supported the court case against the ITQ system of allocation was not a

straightforward process. However, the support of this class action case connected the group and built strong links for research and advocacy, and the collaboration became easier. The initial complex relationship was made simpler by the focus on achieving social and economic justice for small-scale fishers in South Africa. Constraints and challenges were mainly with the state on what should be in the small-scale fisheries policy.

### Cross-scale collaborations

While key partners (i.e. Legal Resource Centre, Artisanal Fisher Association, Masifundise, Coastal Links and the author) remained constant, the transition from academic/community collaboration to intersectoral partnerships spanning local, national, regional and global levels gained momentum and drew the interest of various organizations. The temporal scope of this case study shows key partners collaborating over a number of years—starting in 2005 with the collaboration being ongoing. At various stages of the collaboration between research, community and collective action in the case of small-scale fisheries in South Africa, the partners had various roles, levels of engagement and relationships with each other. In the early stages, during 2004–2005, getting the group together to launch the class action case was complex, and complex contractual relationships with the state could compromise existing and future funding. Hence, getting the support and interest, in this case from researchers, was very difficult initially. When an out of court settlement was reached in 2007, more researchers took a keen interest in the small-scale policy development process. The use of cross-scale strategies by the alliance (transdisciplinary collaborations) is a critical component in linking policy objectives with community mobilization (see Rios 2011).

In addition to use of local cross-scale collaboration, there was also strong international collaboration formed due to links to international research networks (TBTI), placing the case of South African small-scale fisheries at the centre of international debates on adopting a human rights-based approach to fisheries governance. The International Collective of Fishworkers (ICFS) and World Forum of Fisher Peoples (WFFP) were key international social partners in support of the case of small-scale fishers in South Africa. In addition, the UN's Special Rapporteur on the right to food makes the explicit link between the right to food and rights of those who produce it and uses the right to livelihoods of small-scale fishers in South Africa in the report (see United Nations 2012). A small-scale community handbook of the small-scale fisheries policy for South Africa was developed with research and community representatives in 2014.

This case study also crosses disciplines, for example, in the complementary mix between social sciences and legal practitioners. This case study is situated in pro-reform transdisciplinary initiatives that are likely to have “broader and deeper institutional impacts if they are accompanied by processes of strategic interaction between policymakers and civil society counterparts that helps the latter to target and weaken obstacles to change” (Russell et al. 2008). This case study also fits into what Hadorn et al. (2005: 121) explain as “transdisciplinary research is seen as part of a social process with strong elements from the bottom up”. The social and policy processes of small-scale fishers led to a change in the policy landscapes and could lead to change in livelihoods, food security and nutrition for small-scale fishers. This will depend on how the policy is implemented and rights allocated in 2016.

### Towards a model for change

The emphasis of this approach is on the quality of interactions when engaging with the major issues facing small-scale fisheries such as social justice, sustainable livelihoods and food security, as in the case of South Africa. This case study illustrates collaboration between research, legal practitioners and community representatives on a social and economic justice issue facing small-scale fishers in South Africa, which in turn developed a tool for change in the context of securing rights to livelihoods and food security. The collaboration's model of change for small-scale fisheries in South Africa covered three key strategies:

1. Getting noticed (social protests);
2. Organizing at scale (local, national, regional and international); and
3. Securing a place at the negotiation table (co-designing small-scale fisheries policy for South Africa).

The pooling of multiple approaches, the process of getting organized at scale, the identifying and refining of strategies to launch the class action case, and co-designing a new framework for small-scale fishers were all necessary to effecting change in the livelihoods of fishers. The collaborative model of change for small-scale fisheries is situated in a collective action–reflection–action–reflection process with engaged scholarship. This project was not conceived initially as research collaboration with fishing communities and legal experts; the goal for social justice organically created an informal yet strong relationship and collaboration to support the class action case. The right for recognition, food security and practising livelihoods were key campaign tools during the court challenge situated within the human rights-based approach to governing fisheries.

The model of change comfortably fits into an interactive governance framework, starting with the complexity of the problem (to achieve social and economic justice for small-scale fishers), moving on to organization at various scales to raise awareness of the main issue and securing a seat at the negotiation table to draft a new small-scale fisheries policy. The quality and nature of relationships within the core team of community representatives, researchers, NGOs, CBOs and government officials enabled small-scale fisheries to raise their profile, importance and significance in the South African landscape, indicating the high level of governability in small-scale fisheries in achieving a change in legislation.

## Conclusion

Marine resources play a key role in the multiple livelihood strategies and in the food security of poor and marginalized fishery-dependent communities around the world. The Big Number Project (BNP 2010), Global Conference on Small-Scale Fisheries in October 2008, organized by the FAO, and the first World Small-Scale Fisheries Congress in October 2010 and subsequently the second in 2014 have reconfirmed the importance, scale and size of this sector (FAO 2009; Chuenpagdee 2011b). Research, advocacy and policy all emphasize the value of holistic and people-centred approaches to the management and governance of marine resources. They also indicate the importance of research being more action oriented and transdisciplinary in nature, involving affected groups in research design, problem identification, research, analysis and reflection. Transforming societies and a deeper understanding of social change are key elements in International Social Science Council (ISSC) research projects contributing to future Earth. There is a strong call for more research to enter into meaningful engagement with affected communities in the co-designing and co-producing of knowledge.

**Acknowledgments** The author is grateful for the financial support of the National Research Foundation of South Africa under the South Africa–Tanzania collaborative research agreement. I would like to acknowledge the important contribution of editors Ratana Chuenpagdee and Alida Bundy for their valuable inputs. Further, I would like to thank external reviewers for their constructive contributions.

## References

- Anon (2010) The wealth generation opportunities of African fish resources. A paper prepared for the conference of African ministers of fisheries and aquaculture (CAMFA), Banjul, the Gambia, CAMFA/2/2010, African Union, Addis Ababa, 20–23 Sept 2010. p. 8
- Big Numbers Project (BNP) (2010) Small-scale capture fisheries: a global overview with emphasis on developing countries. Intermediate report. Food and Agriculture Organization (Rome) and WorldFish Center (Penang)
- Carlson MC, Koepe J, Hanson PM (2011) From pits and piles to lakes and landscapes: rebuilding minnesota's industrial landscape using a transdisciplinary approach. *Landsc J* 30(1):35–52. doi:10.3368/lj.30.1.35
- Chanse V (2011) Contexts and complexities: a case study in evolving participatory watershed stewardship. *Landsc J* 30(1):121–132
- Chuenpagdee R (2011a) Interactive governance for marine conservation: an illustration. *Bull Mar Sci* 87:197–211. doi:10.5343/bms.2010.1061
- Chuenpagdee R (ed) (2011b) Contemporary visions for world small-scale fisheries. Eburon, Delft
- Copes P, Charles A (2004) Socio-economics of individual transferable quotas and community-based fishery management. *Agric Resour Econ Rev.* 33(2):171–81. <http://purl.umn.edu/31263>
- Crosoer D, Van Sittert L, Ponte S (2006) The integration of South African fisheries into the global economy: past, present and future. *Mar Policy* 30(1):18–29. doi:10.1016/j.marpol.2005.06.013
- Department of Agriculture Forestry and Fisheries (DAFF) (2014) Status of the South African marine fishery resources 2014
- Food and Agriculture Organization (FAO) (2009) Report of the global conference on small-scale fisheries: securing sustainable small-scale fisheries: bringing together responsible fisheries and social development. Bangkok
- Fox J (2004) Empowerment and institutional change: mapping 'virtuous circles' of state society interactions. In: Alsop R (ed) Power, rights and poverty: concepts and connections. Worldbank, Washington DC
- Garcia SM (2009) Governance, science and society. The ecosystem approach to fisheries. In: Grafton RQ, Hilborn R, Squires D, Tait M, Williams M (eds) Handbook of marine fisheries conservation and management. Oxford University Press, Oxford, pp 87–98
- Hackmann H, St. Clair AL (2012) Transformative cornerstones of social science research for global change. Report of the International Social Science Council, Paris
- Hadorn GH, Bradley D, Phol C, Rist S (2005) Implications of transdisciplinarity for sustainability research. *Ecol Econ* 60:119–128. doi:10.1016/j.ecolecon.2005.12.002
- Hauck M (2008) Re-thinking small-scale fisheries compliance. *Mar Policy* 32(4):635–642. doi:10.1016/j.marpol.2007.11.004
- Isaacs M (2004) Understanding the social processes and politics of implementing a new fisheries policy, the Marine Living Resource Act 18 of 1998, in South Africa. Submitted in fulfilment of requirements for degree of Doctor of Philosophy in the Department of Economic and Management Sciences, School of Government, University of Western Cape, Cape Town. (Unpublished)
- Isaacs M (2006) Small-scale fisheries reform: expectations, hopes and dreams of 'a better life for all'. *Mar Policy* 30:51–59. doi:10.1016/j.marpol.2005.06.010
- Isaacs M (2011a) Governance reforms to develop a small-scale fisheries policy for South Africa. In: Chuenpagdee R (ed) Contemporary visions for world small-scale fisheries. Eburon, Delft
- Isaacs M (2011b) Paradigm shift—from individual transferable quotas (ITQs) to collective allocations—a struggle for small-scale fishers in South Africa. *MAST* 10(2):63–84
- Isaacs M (2011c) Creating an action space: small-scale fisheries policy in South Africa. In: Jentoft S (ed) Poverty mosaics: unravelling the poverty circle in small-scale fisheries: global experiences. Springer Academic Books, Dordrecht. doi:10.1007/978-94-007-1582-0\_16

- Isaacs M (2012) Recent progress in understanding small-scale fisheries in Southern Africa. *Curr Opin Environ Sustain* 4:338–343. doi:[10.1016/j.cosust.2012.06.002](https://doi.org/10.1016/j.cosust.2012.06.002)
- Isaacs M, Hara M (2008) Transformation in the South African fishing industry and its ability to redistribute fishing rights. *Am Fish Soc Symp* 49:687–703
- Isaacs M, Hersoug B (2002a) According to need, greed or politics: redistribution of fishing rights within South Africa's new fisheries policy. In: Benjaminsen TA, Cousins B, Thompson L (eds) *Contested resources: challenges to the governance of natural resources in southern Africa*. PLAAS, Cape Town, pp 115–126
- Isaacs M, Hersoug B (2002b) According to need, greed or politics: redistribution of fishing rights within South Africa's new fisheries policy. In: Hersoug B (ed) *Fishing in a sea of sharks: reconstruction and development in the South African fishing industry*. Eburon, Delft
- Isaacs M, Hara M, Raakjær-Nielsen J (2007) Has reforming South African fisheries contributed to wealth redistribution and poverty alleviation? *Ocean Coast Manag* 50:301–313. doi:[10.1016/j.ocecoaman.2006.11.002](https://doi.org/10.1016/j.ocecoaman.2006.11.002)
- Kessel F, Rosenfield L (2008) Toward transdisciplinary research: historical and contemporary perspectives. *Am J Prev Med* 35(2S):S225–S234. doi:[10.1016/j.amepre.2008.05.005](https://doi.org/10.1016/j.amepre.2008.05.005)
- Kooiman J (2003) *Governing as Governance*. Sage Publications, London
- Kooiman J, Banvinck M, Jentoft S, Pullin R (eds) (2005) *Fish for Life: Interactive Governance for Fisheries*. MARE Publication Series No 3. Amsterdam University Press, Amsterdam
- Lewin K (1951) *Field theory in social science*. Harper and Row, New York
- Mansfield B (2004) Neoliberalism in the oceans: 'rationalization', property rights, and the commons question. *Geoforum* 35:313–326. doi:[10.1016/j.geoforum.2003.05.002](https://doi.org/10.1016/j.geoforum.2003.05.002)
- McCay BJ (2004) ITQs and community: an essay of environmental governance. *Agric Resour Econ Rev*. 33(2):162–70. <http://purl.umn.edu/31265>
- Meyer J (2000) Using qualitative methods in health related action research. *Br Med J* 320:178–181. doi:[10.1136/bmj.320.7228.178](https://doi.org/10.1136/bmj.320.7228.178)
- Mobjork M (2010) Consulting versus participatory transdisciplinarity: a refined classification of transdisciplinary research. *Futures* 42:866–873. doi:[10.1016/j.futures.2010.03.003](https://doi.org/10.1016/j.futures.2010.03.003)
- National Development Plan (2012) *National development plan 2030. Our future, making it work*
- Nicolescu B (2005) Towards transdisciplinary education. *J Transdiscipl Res South Afr*. 1:5–16. <http://hdl.handle.net/10394/3843>
- Paterson B, Isaacs M, Hara M, Jarre A, Moloney C (2010) Transdisciplinary co-operation for an ecosystem approach to fisheries: a case study from the South African sardine fishery. *Mar Policy* 30:782–794. doi:[10.1016/j.marpol.2010.01.019](https://doi.org/10.1016/j.marpol.2010.01.019)
- Pohl C (2011) What is progress in transdisciplinary research? *Futures* 43:618–626. doi:[10.1016/j.futures.2011.03.001](https://doi.org/10.1016/j.futures.2011.03.001)
- Raakjær Nielsen J, Hara M (2006) Transformation of South African industrial fisheries. *Mar Policy* 30(1):43–50. doi:[10.1016/j.marpol.2005.06.002](https://doi.org/10.1016/j.marpol.2005.06.002)
- Rios M (2011) Toward a social ecology of scale: collective action, design for health and landscape praxis. *Landsc J* 30(1):106–120. doi:[10.3368/lj.30.1.106](https://doi.org/10.3368/lj.30.1.106)
- Rosenfield PL (1992) The potential of transdisciplinary research for sustaining and extending linkages between health and social science. *Soc Sci Med* 35:1343–1357. doi:[10.1016/0277-9536\(92\)90038-R](https://doi.org/10.1016/0277-9536(92)90038-R)
- Russell WA, Wickson F, Carew AL (2008) Transdisciplinarity: context, contradictions and capacity. *Futures* 40:400–472. doi:[10.1016/j.futures.2007.10.005](https://doi.org/10.1016/j.futures.2007.10.005)
- Schorth O, Hayek UW, Lange E, Sheppard SRJ, Schmid WA (2011) Multiple-case study of landscape visualization as a tool in transdisciplinary planning workshops. *Landsc J* 30(1):53–71. doi:[10.3368/lj.30.1.53](https://doi.org/10.3368/lj.30.1.53)
- Scott D (2013) Science, transformation and society: a contextual analysis of South Africa's SANCOR-managed marine and coastal research programmes. *Afr J Mar Sci* 35(3):361–383. doi:[10.2989/1814232X.2013.842932](https://doi.org/10.2989/1814232X.2013.842932)
- Sowman M (2006) Subsistence and small-scale fisheries in South Africa: a ten-year review. *Mar Policy* 30(1):60–73. doi:[10.1016/j.marpol.2005.06.014](https://doi.org/10.1016/j.marpol.2005.06.014)
- Sowman M, Scott D, Green L, Hara M, Hauck M, Kristen K, Paterson B, Raemaekers S, Jones K, Sunde J, Turpie J (2013) *Shallow waters: social science research in the marine environment*. *Afr J Mar Sci* 35(3):385–482. doi:[10.2989/1814232X.2013.836134](https://doi.org/10.2989/1814232X.2013.836134)
- Stokols D (2006) Toward a science of transdisciplinary action research. *Am J Community Psychol* 38:63–77. doi:[10.1007/s10464-006-9060-5](https://doi.org/10.1007/s10464-006-9060-5)
- Stokols D (2011) Transdisciplinary action research in landscape architecture and planning: prospects and challenges. *Landsc J* 30(1):1–5. doi:[10.3368/lj.30.1.1](https://doi.org/10.3368/lj.30.1.1)
- Stokols D, Grzywacz JG, McMahan S, Phillips K (2003) The ecology of human strengths. In: Aspinwall LG, Staudinger UM (eds) *A psychology of human strengths: fundamental questions and future directions for a positive psychology*. American Psychological Association, Washington, pp 331–343
- Sumaila RU (2010) A cautionary note on individual transferable quotas. *Ecol Soc* 15(3):36
- Sunde J (2006) Emerging concerns of fishing communities: sharing on organizing in South Africa. In: *Proceedings of the international collective in support of fishworkers (ICSF) conference, Forteleza, Brazil, 4–9 July 2006*. Masifundise Development Trust, Cape Town, South Africa
- Thering S, Chanse V (2011) The scholarship of transdisciplinary action research: toward a new paradigm for the planning and design profession. *Landsc J* 30(1):6–18. doi:[10.3368/lj.30.1.6](https://doi.org/10.3368/lj.30.1.6)
- United Nations (2012) *Note to the General-Secretary from the Special Rapporteur on the right to food (Olivier de Schutter)*. New York: United Nation, Sixty-seventh session General Assembly
- Van Sittert L, Branch G, Hauck M, Sowman M (2006) Benchmarking the first decade of post-apartheid fisheries reform in South Africa. *Mar Policy* 30:96–110. doi:[10.1016/j.marpol.2005.06.012](https://doi.org/10.1016/j.marpol.2005.06.012)
- Whitehead D, Taket A, Smith P (2003) Action research in health promotion. *Health Educ J* 62(1):5–22. doi:[10.1177/001789690306200102](https://doi.org/10.1177/001789690306200102)