1. Introduction: setting the scene

In this chapter we provide a brief commentary on the nature of EIA itself and the types of skills it calls for, before moving on to explore the teaching of EIA (including its specialist forms) as it has evolved, and to provide context for the chapters that follow.

1.1 ABOUT EIA

Environmental impact assessment (EIA) is arguably the most successful and well known environmental decision-making and management tool globally. Since its beginnings over 50 years ago under the auspices of the National Environmental Policy Act 1969 (US), EIA can now be found operating at the national level in every country of the world (Bond et al., 2020). It is also applied by sub-national levels of government (e.g. states, provinces, municipalities or local government), by finance organisations such as the international development banks who apply it to development that they fund, as well as by some non-government organisations. EIA is so ubiquitous that it would be an impossible task to determine exactly how many individual processes are in place worldwide. Suffice to say that EIA stands as ‘the most widely emulated environmental policy innovation of the twentieth century’ (Karkkainen, 2007, p45). It is now also considered to be ‘a globally accepted norm’ that ‘may now be seen as a “general principle of law recognized by civilized nations,” and in that sense has joined the body of public international law’ (Yang, 2019, p525).

EIA aims to inform decision-making associated with new development proposals likely to have a significant adverse impact on the environment. Such development may take many forms including new legislation and policies, plans and individual development projects, as well as the modification of existing operating projects including activities associated with the decommissioning and rehabilitation of non-permanent infrastructure. It is intended that EIA be undertaken throughout the entire development life-cycle incorporating conception, design, authorisation, implementation, follow-up and, where applicable, decommissioning and transitioning to a new post-development use of the environment. By identifying and taking into account the likely ‘future consequences of a current or proposed action’ (IAIA, 2009, p1), EIA is intended to contribute to sustainable development. The extent to which EIA can reasonably be expected to achieve this ‘will be determined by the kinds of

development (or human actions) to which EIA is applied and how “environment” – that is, the E in EIA – itself is defined’ (Morrison-Saunders, 2018, p8).

EIA is ‘a process with scientific, legal, administrative, social and political dimensions’ (Morrison-Saunders, 2018, p6), and as such the practice of EIA involves both science and art (e.g. Petts, 1999; Cashmore, 2004). The science dimension is represented by the many disciplines that may need to be involved in understanding the sustainability consequences of development, through a methodological approach involving the ‘systematic acquisition and employment of knowledge’ (Morrison-Saunders, 2018, p6). The art dimension refers to the ‘policy skills and acumen that is acquired experientially and adapted to purpose and context in [EIA]’ (Morrison-Saunders and Sadler, 2010, p82).

In his discussion of EIA teaching requirements, Wood (1985) differentiates between roles for ‘specialists... [who] would provide detailed advice on particular environmental impacts’ (p324) and a ‘*generalist* who should be able to understand the issues, write well, and comprehend a wide variety of technical material’ (pp323–324). Similarly, and subsequently, Lee (1988, p144) differentiated between the ‘personnel-training needs’ of two main types of EIA practitioners: the ‘technical specialist’ and the ‘EIA manager’. These two broad types of EIA learning needs largely reflect the science and art dimensions of EIA practice. They are a distillation of four roles identified in Wood (1985) and seven roles described by Lee and Wood (1985), also in the context of identifying the training needs of those involved in EIA. The many disciplines and professions which may be involved in the conduct of EIA become apparent later in this chapter where we discuss where and how EIA is taught.

The defining characteristics of EIA discussed thus far naturally have implications for how it is best taught. Much of this book is devoted to unpacking the fundamental principles underpinning effective EIA teaching practice accordingly.

1.2 NATURE OF EIA TEACHING

Logic suggests that teaching EIA is as old and as widespread as EIA practice itself. While we have found no published works on EIA teaching from the 1970s, teaching and training must have taken place in this, the first decade of EIA practice. There are, for example, passing mentions of training courses by Andrews (1976) and Wichelman (1976) when writing about EIA in the early years of experience in the US, and by Wolf (1975) when appraising the state of the art of social impact assessment. Lee and Wood (1978) more specifically identified ‘EIA training programmes’ (p109) as one of several means for enhancing the formal implementation of an EIA system. In a similar vein, O’Riordan (1976) surmised that universities might offer courses on EIA but did not provide further details in this regard. Sánchez and Morrison-Saunders

(2010) suggest that EIA teaching was taking place at Stanford University in 1972 and was also being taught in Canada, Italy and South Africa by the following year.

Notwithstanding these works, literature dedicated to the topic of EIA teaching and training (that is still accessible) only really commences in the mid-1980s with the work of Bisset and Tomlinson (1985), Lee and Wood (1985) and Wood (1985). We note that these authors do cite grey literature about EIA teaching going back to the start of the 1980s, but these works were not accessible to us as they precede electronic publishing online. Wood (1985) reported that there was ‘very limited literature on training’ (p321) when he carried out his study of EIA teaching in the US and the state of California (and much of his research was based on interviews and correspondence by letters). He quotes from a publication attributed to the US Council of Environmental Quality from 1976 which apparently stated that ‘existing training programs do not adequately stress the value of the EIA process for agency planning and decision making or communicate this value to agency leaders’ (Wood, 1985, p322) but no details of the actual publication are provided and we have been unable to source such a work. In this book, we focus on work that is still accessible as much as possible (journal papers and book chapters mainly, as well as grey literature available currently as web publications) so that interested readers can easily source this material if desired. An exception here is our inclusion of the EIA training guide of Lee (1987) which is no longer readily available, although at least some of the content within this work is captured in other publications by the same author produced around the same time (e.g. Lee and Wood, 1985; Lee, 1988). One contribution of this book is an attempt to account for all work published in English in the field of EIA teaching to date, as well as some that more obliquely has relevance to this topic.

Turning briefly to the question of *what* should be taught about EIA and to whom, it is clear that the different roles and skill sets EIA requires correspond to different training needs. Lee and Wood (1978) identify two broad kinds of EIA training as ‘technical training courses for specialists and familiarisation courses for non-specialists’ (p109). As previously mentioned Wood (1985) distinguishes between specialists and generalists, while Lee and Wood (1985) further expand on the full range of stakeholders that might be involved in EIA, such as elected representatives, business leaders, senior administrators, EIA project managers, technical specialists, members of review bodies and members of environmental interest groups (to which we could add the public at large), for whom some kind of training in EIA might be useful and appropriate. They subsequently classify EIA training types in terms of ‘general awareness training’, ‘specialised technical training’ and ‘EIA project management train-

ing' (p278). A similar typology is found in Bellinger et al. (2000). Lee (1988) elaborates on these three types of training as follows:

First, general awareness is required to convey to political and business leaders, senior administrators, consultants and technical specialists a good basic understanding of the main procedures and assessment methods involved in EIA to enable them to achieve a better understanding of its role and general significance in environmental management and decision making. Secondly, specialized technical training is necessary to provide technical specialists with a command of the methods appropriate for undertaking specific assessment tasks such as predicting the diffusion patterns of particular air or water pollutants. Finally, EIA project management training could provide potential EIA project managers with the broad knowledge and project management skills which are required to organize and co-ordinate not only the preparation of EIA studies, but also the associated consultation and review activities. (p148)

For the purposes of this book, we have not sought to distinguish between these types of EIA teaching. However, it is fair to say that most of the content aligns predominantly with the first and third categories with specialist technical training largely falling outside of our scope, belonging as it does to specialist scientific fields. Our approach is consistent with most of the published material on EIA teaching. By way of example here, in the case of the EIA training course established by the US EPA (1998a) the purpose is explained as being:

to help individuals responsible for environmental protection and impact assessment in different countries, regions, and localities design and implement programs of EIA and to help others participate in the process as reviewers and commentators. It is intended to provide general and specific guidance in the *principles* of EIA for anyone involved in development, redevelopment, and remedial planning, including government officials, nongovernment officials, industry and academic leaders, environmental scientists and engineers, and private citizens. (pp1-1-1-2)

It is subsequently explained in the accompanying training facilitator's manual that the course: 'is not designed to offer specialized instruction in techniques of impact assessment, analysis, or evaluation for scientists, engineers, and planners' (US EPA, 1998b).

Turning now to *where* EIA is taught, it is entirely possible that some EIA teaching takes place in secondary schools, especially in countries where practice has been ongoing for decades such that EIA is an entrenched or mainstream component of the environmental sciences. We are aware of a classroom role play activity called *Who Decides?* which was developed by the regulator in our home jurisdiction of Western Australia for use in secondary schools (Department of Environmental Protection, 1990 – no longer readily available). The annual report of the Environmental Protection Authority (EPA, 1993) records that the activity 'was developed and has been used to give students

an idea of the issues involved in environmental protection' (p19), that more than 3,500 school students had been exposed to it during the 1992 school year. The EPA (1993) further noted that 'although designed for use in the schools programme, the same exercise has been used successfully with adults' (p19). They also indicated the EPA was then currently working with teacher organisations such as the Science Teachers Association of Western Australia to run in-service courses for teachers to facilitate delivery of the activity in their classrooms and further that they had made a submission to 'developers of a national collaborative curriculum for the Australian Education Council' (EPA, 1993, p19) regarding environmental education, including a role for EIA within that. A teaching recipe adapted from the *Who Decides?* learning activity is included in this book as Recipe 6, having been used by the lead author in undergraduate teaching of EIA.

Beyond this example, however, we have not encountered further evidence of the teaching of EIA in secondary schools, and have not found literature (academic or grey) on this topic. The EIA teaching literature addresses EIA teaching at universities and in relation to training of professionals or community members.

Four types of EIA teaching were identified by Lee and Wood (1985) and Lee (1988) that point to where it takes place as follows:

- undergraduate university degree courses which they referred to as 'first degree level' (p279);
- postgraduate university degree courses or 'higher degree level' (p279);
- short course; and
- on the job training.

While Bellinger et al. (2000) identify other broader forms of EIA training including 'discussions, workshops, conferences, meetings, one to one training, etc.' (p200), we have found it practical to distil these categories into just two broad categories of EIA teaching; within universities as part of degree courses and professional training.

The formalisation of EIA in legislation is generally understood to be a key driver for the development of EIA teaching to meet the needs of practitioners and develop capacity (e.g. Wood, 1985; Clark, 1999). An evolution or transition in the types of EIA teaching on offer has been suggested by Sánchez (2010) as follows:

in many countries EIA teaching usually starts as short-term training or informative courses... Then EIA teaching evolves to graduate courses (academic or professional courses), as an answer to local or national demand for professional qualification. Finally, in a mature and consolidating phase, EIA evolves to undergraduate courses in disciplines such as urban and regional planning, geography or engineering. (p246)

It was anticipated by Lee and Wood (1985) and Lee (1988) that undergraduate university teaching of EIA would be oriented towards general awareness training and basic training in technical skills, being aimed at students with little or no previous work experience. For postgraduate university students, they anticipated that EIA teaching would provide for ‘more advanced training in specialist skills... and EIA project management training’ (Lee and Wood, 1985, p279) and being a second or higher degree it would constitute ‘a form of continuing education’ (p279). We generally concur with this classification; there are some clear differences in work, life and academic skills experience evident between undergraduate and postgraduate level students. That said though, in our own experience of teaching EIA and closely related sustainability courses to both levels of university student, we have found that our teaching content and approach is often very similar. This is because our students are usually experiencing EIA for the first time irrespective of the level of the degree qualification; hence all of the concepts and technical issues are essentially new to them. For the remainder of the book, we mainly simply refer to university teaching of EIA and only differentiate between activities oriented specifically towards undergraduates and postgraduates where authors have indicated the relevance of making this distinction (such as in the work of Sánchez, 2010 and Ramos et al., 2015). Indication of appropriate audience is given for each teaching recipe in Part III.

In the sub-sections that follow, we address university teaching and professional training in turn as well as the cross-over of these two forms of EIA teaching. Both forms are characterised by formal teaching programmes being used to instruct learners. This is followed by a brief consideration of the role of ‘on the job’ EIA training.

1.2.1 EIA Teaching at University

There are numerous papers about EIA teaching within universities (e.g. Spricis, 2001; Stelmack et al., 2005; Gazzola, 2008a; Ramos et al., 2008; Sánchez, 2010; Fischer, 2014; Kabera, 2017; Enríquez-de-Salamanca, 2019). Some of this literature focuses upon specialist areas of impact assessment such as strategic environmental assessment (Ramos et al., 2015) and health impact assessment (e.g. Pollack et al., 2015). There is a body of work that specifically discusses the curriculum of university EIA teaching, especially at the Masters (i.e. postgraduate) level (e.g. Fischer et al., 2008; Fischer et al., undated (a); Gazzola, 2008b; Fischer and Jha-Thakur, 2013; Fischer, 2014; Fischer and Nadeem, 2014) and this is reviewed in Chapter 2.

A substantial portion of the literature on university EIA teaching addresses the level at which it is taught, the faculty or discipline area that hosts EIA courses and whether EIA is taught as a stand-alone unit or is integrated into

other taught content. In relation to undergraduate level teaching, Ramos et al. (2008) report that 87% of the Portuguese university programmes that they surveyed offered EIA courses as a separate semester discipline but that sometimes ‘the subject of EIA [is] integrated into broader environmental courses, such as “environmental engineering” or “environmental management”’ (p641) as was the case in civil engineering programmes. Sánchez (2010) describes a mandatory undergraduate EIA subject taught over two semesters in the final year of an environmental engineering course in Brazil (which, being the fifth year of study for these students, equates to European Masters level education). In Spain, Enríquez-de-Salamanca (2019) indicates that EIA has been a compulsory subject within environmental science degrees (i.e. undergraduate level) since the 1990s, based upon analysis spanning 104 courses where EIA ‘is the main subject’ (p453) in 46 universities. Stelmack et al. (2005) and Fischer (2014) report on EIA teaching at both undergraduate and postgraduate level within Canada and Pakistan respectively, both noting that in undergraduate courses EIA is generally offered in the third or fourth year of study. This accords with our own experience with the universities at which we have worked in Australia and South Africa where EIA units are treated as a kind of ‘capstone’ unit for students in environmental science disciplines. Other studies have focused exclusively on postgraduate EIA teaching, and especially within Masters programmes in European universities (e.g. Gazzola, 2008 (a) and (b); Fischer et al., undated (a) and (b); Fischer and Jha-Thakur, 2013) and here too it has been observed that EIA teaching may be part of a dedicated course, sometimes with a suite of EIA courses enabling specialisation in the field (e.g. Stelmack et al., 2005), or is otherwise integrated into other subject offerings.

In terms of the discipline areas in which EIA is taught, we have previously indicated that it often features in engineering and environmental science courses. Studies reporting on EIA teaching at universities most commonly identify some form of ‘environmental’ course (e.g. environmental engineering, environmental health, environmental management, environmental studies, environmental science, environmental technology), as the host discipline or faculty and mention of the related field of ‘geography’ is also common (e.g. Stelmack et al., 2005; Gazzola, 2008 (a) and (b); Weiland, 2012; Fischer and Jha-Thakur, 2013; Kabera, 2017). However, various other disciplines or subject areas are also identified including: law, environmental policy, health, land use planning, technology, social science, sustainability, biology, chemistry, soil science, mathematics, physics, natural sciences, energy, tourism and business management (e.g. Stelmack et al., 2005; Gazzola, 2008 (a) and (b); Sánchez and Morrison-Saunders, 2010; Fischer and Jha-Thakur, 2013; Fischer et al., undated (b); Ramos et al., 2015; Kabera, 2017). This diversity clearly points to the multi-disciplinary nature of EIA and this has ramifications for how it is taught (a topic to which we return in later chapters).

1.2.2 EIA Training for Professionals

The second main category of EIA teaching we address in this book concerns professional training courses, and there are many publications devoted to this form of EIA teaching (e.g. Fuller, 1994; Onorio and Morgan, 1995; Chaibva, 2000; Bryan et al., 2009; as well as works from the mid-1980s cited previously). Some of the training literature focuses on EIA capacity building (e.g. Lee, 1988; Clark, 1999; Miazga et al., 2003; Van Loon et al., 2010; United Nations Economic Commission for Europe, 2012; Schuchter et al., 2015; Partidário, undated) and to a lesser extent accreditation of EIA professionals (e.g. Park et al., 2002; Ramos et al., 2008; Wu et al., 2011; Bond et al., 2018). Some of this material only mentions EIA teaching in passing, simply noting that there is a need for EIA education and training in order to improve capacity and practice (e.g. Leu et al., 1996; Sadler, 1996; Canter and Sadler, 1997; US EPA, 1998a; Bellinger et al., 2000; Cherp and Golubeva, 2004; SPREP, undated; van Loon et al., 2010; Wu et al., 2011). Based on a survey of 31 academics from 12 disciplines and 21 states of the US all with experience in ‘teaching, research and/or practice of the NEPA [EIA] process’ (p313), Canter and Clark (1997) identified a ‘continuing need for practical, effective training on procedural and methodological aspects of the EIA process’ (p324) within federal agencies in the US due to the turnover of personnel dealing with EIA implementation. As reviewed in the next chapter, various EIA training manuals have been published in the context of professional training courses and are (currently) available online; thereby offering a curriculum that teachers might adopt or adapt for their own purposes.

EIA training for professionals often takes the form of ‘short courses’ (e.g. Lee and Wood, 1985; Wood, 1985; Lee, 1988; Fuller, 1994; Clark, 1999; Ramos et al., 2008). This is because university degree courses: ‘only provide training to a relatively small number of those involved in the EIA process’ (Fuller, 1994, p136). Similarly, Morgan (2017) writes that: ‘it seems likely that much [E]IA education still comes from non-tertiary level programmes, such as short courses for existing practitioners (typically one or two day courses), and capacity building programmes, often targeted at developing countries, with typical formats of two to five days’ (p83). In Lee and Wood (1985) and Lee (1988) short courses are described as performing: ‘very diverse and often multiple functions within continuing education (general awareness, specialist technical training, EIA project management training); [and they] may be “remedial”, up-dating or integral to career development’ (Lee and Wood, 1985, p279).

In our experience, short courses may range considerably in length. For example, we have been involved in delivering courses for EIA professionals carried out in as little as 2–3 hours or in a half-day format, as intensive one- or

two-day training courses (e.g. such as those on offer at the annual conferences of the International Association for Impact Assessment) and as part-time courses delivered online over a period of 2–3 months (e.g. the *Foundations of Impact Assessment* training course offered by IAIA [<https://www.iaia.org/professional-development-program.php>]). The EIA teaching content and approaches for any given short course will be largely determined by the duration of the course and the format it takes. For example, the very short training courses we have delivered in a half-day or shorter format were packaged as ‘refresher’ courses which were opened to a large audience in a ‘conference’ styled setting. For intensive training courses over one or two days, the number of learners is typically capped to a size conducive to a high degree of interaction between learners and the trainer (e.g. ranging from 10 to up to 70). Such courses typically emphasise small group discussions and focused learning exercises but do not extend to preparing formal assignment work. At the other end of the spectrum, the IAIA’s *Foundations of Impact Assessment* course is run over a time period similar to that of a university semester, and it involves a series of topics undertaken independently by learners, each of which culminates in a short, written assessment task that is assessed by a tutor allocated to each learner. Provision is made for meetings (e.g. through teleconferencing platforms) and other communication (e.g. by email) to take place between each learner and their tutor as they progress through the learning content.

Another form of EIA training for professionals is ‘on the job’ training, which Lee and Wood (1985) describe as:

often unsystematized (i.e. ‘on the job’ experience rather than ‘on the job’ training); nevertheless, highly valued at the practical level; it may... be used both by newly qualified staff and by those with previous work experience in other areas. (p279)

Because many EIA professionals ‘enter the field without prior formal exposure to the discipline’ Sánchez and Mitchell (2017, p202) suggest that on the job training and capacity building ‘are preferential forms of disseminating [E]IA knowledge, skills and tools’ (p202). Canter and Clark (1997) noted the importance of including ‘experienced personnel’ in the staff of federal agencies in the US responsible for EIA who ‘can provide on-the-job training’ (p325) for less experienced personnel. They also indicated that developing staff expertise is valuable for reducing agency costs by getting EIA ‘done properly’ (p325) and thereby better realising the ‘potential benefits of the NEPA [EIA] process’ (p325).

Lee and Wood (1985) note that on the job training: ‘is only a practical feasibility in fairly large industrial enterprises and government departments which have already acquired considerable EIA experience’ (p281) and go on to suggest that such organisations represent only a small proportion of the pro-

spective EIA training market. This is because the EIA profession incorporates stakeholders from a wide diversity of organisations meaning that there may be only a small number of employees within a given organisation who work directly with EIA (e.g. environmental officers with agencies responsible for mining, transport, land-use planning etc.) and there may be many small firms working in the field (e.g. small specialist consultancies). In this context, it is perhaps no surprise that short courses become a key focal point for training EIA professionals as a single centrally offered course can serve employees from a wide range of organisations simultaneously. We regularly deliver such training for proponents, regulators and consultants in our home jurisdiction of Western Australia. Such training does not need to be geographically constrained either as the online *Foundations of Impact Assessment* training course hosted by the IAIA demonstrates – this course being taken by participants from all around the world simultaneously.

Beyond the descriptions of on the job training in Lee and Wood (1985) and repeated almost verbatim in Lee (1988), the topic receives little attention in the EIA literature relative to university and short course teaching. Clark (1999) found on the job training in developing countries to be very limited and considered that it was ‘now critical to foster this “hands on” training’ (p45). Two accounts related to health impact assessment teaching indicate the importance of on the job training (Koo and Miner, 2010; Schuchter et al., 2015). While noting its importance, Wood (1985) reported little evidence of formal supervision or programmes being in place in US federal agencies involved in EIA noting that on the job training mainly translated into ‘learning to undertake EIA tasks with the assistance of manuals, guidelines, and the direction of superiors’ (p330). This implies that employees are learning the specifics of how their organisation performs its role which has limited value in the wider context of EIA teaching addressed in this book. Wood (1985) further remarked on:

real dangers in relying solely on this type of training to impart expertise about EIA. Agency personnel receiving only on-the-job training are likely to concentrate on procedures rather than on problems and methods of EIA. (p331)

In a variation of this topic though, Stelmack et al. (2005) noted that on the job training ‘disseminates information related to guidelines and handbook procedures’ (p38) that is produced by EIA regulators implying an important role in diffusing procedural knowledge throughout stakeholder organisations. Previously Lee and Wood (1985) had suggested that where there is an absence of on the job training, ‘explanatory regulations and advisory guidelines, manuals, case studies, etc., can be valuable in guiding and channelling “on the job” experience’ (p281; and this point is reiterated in Lee, 1988). In the

context of SEA training and capacity building the United Nations Economic Commission for Europe (2012) advocated the use of pilot projects ‘to develop, test or demonstrate new SEA approaches... [which] can be implemented as a part of inter-institutional learning and involve local experts through on-the-job training’ (p121). This perspective once again points to on the job training as being relatively specific and applied; while nevertheless clearly important, such specialisation has little to offer our pursuit of international best practice EIA teaching in this book.

1.2.3 Connecting University EIA Teaching and Professional Training

A cross-over between university and on the job training is mentioned in passing by Cherp (2008) who noted an innovation of an Erasmus Mundus Masters course in environmental sciences, policy and management operated by four European Universities being:

the attempt to educate professionals ‘on the job’ through a ‘modular’ scheme by which students would only spend a few weeks studying every year and work the rest of the time in their regular positions. In this way, CEU attempted to educate middle-career professionals from the region. (p24)

No further information is provided as to the degree of success of this initiative. Another example of EIA teaching cross-over between the types of training provided appears in Clark (1999) who makes the recommendation that:

Wherever possible, those on short course training, or postgraduate studies, should be encouraged to spend a period of time in the project office of those conducting an EIA so as to gain practical experience. (p45)

A similar sentiment for advancing professional development is indicated in United Nations Economic Commission for Europe (2012). Canter and Clark (1997) reported on the absence of a holistic environmental education being available at the university level, noting that:

Several short-courses are available currently under the auspices of federal agencies, universities and professional societies. But though several hundred individuals may be trained each year, the need far exceeds the supply. (p324)

They subsequently recommended that a needs assessment be conducted (for personnel within federal agencies of the US involved in EIA) in order to guide and establish an ‘integrated and coordinated training program’ (p325). Although not explicitly stated, the implication here is that such an approach

might entail cross-over between university teaching and professional training courses.

From here on, we focus our discussion on the two categories of formal EIA teaching: university teaching and professional training. A note is warranted at this point regarding the terminology we employ. For simplicity, and as captured in the title of the book we refer throughout to ‘EIA teaching’ in whatever form that may take. At times however, we do refer specifically to university teaching and professional training to distinguish between the two main categories of EIA teaching where this serves to provide insight on the points being made. Nevertheless, the core content of this book, including the international best practice principles for EIA teaching and the series of recipes presented in Part III, is intended to be of value to those delivering EIA courses in both categories.

Importantly, the two main categories of EIA teaching are not mutually exclusive. EIA professionals and practitioners are often invited to contribute to university EIA teaching, even if just as guest lecturers (e.g. Fowler and Engel-Cox, 2007; Clark, 1999; Sánchez and Morrison-Saunders, 2010) and great importance is attached to this. For example, participants in the study conducted by Weiland (2012) suggested that ‘more experts from the field should teach in universities on EIA process and methodology’ (p5). In part, this is important to overcome problems observed by some researchers regarding the relative inexperience of university teachers in the actual practice and application of EIA (e.g. Ramos et al., 2008; Kabera, 2017), but it is also simply to ensure that learners have an opportunity to gain practical experience through exposure to ‘real world examples’ (Lee and Wood 1985, p284). Second, many academics teaching EIA at university also conduct short courses for professionals (e.g. Pope and Morrison-Saunders, 2018; Morrison-Saunders et al., 2020).

1.2.4 Learning (and Teaching) through EIA

The concepts of teaching and learning are clearly intertwined. This book is aimed at teachers of EIA, who work with students in the field and thus it is about explicit efforts to facilitate the learning of others *about* EIA. It is important to acknowledge, however, that many other forms of learning can take place through the conduct of EIA, and that consequently there is a substantial body of literature devoted to learning *through* EIA, which we briefly consider in this section.

A recent and comprehensive review and framing of EIA as a learning process can be found in Sánchez and Mitchell (2017), and it is not our intention to duplicate that work here. Suffice to say that these authors set out to explore how the full range of stakeholders in the EIA process (i.e. proponents, consult-

ants, regulators and the public) can learn from engagement in EIA processes. There is also a long tradition of understanding learning through EIA in relation to follow-up activity (e.g. Au and Hui, 2004; Marshall et al., 2005) which put simply ‘is about learning and managing’ (Morrison-Saunders, 2018, p72). Such learning can be realised at all scales of consideration; ranging from the micro-scale assessment and operation of individual proposals, to macro-scale arrangements for EIA procedures in a given jurisdiction, through to the meta-scale understanding of EIA conceptually (Arts and Morrison-Saunders, 2004).

In the jurisdiction of Western Australia where we mostly work, a long-established aim of EIA established by the Environmental Protection Authority (EPA) is ‘to promote education and awareness in environmental issues’ (Western Australian Government Gazette, 2012, s3, p5942). Our own observation is that EIA has brought attention to many issues regarding environmental management and the types of development that might be considered to be acceptable in particular contexts. We attribute this to the political sensitivity surrounding the types of development that are subject to EIA in combination with the transparent and accessible nature of the process to the public at large. We are of the view that EIA has played an important role in environmental education generally; however, we are unable to demonstrate causality here as environmental issues have also come to prominence in recent decades for many reasons other than through EIA.

The implication of this framing of EIA as a learning process for EIA practitioners, who might not otherwise see themselves as ‘teachers’, is that the way in which they carry out their role may nevertheless play an important education function. Indeed, we note that the work of Sinclair and Diduck (1995) and Diduck and Sinclair (1997) specifically explores the role of education in EIA, especially in regard to educating the public and opportunities to facilitate programmes of public education through a combination of the manner in which legal and guidance on EIA is established and the conduct of public engagement aspects of the EIA process. For example, Sinclair and Diduck (1995) recommend ‘citizen training programs/lectures/workshops’ (p234) carried out in an interactive fashion as a key approach ‘for achieving the task of educating the public on complex legal E[I]A processes’ (p234). We also note much earlier discussion of Ward (1976) regarding the ‘educational requirements for impact assessments’ (p184), which likewise pertains to the role of public participation in EIA. As O’Riordan (1976) noted when discussing environmental education in the context of EIA, ‘properly speaking, an environmentally aware citizenry is a prerequisite of environmental impact assessment’ (p214). In the context of making EIA more collaborative, Lawrence (2013, pp281–282) identifies ‘community education’ as well as ‘proponent, regulatory, and specialist education’ all under the banner of ‘mutual education’ which arises from the interac-

tions of all EIA stakeholders together and is ‘conducive to learning about and through the [E]IA process’ (p290). Rather than further review these studies here, instead we integrate the suggestions of these authors into the discussion of EIA teaching principles later in the book.