



Review

Regulating forestry – Experience with compliance and enforcement over the 25 years of Tasmania's forest practices system[☆]

Graham R. Wilkinson^{a,*}, Mick Schofield^a, Peter Kanowski^{b,c}

^a Forest Practices Authority, 30 Patrick Street, Hobart, Tasmania 7000, Australia

^b Fenner School of Environment and Society, Australian National University, Canberra, 0200, Australia

^c Center for International Forestry Research, Bogor, Indonesia

ARTICLE INFO

Article history:

Received 13 March 2013

Received in revised form 5 August 2013

Accepted 26 November 2013

Available online 15 January 2014

Keywords:

Compliance

Forest practices

Forest regulation

Tasmania

ABSTRACT

Tasmania's forest practices system, one of the most prescriptive globally and the most comprehensive in Australia, has evolved over the last 25 years in response to public demands for high standards of governance, accountability and transparency of forest regulation on both public and private lands. The system was developed in the context of strong contestation, in Tasmanian and Australian civil society and politics, about appropriate forest policies and practices in Tasmania. The system is governed by a Forest Practices Act, which provides for a co-regulatory approach administered by an independent statutory body, the Forest Practices Authority. All forest operations must be undertaken in accordance with a certified forest practices plan, prepared and certified by accredited Forest Practices Officers employed by forest managers. These co-regulatory components of the system are supported by independent monitoring and enforcement by the Forest Practices Authority. This paper describes the genesis and evolution of the Tasmanian forest practices system, and summarises the range of measures employed to foster high levels of compliance, with an emphasis on training and education, self-monitoring and reporting by the industry, independent monitoring by the Forest Practices Authority, and corrective actions, backed by enforcement provisions. Compliance monitoring over 27 years demonstrates rapid improvement in the decade following establishment of the system, with consistently high levels of achievement subsequently. However, larger corporate forest managers consistently achieve higher rates of compliance than do small-scale forest owners, and redressing this imbalance has been a recurrent theme in Tasmania's forest practices system. Experience of implementation of Tasmania's forest practices system suggests that well-designed and implemented co-regulatory approaches, with high levels of transparency, can be effective in delivery of good technical standards of forest practices and high levels of compliance. However, these will not in themselves mitigate public concern about forest management practices unless the policies governing those practices have broad support in civil society.

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1. Introduction

Forest practices systems – the policy approaches and instruments by which governments regulate forest management to protect environmental and other forest values (McDermott et al., 2010, Chapter 1) – are a fundamental component of forest governance arrangements (Cashore, 2009; World Bank, 2009). As Gunningham (2009) describes for environmental governance more generally, forest practices systems have evolved from relatively simple approaches predicated on a 'command and control'

philosophy to a more complex and varied architecture, encompassing a spectrum from traditional regulation to co- and self-regulation, and drawing on market-based as well as regulatory instruments.

Issues of compliance and enforcement¹ are central to the effectiveness of forest governance regimes (Cashore, 2009; Gunningham, 2009; World Bank, 2009), and are critical to closing the gap between policy intent and on-ground outcomes in forest management (Christy et al., 2007). However, assessing effectiveness – both of alternative governance regimes and of different approaches to compliance and enforcement – is difficult, reflecting the complexity and dynamic nature of both what is being governed and of the governance arrangements themselves (Agrawal et al., 2008; Dovers, 2005; Gunningham, 2009), as well as challenges in defining appropriate assessment criteria and measures (McDermott et al., 2010). These challenges are exemplified by recent work to define indicators of good forest governance (Brito

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* Corresponding author at: 30 Patrick Street, Hobart, Tasmania 7000, Australia. Tel.: +61 3 61654090.

E-mail addresses: graham.wilkinson@fpa.tas.gov.au, wilkoforest@gmail.com (G.R. Wilkinson), mick.schofield@fpa.tas.gov.au (M. Schofield), Peter.Kanowski@anu.edu.au (P. Kanowski).

¹ Following Dovers (2005), "enforcement" is used here in the context of direct regulatory approaches, and "compliance" in the context of a broader range of approaches.

et al., 2009), which identified a preliminary list of 94 such indicators, each requiring assessment.

Assessment of effectiveness, in the comprehensive sense above of assessing the impacts of a regulatory regime in relation to its goals (see, e.g., discussion in McDermott et al., 2010, Chapter 1), is beyond the scope of this paper. Rather, the assessment here is limited – because of data availability – to the compliance and enforcement elements of the case study regulatory system. This remains an important contribution, because as Gunningham (2009: 212) notes, “tak[ing] advantage of the wealth of empirical evidence that has been accumulated” is important to improving regulatory outcomes, but there are relatively few empirical studies of the effectiveness of various regulatory approaches in forest management (Ellefson et al., 2007; McDermott et al., 2010).

This paper contributes to our understanding of forest regulation, and important elements of its effectiveness, by drawing on data and experience of compliance and enforcement from 25 years of implementation of the forest practices system in the Australian state of Tasmania. Tasmania was the first Australian state, and one of the first jurisdictions globally, to introduce a comprehensive forest practices system (McDermott et al., 2010); it remains one of only two of the 45 jurisdictions across 20 countries surveyed by McDermott et al. (2010) to have a single forest practices system that applies across all forest tenures and types.

In this paper, we briefly review contemporary approaches to environmental regulation and their expression in forest practices systems; introduce Tasmania's forest practices system; and discuss experience and the record of compliance and enforcement under the Tasmanian system. Our perspectives are those of forest practices practitioners in Tasmania and the Asia-Pacific region (Wilkinson and Schofield), and of an academic with interests in forest policy and regulation (Kanowski).

The paper does not address the larger political economy of forestry in Tasmania, which has been extensively addressed elsewhere (e.g. Ajani, 2007; Dargavel, 1995; Economist, 2011; Gale, 2008; Kanowski, 2012; Russell et al., 2010), other than to provide context and in respect of the roles that the entity administering Tasmania's forest practices system has, or is perceived to have, played in relation to political decisions regarding forestry.

2. Approaches to environmental and forest governance and regulation

The modern era of environmental governance is generally associated with the establishment of the US Environmental Protection Agency in 1970, and comparable initiatives in Europe around the same time (Gunningham, 2009). Since then, the broad architecture of environmental law, regulation and governance has changed substantially, from one of direct ‘command and control’ by the state to various forms of collaborative governance involving government, private and non-government organisations, an emphasis on ‘outcome-based’ regulation, and the use of market-based as well as regulatory instruments (Glück et al., 2005; Gunningham, 2009). Gunningham's (2009) review of environmental law, regulation and governance suggested that each of these regulatory approaches has their place, as none of them work well in all situations, and argued for the use of a range of complementary approaches and instruments within a ‘regulatory tool-kit’, noting that the effectiveness of any particular approach is ultimately underpinned by the threat of sanctions. These conclusions are mirrored in the forest governance literature (e.g. Cashore, 2009; Glück et al., 2005; World Bank, 2009).

The choice of regulatory approach is determined in part by the relative costs, benefits and risks of alternatives to both the public and private sectors. For example, under-regulation may lead to environmental harm, and lack of market or social acceptance for forest management practices. Conversely, over-regulation may not improve environmental outcomes, may render operations uncommercial and may have the perverse outcome of stifling innovation that will improve environmental outcomes because forest managers adopt a minimalist or a ‘letter of the law’ approach to compliance (McDermott et al., 2010, Chapter 10). Whilst

governments generally recognise that both business efficiency and environmental outcomes are hindered rather than helped by excessive regulation (Industry Commission, 1998), ‘regulatory creep’ nevertheless remains a common phenomenon. For example, Bennett (2002) reported that over 900 forestry decrees were issued in Indonesia between 1976 and 1999, leading to forest managers becoming more focused on office-based administrative compliance rather than on improving practices in the field. In California, USA, conflict and litigation about forest harvesting resulted in increasingly prescriptive forest practices rules, which significantly increased regulatory costs without necessarily improving environmental outcomes (Gasser, 1996). In Tasmania, the size of the Forest Practices Code and supporting planning guidelines increased 50-fold from the first issue of the Code in 1987 to its third edition in 2000, significantly increasing costs as well as enhancing environmental protection (Wilkinson, 2006).

The success of any environmental regulatory system is determined by a number of factors, principally the relevance of its prescribed policies and practices to protecting environmental and other (e.g. cultural) values, the extent to which these prescriptions are implemented, the cost of regulation, and the degree to which society and markets have trust and confidence in the system (see, e.g. Gunningham, 2009; Hollander, 2006). All of these factors are important to the success of a forest practices system; as McDermott et al. (2010: 21) observed “the best crafted forest practice regulations are irrelevant if they are not observed in practice”.

3. The Tasmanian context

The Australian state of Tasmania is richly forested, with a diversity of temperate forest ecosystems mirroring the exceptional diversity of the island's environments. Tasmania's forests range, for example, from the world's largest eucalypts to the smallest, and from rainforests receiving more than 3200 mm annual rainfall to dry eucalypt forests receiving less than 500 mm annually (Harris and Kitchener, 2005; Jackson, 1968). Although an estimated 40% of Tasmania's forests have been converted to other land uses since European colonisation in 1803 (Tasmanian Public Land Use Commission, 1996), the state remains proportionally the most highly forested of the Australian states; 50% of its land area of about 3.4 m ha is forested (FPA, 2012). Nearly 91% of these forests are native ecosystems; there are also about 314,000 ha of commercial plantation forests (FPA, 2012).

Around a half of Tasmania's native forests are protected in conservation reserves: 38% in formal reserves, and 11% in informal reserves that are excluded from timber harvesting through administrative zoning or by prescription under the forest practices system (FPA, 2012). The remaining forests are almost equally divided between those on public land and those on private freehold land (FPA, 2012). Forest-based industries have been economically important since European colonisation (Dargavel, 1995), and have comprised a significant share of the state's economy (4.6% of Gross State Product in 2008 compared to the national average of 0.7% of Gross Domestic Product; Felmingham and Wadsley, 2008; Montreal Process Implementation Group for Australia, 2008). Both public and private forests are important for wood production; although public forests have contributed around two-thirds of native forest harvest volumes in the period 2001–11 (FPA, 2012; Tasmanian and Australian Governments, 2007), the areas of public and private native forests subject to forest operations in any one year are usually comparable, and the majority of plantation operations are now on private lands (FPA, 2012). Forest operations in Tasmania are typically undertaken by forestry contractors, who operate as independent small businesses, under the direction of the forest owner and subject to the forest practices system and other relevant legislation.

Management of Tasmania's forests has been contested since Aboriginal Tasmanians' resistance to European colonisation (Boyce, 2008; Dargavel, 1995). In the first half of the 20th century, the contest was largely between professional foresters and the forest industries over

sustainable management of forest resources (Carron, 1985; Dargavel, 1995). For much of the last 40 years, coinciding with the larger-scale and more intensive harvesting of native forests for pulpwood, there has been strong contestation between the environmental movement, the forest industries, and forest managers over forest conservation, forest practices, and forest-based development (Ajani, 2007; Dargavel, 1995; Gale, 2008; Russell et al., 2010). Over the past 15 years, the substantial expansion of plantation forests on both agricultural and forest land has been a further focus of strong contestation in the Tasmanian community (Schirmer, 2009; WWF Australia, 2004).

The Australian federal government exercises only a limited role in forest policies and practices at the state level (McDermott et al., 2010, Chapter 8). However, because of the high degree of contest over Tasmanian forest policies and management since the 1980s, the Australian government has played a more active role in forest policy in Tasmania than in other Australian state. In particular, the Tasmanian Regional Forest Agreement 1997 and Tasmanian Community Forestry Agreement 2005, between the Australian and Tasmanian governments, have shaped recent Tasmanian forest policy (McDermott et al., 2010). Both governments have supported the more recent negotiation of a Tasmanian Forests Agreement, which is expected to reduce the area of public native forest available for timber harvesting and the volume of native forest sawlog harvested by half (Australian Government, 2011).

It is in these contexts that Tasmania's forest practices system was developed and has evolved since its introduction in 1985. Despite the subsequent extensive involvement of the Australian Government in Tasmanian forest policy, the forest practices system has remained solely the responsibility of Tasmania.

4. Tasmania's forest practices system

Tasmania's *Forest Practices Act 1985* (Parliament of Tasmania, 1985) had its genesis in the 1970s when public attitudes to forestry operations were largely ambivalent or supportive, and prior to the environmental activism that has subsequently strongly influenced Australian forest policy (Ajani, 2007; Dargavel, 1995). At that time, the pressure for regulation came primarily from foresters in both the public and private sectors. They were particularly concerned about poor regeneration and unsustainable forest practices on private land following the widespread introduction of more intensive harvesting regimes associated with the development of a native forest-based woodchip export industry in 1972 (Rolley, 1994). This industry created significant silvicultural and economic opportunities for better long-term forest management, by providing ready markets for previously non-commercial trees and residues from sawlog harvesting. However, it also provided an opportunity for landowners to either convert their forests to other land uses or to simply to 'log and leave' forests, in an unmanaged and often degraded condition. These problems were identified by a 1977 inquiry into private forestry in Tasmania (Everett and Gentle, 1977), which recommended the development of a regulatory system to encourage sustainable forest management across all tenures.

Thus, the objective of the Tasmanian forest practices system is to 'achieve sustainable management of Crown [public] and private forests with due care for the environment ... in a way that is as far as possible self-funding' (Parliament of Tasmania, 1985; *Forest Practices Act 1985*, Schedule 7). The system operates primarily through the provisions of the *Forest Practices Act* (the Act) and the associated *Forest Practices Code* (the Code), under the oversight of what is now an independent statutory body, the Forest Practices Authority (FPA). The forest practices system is based on a co-regulatory approach, involving responsible self-management by the forest industry, and monitoring, enforcement and public reporting by the FPA (FPA, 2012). The system emphasizes a partnership approach between government and the forest industry as the basis for both regulatory compliance and the continuous improvement of forest practices (Parliament of Tasmania, 1985). It has therefore been

characterised as a 'light-handed' approach to regulation (Hollander, 2006).

A key feature of the co-regulatory system is the training, accreditation and performance monitoring of Forest Practices Officers (FPOs) by the FPA. Under the Act, FPOs are delegated powers and responsibilities to plan, monitor and enforce the Code within the operations under their control. FPOs are employed or engaged by forest landowners or managers to prepare Forest Practices Plans (FPPs), which are the principal means of giving effect to the Code. Forest Practices Plans are required for all forest practices, which includes the establishment of forests, the harvesting of timber, the clearing of trees and any associated construction of roads and quarries, on all land tenures and for both native and plantation forests. Forest Practices Plans must be prepared and certified by an FPO at the coupe or compartment level for all operations; McIntosh and Ware (2008) present an example of how the Code is translated into operational specifications at this level. Although Tasmania's forest practices system predates the development of forest certification schemes, it provides a framework that delivers many of the requirements of the two schemes operating in Australia, the PEFC-accredited Australian Forestry Standard and the FSC (La Sala, 2012), which currently cover 1.8 million ha (76%) and 33,000 ha (1.4%) of Tasmania's wood production forests, respectively (FPA, 2012).

Tasmania's forest practices system has been criticised for a number of reasons, principally relating to the broader legislative and policy framework within which it operates, and the forest practices allowed by that framework (e.g. clearfelling, conversion of native forest to tree plantations, pest animal and plant management; see, amongst many others, Ajani, 2007; Lindenmayer, 2008; WWF Australia, 2004); to the potential for conflicts of interest for FPOs in their dual forest management and regulatory roles; and to inadequate transparency in some processes (e.g. Hollander, 2006; Russell et al., 2010). Conversely, the system was ranked as one of the two most prescriptive across the 45 jurisdictions assessed by McDermott et al. (2010), and is one of only two cases in that sample in which the forest practices system is overseen by a dedicated, independent, forest practices agency. Australia's national scientific organisation, CSIRO, similarly rated Tasmania's forest practices code as the most comprehensive amongst all Australian states and territories (Smethurst et al., 2012).

5. Structures and processes to promote compliance and enable enforcement

Regulation has traditionally been based on either the threat of penalties (the 'deterrence' model) or on persuasion and cooperation (the 'accommodative' model) (Ayres and Braithwaite, 1992). Both approaches have their strengths and weaknesses and regulatory theory now focuses on models of 'responsive regulation' that involve a hierarchy of graduated responses (Murphy, 2004). One version of this hierarchy is an 'enforcement pyramid' (Ayres and Braithwaite, 1992), in which the regulatory approach is predominantly one of cooperation and persuasion, followed by progressively tougher sanctions depending upon the seriousness of the non-compliance and the responsiveness of the offender.

The approach to forest regulation in Tasmania can be characterised as such a pyramid of responsive regulation (Fig. 1), in which the emphasis and primary focus are on achieving high levels of compliance through training, education and cooperation, with penalties as a last resort (Rolley, 1994). This approach is enunciated and enabled through the following provisions of the Tasmanian Forest Practices Act 1985 –

1. The administration of the Act by an independent statutory authority (the FPA) (Part 1A)
2. An emphasis on training and education (Schedule 7)
3. Compliance monitoring and reporting
 - a. Monitoring and reporting by FPOs (s.25A)
 - b. Monitoring and reporting by the FPA (Section 4E).
4. Enforcement powers, including—



Fig. 1. The hierarchy of compliance and enforcement provisions under the Tasmanian Forest Practices Act.

- a. The right of FPOs to enter upon any land and to obtain information relating to any forest practices (s.40)
- b. The issue of notices by FPOs to stop work and/or take prescribed actions in order to comply with the Act or certified forest practices plan (s.41)
- c. The issue of fines by the FPA (s.47B)
- d. Prosecution (s.47) with maximum penalties of up to 1000 penalty units per offence (currently one penalty unit = AUD \$130²)
- e. Revocation of the appointment of an FPO for failing to exercise due diligence (s.39).

Each of these provisions is discussed below.

5.1. The statutory basis for administration of the Forest Practices Act

When first established in 1985, the Tasmanian Forest Practices Act was administered by the then Forestry Commission, which had broad responsibilities for the management of state forests and for providing advice on private forestry. In 1994 the Commission was replaced by three separate organisations: Forestry Tasmania, a state-owned enterprise responsible for the management of state forest; Private Forests Tasmania, a state agency responsible for advice to private forest owners; and the Forest Practices Board (FPB), responsible for the administration of the Forest Practices Act as an 'independent' division of Forestry Tasmania. The board of the FPB comprised two of the directors from Forestry Tasmania, one director from Private Forests Tasmania, and the secretary (*viz.* head) of the state department responsible for environmental management and pollution control (the then Department of Environment and Land Management).

Whilst the FPB was seen within the forestry sector to serve its purpose in promoting good compliance standards, it was not perceived in the wider community to be truly independent from the commercial interests of Forestry Tasmania (Tasmanian Public Land Use Commission, 1997). As a result, the Forest Practices Act was amended in 1999 to establish the FPB as an independent statutory authority. The governance model for the new board of the FPB was based on representation of key stakeholder bodies, comprising directors appointed by the Minister from each of Forestry Tasmania, Private Forests Tasmania, local government, the forest industry, and the department responsible for environmental management and pollution. However, continuing perceptions about bias

in the representation of stakeholder bodies on the Board (Green, 2004) led to the board recommending its replacement with a governance model based on independent directors (Futureye, 2004). The changes were passed by parliament in 2005 with the creation of the Forest Practices Authority, a fully independent body at arm's length from both government and industry, able to make statutory decisions and to enforce the Act. The FPA provides advice to the Minister and is required to report annually to the Tasmanian parliament on the operation of the Act, but it is not subject to direction or interference from the Minister or other governmental bodies. The FPA is governed by a board of seven directors, appointed by the Minister under s.4A of the Act to provide expertise in the following areas: governance and public administration, sustainable forest management on public and private lands, environmental or natural resource management, biological science/nature conservation and community liaison and local government.

The Act requires the FPA to provide annual reports on its monitoring and enforcement functions, including a report on the standards of forest practices that are being achieved and the degree of compliance with the Act and Forest Practices Code. The FPA's Annual Report is required to be tabled in Parliament and it is published on the FPA website (www.fpa.tas.gov.au). The statutory functions of the Authority are funded by both an annual appropriation by parliament (AUD \$1.4 million in 2012), and through prescribed fees on submission of forest practices plans, from fines, and from the sale of publications and other services. These latter sources totalled about AUD \$1.2 million in 2009, but had declined to about AUD \$300,000 in 2011 due to a decline in forest industry activity (FPA, 2012).

The principle of independent regulation is strongly established in Australia, with a plethora of statutory watchdogs that oversee diverse fields of activity (Monash University, 2013). Civil society is fiercely critical of any political interference that appears to undermine the functioning of these bodies. For example, the Tasmanian Government incurred significant public anger and electoral backlash by removing the approval of a major forest industry project, a proposed pulp mill in the Tamar Valley, from the authority of the relevant independent statutory regulator (not, in this case, the FPA) and introducing legislation to fast-track the approval through Parliament (Gale, 2008).

The FPA does have a role in providing advice to the Minister on forest practices policy under s.4C of the Act, and its advocacy has resulted in legislative amendments, including improved regulation of land clearing and plantation establishment, and improved governance, compliance reporting and enforcement measures (Forest Practices Board, 1995 to 2005; FPA, 2006 to 2012). Similarly, the FPA has used its independent status to advocate for policy change through representations to the Minister and parliamentary inquiries (e.g. Legislative Council Select Committee, 2013; Wilkinson and Duff, 2013). However, the Tasmanian government has chosen to keep the FPA and its regulatory role at arm's length from matters of broader forest policy, such as the deliberations and negotiations that led to the 2005 Tasmanian Community Forest Agreement (Tasmanian and Australian Governments, 2005) and the 2011 Tasmanian Forest Agreement (Australian Government, 2011).

The evolution of the governance arrangements for the regulation of forest practices in Tasmania demonstrates the importance to the credibility of the forest practices system of the regulator both being independent and being seen to be independent. This is challenging in two major respects. Firstly, the FPA and its board face the challenge, common to Ministerially-appointed statutory entities in many jurisdictions, of exercising its independent capacity to act, without fear of favour, but without being judged by the government to have overstepped its authority. Secondly, whilst, as described above, the FPA is now independent of government, there is often a lack of differentiation in the public's mind between the forest policy settings that are the province of government and the regulation of technical standards for which the FPA has responsibility. Core elements of Tasmanian forest policy, such as decisions about the allocation of forested lands to particular tenures, permissible silvicultural systems, Aboriginal peoples'

² AUD \$1 = USD \$0.91 (at 18.7.13).

rights, and community participation in forest management, have been the subject of vigorous public and political debate, and to numerous inquiries and agreements between the Tasmanian and Australian governments, over the past four decades (e.g. Ajani, 2007; Australian Government, 2011).

The lack of differentiation between policy settings and technical standards in much of the public discourse has led to criticism of the FPA and its predecessor FPB over contentious forest policy issues, such as the clearfelling of old growth forests and the conversion of native forests to plantations, that were outside of the control of the regulator (Forest Practices Board, 1995 to 2005; Russell et al., 2010). Increasingly, however, other forest sector actors have recognised the distinction between policy and regulation, and have lobbied government to ensure that the role of the FPA as an environmental regulator is not downgraded or undermined as a result of policy decisions, e.g. those about future levels of timber harvesting in native forests (Tasmanian Conservation Trust, 2013).

5.2. Training and education

The introduction of the forest practices system in 1985 was accompanied by a major focus on the training of FPOs and the education of landowners. The early FPO courses focused on upgrading skills and changing attitudes away from the primacy of wood production towards a broader understanding of sustainable management of the forests' natural and cultural values. Despite some initial trepidation and resistance, most foresters and contractors rapidly embraced the new system (FPA, 2007a).

The FPA continues to offer annual training courses for prospective FPOs, with an average of 24 participants attending each course. The subject areas cover forest flora, fauna, soils, water, geomorphology, cultural heritage, visual landscape, silviculture, harvesting, road construction, fire management, monitoring, enforcement and communication (FPA, 2006 to 2012). The FPA requires FPOs to attend biennial refresher programmes and regular training courses on new developments to ensure that their knowledge remains up to date. The training of forest contractors and forest workers is undertaken by forest companies and registered industry training organisations, which also provide other skills training in the sector. Training is an ongoing process because of normal employee turn-over within companies and the need to regularly update those working within the system.

In 2007 the FPA introduced a system of annual awards to recognise and encourage good practice – amongst FPOs, contractors, landowners, forest planners and researchers. Winners are presented with a framed certificate at an awards ceremony and their testimonials are described in *Forest Practices News*, a regular newsletter published by the FPA (see www.fpa.tas.gov.au) and widely circulated throughout the Tasmanian forestry sector. The awards have been very successful in promoting positive attitudes and pride amongst those working within the system, as exemplified by the comments of the family firm of logging contractors who were one of the 2007 award winners:

It's great for us that we have won this forest practices award. For us, it's an acknowledgement of the quality of work which we strive to achieve. Our motto is safety and quality before quantity. Because of this ethos, we are not just focused on prices and so we don't always offer the most competitive price. Now, thanks to this award, we can justify our approach. This will help in maintaining high standards as it will justify our rates, which are higher than some other contractors. ... All our workers have pride in their work and we work together to achieve the high standards we are so proud of.

[R & G Bye, quoted in FPA, 2007b.]

Broader education about the forest practices system has been more readily achieved for major forestry organisations than for the small-scale landowners who collectively manage the majority of Tasmania's privately-owned forests. Maintaining high levels of awareness of

legislative requirements is made more challenging by frequent changes to the forest practices system: for example, there have been 10 major amendments to the Forest Practices Act in the last 20 years. Major changes to the system in 2007 were accompanied by additional government funding for landowner education, as had been the case when the system was introduced in 1985. In both cases, these programmes were conducted in collaboration with key stakeholder groups such as the Country Sawmillers Federation (Forestry Commission, 1993) and the Tasmanian Farmers and Graziers Association (Field, 2008), often by the temporary placement of governmental staff or resources in those organisations to build internal capacity.

An analysis by Wilkinson (2007) found that a lack of knowledge about the Act and Code still accounted for 29% of recorded non-compliances during the period 2000–2006, some 15–20 years after the introduction of the Act. These results highlight the importance of maintaining ongoing training and education programmes, particularly across the private sector, where many small-scale forest owners are involved with forest operations only on an intermittent basis.

5.3. Compliance monitoring and reporting

5.3.1. Compliance monitoring and reporting by FPOs

The original Forest Practices Act relied upon self-regulation by forest managers, backed up by the independent monitoring of a sample (10–15%) of FPPs by the regulator. In practice, this worked comparatively well for large organisations that employed FPOs, and for which regular coupe inspections were part of the normal management system. However, on the smaller independent private property operations, there was little monitoring outside of the 10–15% sample by the regulator (see Section 5.3.2 below), and compliance standards were consistently reported by the FPA and its predecessors to be lower than those for larger organisations (Forest Practices Board, 1995 to 2005). As a result, in 1999, parliament accepted a recommendation from the then FPB to amend the Act to introduce requirements for compliance reports to be lodged at the completion of all FPPs. Because of the relatively long time period of some FPPs, of up to five years, this requirement was amended in 2005 to require compliance reports at the end of each discrete operational phase within a FPP (for example, at the end of phases of road construction, harvesting, reforestation treatments and stocking surveys). The compliance reports must be prepared by an FPO and lodged with the FPA within 30 days after the completion of each phase. The FPA checks the accuracy of compliance reports as part of its regular assessment program.

The large forestry organisations responded to the new requirements with a lodgement rate of 87% in 2005, rising to 100% by 2009. The response of the small independent private sector was poor, averaging less than 47% by 2008, and prompting concerns that a failure to lodge compliance reports may have been indicative of other compliance issues. Consequently, the FPA increasingly used its regulatory powers to enforce the lodgement of the reports, resulting in a lodgement rate of 99% in 2009 (FPA, 2009). The compliance levels reported by small-scale operators (85% reported to be “fully compliant” and a further 12% reported with minor non-compliances and no further action required) are now consistent with the results of the FPA's independent monitoring assessments (90% reported to be “above sound”; FPA 2010), which are discussed in Section 5.3.2 below.

Regular compliance reporting in itself is a powerful regulatory tool. Prior to the introduction of mandatory compliance reports, it could be argued that forest owners could ‘take a risk’ on the basis that there was only a 10–15% chance of being assessed by the regulator. The requirement for all operations to be checked places the onus on the operators to ensure that their operations are compliant and that all requirements, including post-harvesting rehabilitation works, are completed in a timely manner. Concomitantly, it increased compliance costs by up to 20% for those forest owners whose management system did not already require such monitoring (see Table 1). Nevertheless, compliance monitoring and reporting

Table 1
Average regulatory costs for forest owners for timber harvesting and reforestation in Tasmania. (Based on an average 50 ha harvesting unit. Operational costs such as road construction, logging, haulage and reforestation costs are not included).

Item	Native forest operations (average cost AUD/ha)	Plantation forest operations (average cost AUD/ha)
Planning costs		
1. preparation of a forest practices plan	\$30 to \$200	\$20 to \$80
2. application fee (covers the cost of assessment of the application by the FPA)	\$20 to \$40	\$8 to \$22
Implementation costs (marking of boundaries, reserves etc.)	\$10 to \$100+	\$10 to \$30
Monitoring costs (inspections by an FPO)	\$10 to \$40	\$10 to \$40
Compliance costs (compliance check and lodgement of report by an FPO)	\$10 to \$40	\$5 to \$40
Total regulatory costs for forest owner	\$80 to \$420+	\$53 to \$212
Revenue (royalty payment to forest owner)	\$700 to \$10,000	\$1500 to \$6000

are now clearly established as the ‘cost of doing business’ in the Tasmanian forestry sector, whatever the scale of operation. Collaterally, it also serves to meet some of the requirements for forest certification under schemes operating in Tasmania.

The ‘self-certification’ of compliance presents FPOs with a potential conflict with their employer’s interests (Hollander, 2006). Such a potential conflict of interest is similar to those faced by other accredited professionals who have to certify that their own work meets professional or industry standards in fields as diverse as occupational health and safety, taxation, electrical installations and manufactured products (e.g. Danforth, 2006; Government of South Australia, 2011; Gunningham, 2002; Murphy, 2004). Public concern about self-certification is addressed under the forest practices system through independent monitoring and regular public reporting of results by the FPA. Evidence suggests that the vast majority of FPOs take great pride in their work (FPA, 2008), and are aware that their reports are randomly checked by the FPA and of the serious consequences of inaccurate or false reporting. As discussed in Section 5.4.5 below, the incidence of transgression by FPOs appears to be very low.

5.3.2. Monitoring and reporting by the FPA

The Act requires the FPA to assess the implementation and effectiveness of a sample of forest practices plans and to annually report its findings to parliament. Implementation or ‘compliance’ monitoring is annually undertaken through formal procedures (FPA, 2009), and the findings are published in the FPA’s Annual Report. In general, a stratified random sample equivalent to about 10–15% of the FPPs certified in each year is assessed, at stages varying from desk-top assessment of new FPPs to field checks of completed.

Results of the FPA’s monitoring demonstrate substantial improvement in the standard of implementation of FPPs over the 25 years since the introduction of the Forest Practices Code (Fig. 2). Less than half of all operations were rated as ‘sound’ or better in 1985, two years

before the introduction of the Code. This proportion increased to 68% two years after the Code was introduced and rose steadily to 80% after six years. Compliance assessed at the level of ‘sound’ or better has remained within the range of 85–95% over the last 15 years.

As noted above, the standards achieved by small, independent operators on private property are consistently well below those achieved on State forest and on the private land operations of the large industrial companies (Annual Reports: Forest Practices Board, 1995 to 2005; FPA, 2006 to 2012). This is not unexpected; the public forest manager (Forestry Tasmania) and the larger companies have greater resources and more staff and FPOs to plan, implement and monitor their operations. In addition, all operations on State forest and the majority of operations by the large industrial companies on private land are conducted under environmental management systems (predominantly ISO14000; see ISO, 2011) and/or forest certification schemes (predominantly the Australian Standard for Sustainable Forest Management; see Australian Forestry Standard, 2012). In contrast, smaller private landowners tend to have less capacity and experience with forestry operations, and they therefore rely more upon the expertise of the contractors who carry out the forest practices. Many of these landowners are also reluctant to pay for regular monitoring by FPOs beyond the compliance inspections that are legally required at the end of each operational phase under s.25A of the Act (see Section 5.3.1 above). As a result, the number of breaches serious enough to warrant a fine are disproportionately higher for the smaller operators; these operations represent 22% of all operations and account for 50% of fines, compared with the larger industrial companies (45% of operations and 24% of fines) and operations on State forest (33% of operations and 26% of fines) (derived from Annual Reports: Forest Practices Authority 2000 to 2012).

The FPA conducts ‘effectiveness monitoring’ to evaluate whether management prescriptions are achieving good environmental outcomes.

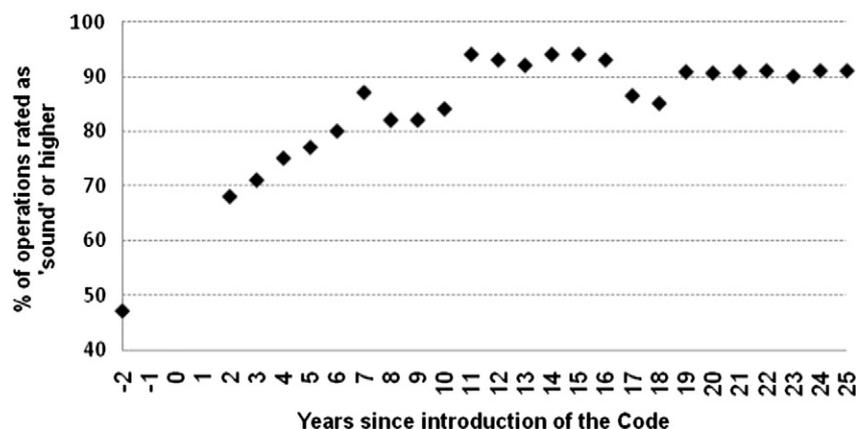


Fig. 2. Results from the FPA’s annual assessment of the average standard of compliance with forest practice plans from 1985 (two years before the introduction of the Forest Practices Code) to 2012 (25 years after).

This monitoring comprises research and studies conducted by scientific staff employed within the FPA in collaboration with other research organisations and forest managers. The results are reported in publications (e.g. Koch et al., 2012) and summarised in the FPA's Annual Report.

5.4. Enforcement

5.4.1. The right of FPOs to enter upon any land and to obtain information relating to any forest practices

Under the Act, FPOs have broad powers to enter any land where forest practices have been carried out and request information from any person associated with those practices. Any person who hinders an FPO or fails to comply with a request for information is guilty of an offence and may be fined (up to 5 penalty units; currently AUD \$650) or imprisoned for up to three months.

These powers are important for monitoring and investigating potential breaches. Whilst most landowners are generally cooperative, a small minority will resort to threats of intimidation or trespass, and it is necessary that investigating officers have appropriate powers and protection under the Act. In practice, these powers have been rarely required; in the experience of the senior author, there have only been four cases in the last 14 years where it has been necessary for the FPA to enlist the assistance of police in investigations where the alleged offenders were demonstrating threatening or obstructionist behaviour towards an investigating FPO.

5.4.2. The issue of notices by FPOs to stop work and/or take prescribed actions in order to comply with the Act or certified forest practices plan

FPOs have powers to issue verbal or written notices to direct persons to cease operations or to take any actions necessary to comply with the provisions of the Act or a certified forest practices plan. Persons who are served such a notice have the right of appeal to a tribunal. A failure to comply with a written notice is an offence under the Act, with significant penalties (up to 100 penalty units, currently AUD \$13,000). Where a person fails to comply with a notice, the FPA's Chief Forest Practices Officer may engage a person to carry out the required works and recover the costs from the offender.

Notices are the 'front line' of enforcement activity under the Act. Most are issued verbally as part of day to day supervision of forestry operations by FPOs, with about 20–30 written notices each year for more serious matters (FPA, 2012). Where possible, notices are used to require corrective actions, such as installing water bars on skid tracks to prevent erosion. With more serious cases of non-compliance, such as harvesting trees within areas reserved from harvesting, notices may be issued to stop the activity pending further investigation and resolution of the offence by way of fines or prosecution (see below). Notices may also be used to require major rehabilitation or offset works, such as the revegetation of cleared areas or the setting aside of compensatory areas as reserves. The costs of enforced corrective actions or rehabilitation works, which must be borne by the operator, are often significant (see the case studies in Box 1); these costs in themselves are likely to provide an effective deterrent.

5.4.3. The issue of fines by the FPA

The FPA has strong powers to impose fines of an amount up to twice the cost of making good any loss or damage or any amount that will constitute a sanction and deterrent, subject to the maximum penalties prescribed under the Act (up to 1,000 penalty units, currently AUD \$130,000 per offence). The provision was introduced in 1994 and first used by the FPA in 1999 after it became apparent that the court process was cumbersome and time-consuming for all concerned, and not always effective, with several cases lost on minor technicalities (Forestry Commission, 1993). The fines are offered as an alternative to prosecution. The vast majority of offenders opt to pay the prescribed fine and avoid the more expensive and adversarial nature of a prosecution. The number of successful prosecutions brought, and of fines issued and their magnitude, by the FPA are summarised in Fig. 3. The data show

Box 1

Case studies of actions taken by the FPA in relation to breaches of the Forest Practices Act.

1. Higher level breaches

Case 1 – Corrective action

Nature of Breach – Clearing of a streamside reserve (1.2 ha) and construction of a road and fence adjacent to the stream

Tenure – Private property

Method of detection – detected and reported to the FPA by a Forest Practices Officer

Cause of breach – lack of knowledge of the legislation

Action taken – The landowner was required to relocate the road and fence outside of the streamside reserve and to actively rehabilitate the riparian zone with native vegetation. The total cost of the remedial works exceeded \$42,000.

Case 2 – Fine and corrective actions

Nature of Breach – harvesting encroachment into 7 ha of Forest Reserve

Tenure – State forest

Method of detection – detected by the State forest manager during post-harvest monitoring and reported to the FPA

Cause of breach – human error and equipment malfunction in the marking of a boundary

Action taken – The State forest manager was fined \$25,000, required to regenerate the area and to set aside an additional 14.5 ha of similar forest in an extended reserve.

Case 3 – Fine and corrective actions

Nature of Breach – road construction within a streamside reserve, causing damage to the stream

Tenure – State forest and Crown Reserve

Method of detection – detected by a Forest Practices Officer during routine monitoring and reported to the FPA

Cause of breach – serious management deficiencies within the forestry company

Action taken – The forestry company was fined \$50,000 and required to carry out extensive remedial works at a total cost of \$120,000.

2. Lower level breaches

Case 1 – Fine

Nature of Breach – felling three trees beyond the boundary of a forest practices plan

Tenure – State forest

Method of detection – reported by a Forest Practices Officer during monitoring

Cause of breach – deliberate felling of trees for firewood

Action taken – the contractor was fined \$1,000.

Case 2 – Fine

Nature of Breach – construction of a landing not authorised in a forest practices plan

Tenure – State forest

Method of detection – detected by a Forest Practices Officer during routine monitoring

Cause of breach – insufficient attention to the requirements of the forest practices plan

Action taken – the contractor was fined \$1000.

Case 3 – Fine and corrective action

Nature of Breach – harvesting contrary to the wet weather closure requirements of the Forest Practices Code

Tenure – private property

Method of detection – detected by the FPA during independent monitoring

Cause of breach – inadequate supervision of the operation

Action taken – the contractor was fined \$2000 and required to carry out remedial works on the snig tracks and roads.

a spike in fines in 2005 and 2006 during a period of rapid expansion in the forestry sector (FPA, 2006 to 2012).

In determining whether or not to deal with a matter by way of a fine, the FPA considers factors that include—

- Environmental harm, reparability and public sensitivity
- Intention and degree of co-operation
- Corrective actions taken
- Previous history of the offender.

On average, breaches are found in about 6% of Tasmanian forestry operations, and about 1% of operations have breaches that are serious enough to warrant a fine or prosecution (Wilkinson, 2007). Penalties are seen both by the regulator and many in the industry as a powerful way to deter would-be offenders and to discourage 'free-riders' and complacency. In the words of one forest manager:

no-one likes being fined but it's good that people do get fined because it shows that the system has got teeth and that everyone has to apply the same standards.

[S. Jennings, pers. comm.]

There is also a general presumption that 'the punishment should fit the crime'; thus, penalties have been applied in 49% of cases where the non-compliance was of a deliberate nature, compared with only 12% of cases where the non-compliance was due to human error or deficiencies in knowledge or the management system (data derived from Wilkinson, 2007).

5.4.4. Prosecution

Prosecution under the Act is generally only used where other forms of enforcement have failed. Whilst most regulators and offenders will generally try to avoid the costly, adversarial nature of litigation, it remains the ultimate forum for regulators in seeking to enforce their legislation and for defendants who assert their innocence. Unfortunately, the penalties imposed by courts often fall short of the expectations of

the regulator and the public (Bartel, 2003). For example, in 2006, the FPA prosecuted a landowner who illegally cleared 20 ha of forest formally classified as a 'threatened native vegetation community'. The landowner pleaded guilty and was fined AUD \$3000, a penalty that the FPA considered to be manifestly inadequate. Maximum penalties under the Forest Practices Act were subsequently increased by the Tasmanian Parliament from 150 to 1000 penalty points (currently equal to AUD \$130,000) per offence, with the Minister for Forests arguing that 'a penalty is necessary to deter persons from causing offences under the Act', and that 'the community will not accept poor standards of forest practices' (Green, 2004).

There were no prosecutions initiated for the first three years after the introduction of the Act and Code, when the emphasis was firmly placed on training and education. For the next eight years until 1998, there were 27 complaints laid, with only two-thirds of cases (18) resulting in successful convictions, and most cases taking several years to resolve. Since 1999, the FPA has generally only taken prosecution action where the defendant has refused other compliance measures such as corrective actions and/or prescribed fines. Over the last 12 years the number of successful prosecutions has averaged less than one per year, whilst more than seven cases per year are successfully resolved through the payment of fines imposed by the FPA (Fig. 3).

5.4.5. Revocation of the appointment of an FPO for failing to exercise due diligence

Under the co-regulatory approach of the forest practices system, much of the responsibility for maintaining high compliance standards falls to the c. 230 FPOs who are employed within the public and private sectors. The FPA places a high priority on training, supporting and monitoring the performance of these officers. The vast majority of FPOs maintain very high professional standards. However, as in any field of human performance, there are instances of sub-standard performance due to errors, deficiencies in skills and experience, or inappropriate decision-making. Any instances of alleged unsatisfactory performance are formally investigated by the FPA and addressed through further training, warnings, fixed

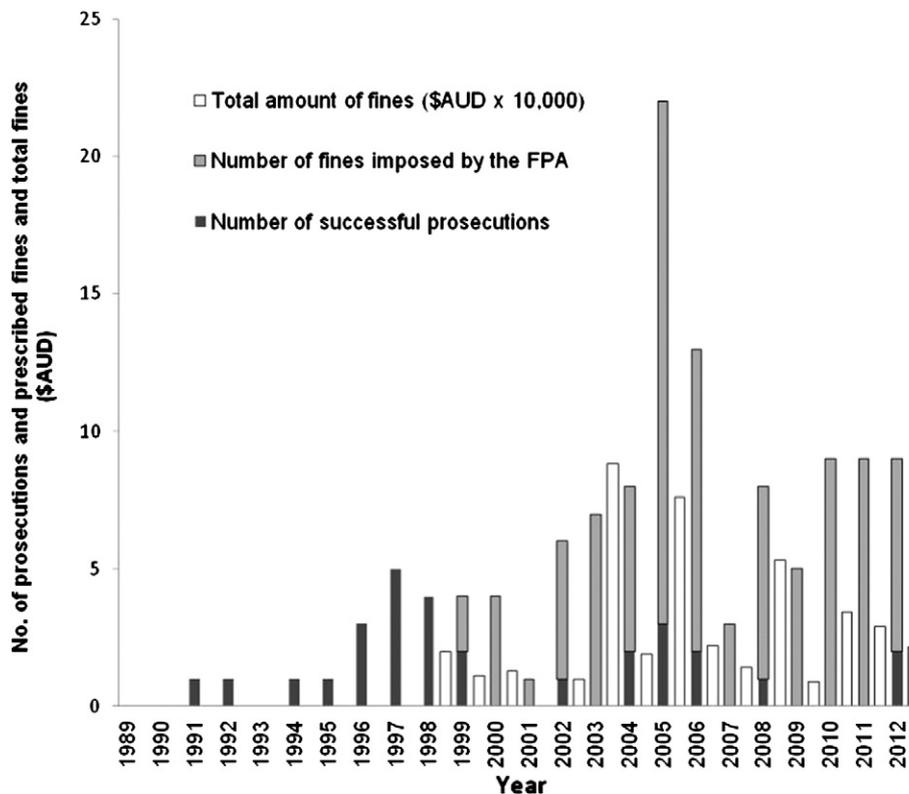


Fig. 3. Prosecutions and fines imposed for offences under the Forest Practices Act 1989 to 2012.

term suspension or permanent revocation of their appointment. Disciplinary actions are reported in the FPA's Annual Report. There were 21 warnings, 24 suspensions and five revocations of appointment over the 18 year period 1995 to 2012 (Forest Practices Board 1995–2005, FPA, 2006 to 2012), corresponding to an annual average of about 1.2% of FPOs being subject to formal investigation for performance matters. This rate appears comparable to those for other administrative and law enforcement bodies in Western democracies: for example, an annual rate of about 2.6% for public sector employees and police in the Australian state of Queensland (derived from statistics in [Crime and Misconduct Commission, 2012](#) and [Public Service Commission, 2012](#)), and of 1% for reported misconduct of police officers in the USA ([Packham, 2011](#)).

6. Causes of poor compliance in environmental regulation – evidence from Tasmania's forest practices system

There are numerous examples worldwide where well-intentioned regulatory frameworks have created “a plethora of rules, [but] an absence of enforceability” ([Forsyth, 1998](#)). Reasons for poor enforcement in environmental management in Australia include inadequate monitoring, lack of funding, lack of political will exacerbated by the pressure of influential stakeholders, regulatory capture, inadequate legislation, and inadequate sentencing by the courts ([Bartel, 2003](#); [Riddell, 2005](#)).

[Wilkinson \(2007\)](#) analysed 648 investigations of non-compliance conducted by the Tasmanian FPA over the period 2000–2006, and attributed the causes of non-compliance to one of the following factors—

1. Deficient management system (accounting for 35% of non-compliances)
2. Human error (22%)
3. Lack of knowledge or understanding of the legislative requirements (18%)
4. Lack of knowledge or understanding of the provisions of the Forest Practices Code or forest practices plan (11%)
5. Intentional (15%).

This analysis showed that 85% of non-compliances were associated with system deficiencies, human error, or lack of knowledge (factors 1–4 above), and only 15% were intentional. On this basis, [Wilkinson \(2007\)](#) concluded that the biggest gains in compliance standards would be achieved through more efforts in training, education and improved management systems, but that ‘regulatory teeth’ were also needed to deal with those who were intentionally non-compliant.

7. Discussion and conclusions

Forest practices systems such as Tasmania's are one expression of ‘next generation’ (sensu [Gunningham, 2009](#)) approaches to environmental regulation, each form of which has strengths and limitations. Prior assessments of the Tasmanian forest practices system have focused on its ‘fit’ with governance and regulatory principles (e.g. [Hollander, 2006](#); [Nambiar et al., 2012](#); [Russell et al., 2010](#)); evaluation of the system's performance on the basis of empirical data has been limited to the annual reports of the Forest Practices Authority and its precursors. Whilst various evaluations have been reported for a number of North American forest practices systems (e.g. [Cubbage, 2004](#); [Ellefson et al., 2007](#); [Ice et al., 2004](#)), this has not generally been the case for Australian jurisdictions. This paper has sought to begin to address that deficiency.

Notwithstanding the context-specific nature of forest practices systems ([McDermott et al., 2010](#)), the results reported here exhibit many similarities with those reported elsewhere. For example, both the pattern and level of forest practices plan compliance in Tasmania ([Section 5.3.2](#)) correspond closely to those reported by [Ice et al. \(2004: Figure 1\)](#) over a similar period for Best Management Practice implementation in Montana, USA, where the progressive improvement in compliance to sustained high levels was also attributed to education of those engaged in forest harvesting. [Ice et al. \(2004\)](#) also note continuing public scepticism about

the results of auditing and monitoring of forest practices impacts, despite an increasing focus and expenditure on more rigorous and scientifically-defensible assessments of forest practice impacts.

Such findings emphasise that achieving and sustaining high levels of compliance are necessary but insufficient conditions for the credibility of forest practices systems; the system must, as with other natural resource governance arrangements, be seen as legitimate³ (sensu [McDermott 2012](#); [Wallington et al., 2008](#)) to enjoy public confidence and trust. This is particularly difficult to achieve in systems that are based on a co-regulatory approach, such as Tasmania's, which are open to criticism of regulatory capture (e.g. [Hollander, 2006](#)). We discuss below how key elements of building credibility and trust have and might continue to be addressed in the Tasmanian context, at each of the operational, system and institutional levels.

7.1. Operational level

A co-regulatory forest practices system depends fundamentally for its success on the commitment and cooperation of forest owners, managers and workers. Engendering a positive attitude to the forest practices system amongst these groups, and a culture of ongoing innovation and improvement in delivering its objectives, is the foundation of achieving the environmental protection goals of the system. The evidence from Tasmania suggests that, whilst this element of an effective forest practices system has largely been achieved through ongoing education and training for those fully or regularly engaged in forest management or operations, it remains difficult to engender a sufficient level of knowledge and understanding amongst small-scale forest owners whose forests are subject to only infrequent operations, and who may also see regulations for forest operations as an unreasonable constraint on their land use and profitability ([Productivity Commission, 2004](#)).

In the Australian context, this situation has parallels in the challenges of public education about bushfires, as severe fires typically occur only infrequently at any particular geographic location. Education campaigns about bushfires have received considerable attention in Australia (e.g. [Kanowski et al., 2005](#)), and may be relevant to landowner education about forest practices. It is also the case that the financial costs of compliance with the forest practices system are typically proportionally greater for small-scale forest owners, a situation analogous to that of forest certification; as for certification (e.g. [Auld et al., 2008](#); [Butterfield et al., 2005](#)), reducing cost barriers to small-scale forest owners is an important factor in fostering their willingness to participate most effectively in the forest practices system.

7.2. System level

At the level of the regulatory system itself, effective and transparent processes of compliance monitoring and public reporting are fundamental to establishing and maintaining public credibility and trust. In the Tasmanian case, the FPA's monitoring strategy and its annual compliance reporting to parliament, are the principle means of fostering public confidence in the forest practices system. Similar independent monitoring and reporting have been implemented in the Australian state of Victoria ([Department of Sustainability and Environment, 2012](#)), but not in the other Australian states and territories ([Smethurst et al., 2012](#)). The ultimate use of punitive measures, such as fines and legal proceedings, is a necessary part of establishing the credentials of a regulatory system; the Tasmanian experience suggests that invoking these measures as part of the regulatory tool-kit does lead to changed behaviour and improved compliance.

Market-based mechanisms to improve forest management and communicate its quality, through forest certification, are also important

³ Following [Bernstein \(2004, p 18\)](#), [McDermott \(2012\)](#) defines legitimacy as a “collective audience's shared belief that ‘the actions of an entity are desirable, proper or appropriate’”.

measures complementary to regulation that can, in turn, strengthen the legitimacy of the regulatory system. However, to date, having 76% of its wood production forests certified under the PEFC-accredited Australian Forest Certification Scheme has had little evident impact on public attitudes to forest policies and practices in Tasmania. As a result, the Tasmanian government and forest industry have recently made a commitment to seek FSC certification for Tasmania's public wood production forests (Australian Government, 2011), in the hope that the greater emphasis of the FSC on stakeholder consultation will better address issues related to the social acceptability of forest policies and practices. Recent amendments to the Forest Practices Act explicitly require the FPA to review the Forest Practices Code in a manner that is consistent with this objective (Parliament of Tasmania, 2013).

7.3. Institutional level

At the institutional level, the legitimacy of the entity overseeing the forest practices system is paramount. In the initial years of the forest practices system, the principal concern was legitimacy with the forest industry; this was reflected in the composition and institutional location of the initial Forest Practices Board within the state forestry agency. As the system evolved and matured, greater weight was given to legitimacy of the forest practices system in the broader public domain, and both independence from vested interests and representativeness of the diversity of interests in forest management were recognised as fundamental (e.g. Green, 2004; Futureye, 2004). Consequently, the establishment of an independent Authority reporting to parliament has been recognised as a necessary condition for strengthening public confidence and trust in the forest practices system. Until the establishment in 2005 of an independent authority governed by a skills-based Board, governance arrangements for the forest practices system were open to assertions and perceptions of pro-industry bias (e.g. WWF Australia, 2004). Establishing a greater level of public understanding about the FPA's roles and responsibilities, and where the limits of those lie, are also necessary (Russell et al., 2010), but have been more difficult to achieve in the highly-contested political and social contexts of Tasmanian forestry.

7.4. Conclusions

The major forest policy changes currently underway in Tasmania (Australian Government, 2011) are intended to greatly diminish the extent of social conflict over native forest management, largely by greatly increasing the area of native forest reserved from harvesting and reducing the allowable cut from remaining forests. However, one perverse outcome associated with increasing the polarisation of forest management into either protected forests or wood production zones (*sensu* 'land apartheid' – Lindenmayer, 2008) is that it can lead to an intensification of timber harvesting regimes within wood production forests, which can exacerbate, rather than diminish, public concern about forest practices (Wilkinson, 2011; Tasmanian Conservation Trust, 2013). Nevertheless, these changes and their consequences should help differentiate and clarify policy and regulatory roles and responsibilities in Tasmanian forestry, and – in turn – enhance the legitimacy of both forestry operations and the forest practices system that governs them.

The Tasmanian forest practices system offers an informative case study of a co-regulatory system. The key to its effective operation is the FPOs, who have the powers to certify operations, report on compliance and take action to enforce the rules as required. The potential conflicts of interest of the self-regulatory FPO system are transparently managed through the statutory monitoring and enforcement powers of the FPA as the independent regulator. The emphasis of the FPA and its precursors on training, education, monitoring and corrective actions as the primary tools for achieving and maintaining high standards of compliance has been demonstrably effective in improving compliance with forest practices requirements, but the importance of punitive measures as a fall-back is also evident. The fundamental importance of establishing

legitimacy for forest practices systems, through independent and representative governance arrangements, is evident from the Tasmanian case; so too are the challenges of doing so in strongly contested political and social contexts. As noted above, current changes to forest policy and institutional arrangements in Tasmania should lead to further clarification of the roles of the forest practices regulator, and enhance its legitimacy – although there is also potential for the converse.

Nevertheless, the results of the analyses we report here, revealing high levels of compliance since the Tasmanian forest practices system became fully established, suggest that well-designed and implemented co-regulatory approaches, with high levels of transparency, can be effective in fostering achievement of forest practices standards. Further analysis, focusing on the effectiveness of the forest practices system in delivering acceptable social, economic and environmental outcomes rather than just on levels of compliance, would offer further insights into the utility of the Tasmanian forest practices system and the learnings that can be drawn from it.

Acknowledgements

The authors gratefully acknowledge the valuable comments provided by Dr Wynne Russell and two anonymous reviewers on a draft of this paper.

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