Chapter Ten
Conclusions and recommendations for research and policy

The description and analysis of indigenous pastoral knowledge and practice among the Beni-Amer have shown that this knowledge provides a sustainable livelihood for pastoral communities, contributing increased productivity as well as resilience in the face of environmental and political stresses. Comparisons with other pastoralist knowledge systems illustrate how these communities incorporate their own knowledge into their local livelihood strategies and integrate some aspects of western veterinary knowledge into their practice.

The Beni-Amer herders attach great importance to good management practices that enhance animal health and productivity. Their pastoral production practices have been systematically refined over time, as is evidenced by their having a production system which is scientifically sound. They understand the close relationship between livestock production, herd management and animal health, and have an awareness of how these three factors influence each other; this makes them successful professional herders. I have a high regard for this pluralism of knowledge.

As well as the technical and scientific skills of the Beni-Amer, their day-to-day work and their practices of cattle husbandry demonstrate their unique relationship with the land and with the animals, which is embedded in cultural and spiritual values. These understandings determine their milking and breeding practices, their herd composition and management, and their seasonal movements. The fact that they share veterinary knowledge with other pastoralist groups in the study area shows that they have an interest in improving the ways in which they care for their livestock, and that they are open to other methods and techniques. They are therefore in a good position to be the focus of research on ethno-veterinary knowledge and practices, and they can make a significant
contribution to livestock research and to pastoral development more widely.

This combination of management strategies, breeding and herding techniques, and animal health is part of a complex yet rigorous knowledge system which is dynamic and adaptive, and encompasses the Beni-Amer’s cultural and ecological understanding of their environment. This means they are well placed for an uncertain future. This adaptiveness and resilience future-proofs them against a range of stresses, such as climate change, unfavourable government policies, natural resource conflicts, land grabbing, biodiversity loss and cattle raiding, and these threats are set to increase and intensify.

Although IK is negotiated by communities and adapted in response to experience, it also incorporates western science, in particular veterinary knowledge. The clash of paradigms between indigenous and scientific knowledge systems is evident in some of the policy decisions that have been made over recent decades. As demonstrated by the practices of the Beni-Amer cattle herders, IK is pluralistic, replicable and dynamic. It is not static, but is ever evolving through observation and practice. Its flexibility and adaptiveness make the case to sustain and build on IK, and this should be seen as a policy and research priority as we go forward into an uncertain future.

Pastoralists have generations of collective knowledge and experience of adapting to ecological and socio-economic changes, and have developed an immense wealth of indigenous knowledge and practices to deal with these changes. Their indigenous knowledge system is dynamic and characterised by flexibility and adaptability and is strongly integrated into their socio-cultural system. It is not easy to distinguish these practices from more recent processes of local innovation, which is equally a reflection of flexibility and adaptability. It is, however, important to give attention to local innovations, whether they are in response to climate change or to other changes, because they are sources of valuable new knowledge based on the deep-rooted experience of pastoralists (GebreMichael, Bayer and Waters-Bayer 2011).

This adaptive nature of IKs means that practices can move with the times and be supplemented with modern technology, in particular in food production, so that new technologies such as genetic modification (GM) are not the only solution to food insecurity.

As outlined in Chapter 8, pastoral communities around the world adapt to challenges on a daily basis to ensure their livelihood. They endure marginalisation and political alienation, as their mobility is crucial for their survival. There are many lessons to be learnt from the resilience of
these communities as we all face new and emerging threats from climate change and globalisation. The case studies show how their IKS is evolving to deal with common challenges such as resource-based competition and conflict. Diversifying their economies has impacted on their social and cultural structures and threatens some of their traditional knowledge. Their ethno-botanical knowledge may be lost as they become less mobile and resources dwindle, and it is clear that agro-pastoral communities must all become involved in the conservation and management of plants, and medicinal plants in particular (Fenetahun and Eshetu 2017).

Moving the debate forward

IK shows considerable resilience in the face of a wide variety of stressors (physical, economic, political and academic), being adapted by its practitioners to best service the community. We have also taken note of the times it has collapsed in the face of a new economic reality which it could not withstand, and of its shortcomings, namely its limited socio-geographical scope and applicability. We followed through with the idea that, far from being an indicator of a loss of sovereignty, IK has the potential to merge with occidental knowledge, incorporating certain concepts and methodologies, reaffirming the knowledge sovereignty of local actors and practitioners and providing them with a more workable knowledge platform with which to act. Finally, we saw how such mergers are being carried out, successfully and unsuccessfully, in the real world.

Now we take the discussion squarely into the realm of the political. The question we intend to address is: ‘How do we bring this debate forward into the formation of policy?’ That is: ‘How do we ensure that IK remains relevant and of practical value to its practitioners without being completely subsumed by the occidental paradigm, and how do we ensure that policy makers facilitate such a political environment?’

IK, far from being a static body of knowledge, is an ever-changing amalgam of observation and practice. In order to secure the survival of such a living and dynamic IK, certain policies must be pursued in several areas.

The first such area is the courtroom. Throughout the world, practitioners of IK (particularly pastoralists) are finding themselves evicted from lands traditionally worked by their people in favour of (ostensibly) more lucrative enterprises. In response, some of these groups have used the courts in an attempt to counter these evictions and secure their lands for themselves. Such a legal struggle is exemplified by
the 2010 court battle of 600 pastoralists in the Buliisa district in western Uganda. Here, these pastoralist groups, with the help of the civil society organisation the Uganda Banyarwanda Culture Development Association (UMUBANO), petitioned the Uganda Human Rights Commission for a stay of eviction (Wanambwa 2010). On 15 December 2010, the Masindi High Court granted that stay and the pastoralists were allowed to return to their land (Muramira 2010). Policies must be enacted to facilitate civil society to act in this way, as a facilitator and conduit to the legal system.

In addition to mere legal representation and guidance, data from joint projects such as the previously mentioned land use map (Kristjanson et al. 2009), as well as other joint IK-occidental knowledge projects, could be used to bolster the arguments brought forward by civil society organisations and to spotlight IK practitioners (again, pastoralists in particular) ‘as “custodians of the commons” in an era of global climatic change’ (Upton 2014, 207). Such arguments could go a long way towards changing the opinions of policy makers, allowing them to see pastoralism and other traditional lifeways not as quaint, low-output practices, but as realistic, prudent and modern answers to current climatic pressures. Policies which stress the use of social scientists and local actors in both the design and the implementation of joint community projects would lead to greater success rates, furthering the cause of IK in the minds of lawmakers (DeWalt 1994; Kristjanson et al. 2009).

Policies that influence technological investment could also, if so targeted, promote the advancement and effectiveness of IK. Current technology tends to focus on high-input/high-output forms of production while lowering the amount of human labour necessary to perform such tasks. If, however, as DeWalt suggests, policy makers invest in ‘knowledge and technology that is labor demanding to create employment opportunities’ (DeWalt 1994, 128), this would not only help keep IK alive, but also allow traditional roles, such as pastoralism, to remain relevant career options to those who have passed through the education system.

Finally, within the academic system itself, IK must be recognised as legitimate knowledge, relevant to certain lifestyle and economic choices. In particular, education garnered from the school system should not be assumed to be ineffectual in a ‘traditional’ environment. Some efforts are already in progress, such as the College of Indigenous Studies in Taiwan (Shih 2010). Promotion of such policies would help to ensure that the education system adequately prepares students to excel in whatever field they choose, and is decoupled from certain assumptions about the graduate’s future values and lifestyle.
Policy and research recommendations based on the present findings

This concluding chapter provides an opportunity to ask those tasked with the challenge of designing the future for the region (policy makers, NGOs, research institutions, social movements, etc.) serious questions about the role IK plays in designing and implementing development interventions and programmes. Doing so means that we move beyond simple pro- or anti-positions on a narrow set of options; we ask more nuanced questions about what kinds of development are available if these different knowledges are considered.

There are many misperceptions about IK. Development planners and policy makers often do not see it as being rigorous; they see it as simplistic, and fail to see its pluralistic and adaptive nature. On the other hand, conventional development interventions, based on external scientific knowledge, can be short-sighted and politicised, and often lack resilience and the genuine participation of those whose lives are affected. As demonstrated by the practices of the Beni-Amer, the hybridisation of these knowledges must be given consideration when future research programmes and policy initiatives are designed, and the points discussed in the following sections must be taken on board.

Repositioning indigenous knowledge and knowledge sovereignty within a global context

Rapid environmental, economic, cultural and political changes on a global scale are having negative impacts on indigenous practices. Indigenous knowledge and practice are important drivers of the global economy (for example, by influencing the market price of meat), and also contribute to the sustainability of the global environment. Yet IK is still an underused resource in scientific research and development, and its contribution has often meant a loss of traditional ownership and the exploitation of indigenous communities, when their knowledge is used without their consent. Livestock knowledge is still largely untapped, and threats to indigenous knowledge and food sovereignty, which have been outlined earlier in the book, can have a detrimental impact on food security at national, regional and global levels, and lead to wider (global) economic, social and environmental insecurity and instability.
Involving pastoral communities in research and policy design

Pastoral indigenous knowledge is transformative and fosters resilient communities, while sustaining natural resources. It is imperative to engage these communities in the design of research. Such engagement is not without its challenges. According to Pimbert (2006, 10), ‘a future challenge lies in bringing together . . . plural forms of knowledge within a more comprehensive, power equalising dynamic of participatory learning and action’. The use of indigenous knowledge could lead to the increased participation of pastoralists in pastoral development projects and be a starting point for supporting grassroots institutions (such as herders’ associations and groups) that can back up technical and social interventions (Fre 1992).

The promotion of a dialogue between pastoral communities, researchers and policy makers is therefore a progressive move towards dealing with the challenges of climate change adaptation and food insecurity. The participation of women and young people in particular is crucial, given the diversification of livelihoods, increasing urbanisation and the increasing disengagement of youth from pastoralism, which affect social and cultural dynamics.

As well as informal knowledge sharing, formal training should be encouraged, in order to document indigenous knowledge and practice, and the ways in which traditional adaptive strategies can be combined with new technology (such as early warning systems (EWS)). Pastoralism is already being incorporated into some university courses in Africa; for example, Mekelle University in Ethiopia is running a PhD programme on *Dryland Ecology and Resource Management including Pastoralism*. Over the last 25 years, a number of home-grown pastoralist training and research centres, as well as African-led NGOs, community-based organisations (CBOs) and networks, have emerged in the region, making a positive contribution by advocating policy changes in support of pastoralist livelihoods. The Pastoral and Environmental Network in the Horn of Africa (PENHA), founded by the author in 1989, has such home-grown initiatives.

For example, in Kenya some policy makers are introducing more progressive dryland policy and planning. The Ministry of State for Development of Northern Kenya and Other Arid Lands has designed fiscal incentives to attract private-sector investment into pastoral production in the region. It is also ‘integrating climate foresight and adaptation into local and national government planning in a way that explicitly
strengthens the strategies used by communities to adapt to climate variability and to reduce and manage the risks from natural disasters’ (Hesse 2011).

Strengthening rights

We have a duty to ensure that IK is treated with respect and celebrated, just as it respects and celebrates the diversity of life. This cannot be achieved without protecting the rightful ownership of IK and ensuring the non-exploitation of pastoralist communities, who have called for the protection of their knowledge in accordance with customary law and human rights (Swiderska, Roe, Siegele and Grieg-Gan 2008). Safeguarding the diversity and pluralism of IK is imperative if we are to ensure a sustainable use of resources and the preservation of biodiversity in all its forms. National and international law must ensure that community ownership rights to IK are protected. It is only recently that the intellectual property rights of indigenous communities have been given any kind of legal status, and these are now enshrined in the UN Convention on Biological Diversity (CBD). Article 8(j) of the CBD states: ‘Each contracting party shall, as far as possible and as appropriate: . . . Subject to its national legislation, respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles relevant for the conservation and sustainable use of biological diversity and promote their wider application with the approval and involvement of the holders of such knowledge, innovations and practices and encourage the equitable sharing of the benefits arising from the utilization of such knowledge innovations and practices’ (United Nations 1992, 6).

The contribution of IK to the conservation of biodiversity has been recognised at a global level in the CBD, and the Food and Agriculture Organization (FAO) refers to livestock keepers as ‘guardians of biological diversity’ (FAO 2009). The intellectual property rights of IK have been incorporated into the CBD under the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization to the Convention on Biological Diversity: Text and Annex, which came into force in 2014, and which aims to create equity between providers and users of genetic resources and associated traditional knowledge. At the local level, however, rights are not always recognised and international agreements are not always implemented. Local communities have developed tools to support the implementation of the protocol, such as community protocols, model contractual clauses
Livestock bio-cultural protocols (BCPs) have been developed by some pastoral communities, such as the Raikas, which document breeds and associated traditional knowledge and practices, and invoke rights under various existing legal frameworks, including the CBD. ‘The process of developing these documents – when driven and designed by communities – offers the potential to strengthen community cohesion and the capacity to secure and defend rights’ (Köhler-Rollefson, Kakar, Mathias, Rathore and Wanyama 2012, 110).

As pastoral communities are increasingly being deprived of access to grazing areas and other natural resources, their legal rights must be safeguarded in national laws. Where the political climate allows, civil society organisations can help pastoralist groups to access legal channels, and new and existing institutions can monitor and document these processes.

Recognising multiple knowledges

A book like this one, with an ambition to advance the cause of knowledge sovereignty and sustainability, sees such debates within a wider context than that of choice (a context which extends to democratising knowledge and developing new or hybrid knowledges). The manner in which entire sets of relevant and valid knowledges (and indeed the worlds they represent) become delegitimised and – to borrow from the philosopher Isabelle Stengers (2010) – ‘disqualified’ are worth noting. Ultimately, this leads us to the fundamental question of what types of future are being constructed under the current approaches, and how beneficial they are for the Beni-Amer and other pastoral and farming communities.

_The world is not a single entity; it is comprised of multiple ways of understanding, being and living._ Thus the world (and by extension the universe from which ideas of universality stream) is made up of the multiple, making it a ‘multiverse’ (Latour 2004). What happens, though, is that this reality is rarely acknowledged and respected; rather it becomes squashed and made to fit into a universe. This book is an example of this, as it documents that the manner in which the knowledge of the Beni-Amer – despite being valid and often superior – is being squashed by the imposition of ‘scientific’ knowledge from the ‘universal’ and ‘objective’ world of scientific knowledge.

Michel Serres (1995) provides a good gateway to making sense of this idea of _multiple worlds_. In _The Natural Contract_ he makes a
distinction between the ‘worldwide world’ and the ‘worldly world’. He defines the ‘worldwide world’ as the ‘world of things’, and the ‘worldly world’ as the ‘world of contract of law’, which is ‘inhabited by scientists’. For purposes of convenience, the ‘worldwide world’ can be understood as that of the real and lived world, comprised of the complex, the dynamic and the uncertain. By studying the Beni-Amer through starting with their understandings and documenting them, but also through gathering empirical evidence that shines a light on their ‘worldwide world’, I have shown the tension that exists when the world they inhabit meets the more powerful and dominant ‘worldly world’ inhabited by scientists. This leads us on to my position on the broader debates of wider significance.

Reflections on ways forward

I have a foot in both of the worlds described above. While very appreciative of the world inhabited by the pastoralists, and having documented the logic and rationale they employ in order to make sense of, and thrive in, their environments, I also inhabit the world of scientists. This position in relation to the debates enables me to understand the forces that push the two worlds apart, and to reflect on the gap between them and on what can be done to bridge them. This book is written in the spirit of sharing the knowledge of the pastoral communities and finding ways to align it with what is deemed to be superior scientific knowledge.

Reaffirming indigenous knowledge

What comes out in this analysis is how pastoralist knowledge is being suffocated because of the primacy given to ‘scientific knowledge’. Pastoralist knowledge – despite being more context-appropriate than, and in many instances superior to, ‘scientific’ knowledge – is not taken seriously. This reminds me of a point argued by Grosfoguel (2009, 11); he says, ‘Unlike other traditions of knowledge, the western is a point of view that does not assume itself as a point of view. In this way, it hides its epistemic location, paving the ground for its claims about universality, neutrality and objectivity’. In other words, ‘the western’ – which in this instance can be read as ‘the scientific’ – is a point of view that considers itself to be not a point of view, but the truth.

Much of the ‘scientific’ knowledge that underpins approaches to development in pastoral areas has a history, and emerges out of a particular time
and location (Sullivan and Homewood 2003). The location, however, is hidden behind a language of objectivity and universality, implying it should be accepted everywhere. However, the reality, to use the title of Walter Mignolo’s (2000) book, *Local Histories/Global Designs*, is where local history is used as a global (objective) baseline against which the Beni-Amer are being judged. This would not work in reverse: we would be considered crazy if we took indicators from Africa and then used them to judge agricultural systems in the West. Treating scientific knowledge as ‘universal’, when it is in fact a ‘local knowledge’, means that the Beni-Amer, despite having valid sets of knowledges, are disqualified. On a philosophical level, this can be tied back into the promise of modernity, that (European) man believed that through science and technology he would have control and mastery of nature.

**Democratising knowledge**

If one takes Latour (2011) seriously, especially his idea that Europe – and European knowledge as a baseline – is an exercise in exoticism, what happens if, rather than viewing the debate as it is currently is, as one of ‘indigenous’ knowledge from the margins needing to be incorporated into an ‘objective centre’, we locate both sets of knowledges and give neither immediate primacy, and say, ‘Here are two knowledges coming out of different locations with different histories, and both are potentially valid’. So one set of knowledges arises out of the Beni-Amer and is located in the study region, and the other arises out of scientific knowledge and is located in Europe/the West. By getting rid of the baseline, we put the knowledges on equal footing. Thus the prefixes of ‘indigenous’ and ‘scientific’ knowledge do not denote worth or value, but only the locations in which the knowledges we want to put into conversation with each other arise. Saying they are of equal value makes hybridisation an exercise in democracy.

I use the term democracy as Fraser (1996, 197) defines it, as ‘a process of communication across differences, where citizens participate together in discussion and decision making to collectively determine the conditions of their lives’. And then the question becomes; How do we communicate across the differences? What are the criteria that we are using to judge effectiveness, and so on? These I have already established in this book by highlighting the importance of food sovereignty and knowledge sovereignty.

Shih (2010) describes how, in academic circles, IK has essentially been relegated to the status of a second-class citizen in comparison to
its occidental cousin. However, there are those who are responding by attempting to change this. Shih (2010, 46) states, ‘Starting with the idea of Indigenous knowledge sovereignty, we envision a determination to make Indigenous Peoples . . . the ‘subject’, rather than ‘object’, of Indigenous research and education’. With this in mind, the College of Indigenous Studies at National Dong Hwa University in Taiwan was established in 1991 to show the government’s commitment to enhancing indigenous education as well as research. It is probably unique in the world in being a faculty dedicated to local indigenous studies. So we can see that, even in academic circles dominated by the occidental paradigm, IK is beginning to find ways to raise its voice as an equal.

There is ample evidence to show that IK responds and adapts itself to new situations and imperatives in order to service the community that uses it. It is not, however, in simple adaptation that we see the true strength of IK, but rather in IK’s ability and willingness to adopt principles and practices from other systems of knowledge. This ability to extract information and practices from elsewhere and incorporate them into one’s own knowledge system is one of the quintessential expressions of knowledge sovereignty, that is, the power to use one’s own system of knowledge to evaluate an integral component of another knowledge system and pronounce it worthy or unworthy of incorporation into one’s repertoire of knowledge and practice.

Building alternative futures

Finally, we turn to the future as something that needs to be built and constructed. So, rather than having a universe imposed, we don’t reject universality, but, like Latour (2004), we say a common universe needs to be constructed through an exercise of knowledge democracy.

Under the current system the basis (both social and resource) upon which the knowledge systems of the Beni-Amer depend is being systematically undermined. A variety of possible and viable potential futures are being denied the chance to be built, for reasons that are more political than scientifically legitimate (given that science is meant to be an exercise in uncovering truth).

Therefore, if things continue as they are, the knowledge that sustains the Beni-Amer will be suffocated to death: it won’t have failed, it will have been killed.

With new challenges ahead and rising demand for meat, the integration of livestock systems within the agroecology debate could be a
way forward. Applying agroecology to the question of animal health would imply focusing on the causes of animal diseases in order to reduce their occurrence. Major attention will therefore be given to choosing animals adapted to their environment and using a set of management practices that favour animal adaptations and strengthen their immune systems (Soussana, Tichit, Lecomte and Dumont 2015), a practice which is inherent in the IKS of the Beni-Amer, as outlined in this book.

The interaction between livestock and vegetation is a principle that pastoral communities embody. Extensive livestock grazing is an excellent example of managing biodiversity and soil fertility. For example, through the transport of seeds and insects by livestock, the migration of pastoralists and their flocks supports habitat connectivity and biodiversity (Florin and Quiroz 2016).

Adaptive pastoral practices, such as crossbreeding more resilient cattle to combat raiding by intruders, demonstrate the integral role of IK in a sustainable future. As national governments focus more on private investments, such as crop intensification, mining and tourism, and thereby are complicit in land grabbing, they fail to see not only the economic value of pastoralism, but also how the holistic nature of indigenous pastoral practices and traditional land management is key to a sustainable future. The undermining of customary law brings tensions between the objectives of customary and national laws into play. Consultation with pastoral communities in this process is often inadequate or non-existent, and pastoralists are losing access to and control over their lands, which leads to conflicts among other land users (Florin and Quiroz 2016). This highlights the need for more productive and resilient herds. Food sovereignty, therefore, cannot be achieved without secure pastoral land rights.

In addition, policy makers still interpret practices such as livestock mobility and negotiated and reciprocal access to pastures and water as ‘coping’ mechanisms in response to scarcity, rather than as what they really are: proactive husbandry strategies that exploit variability to manage uncertainty and maximise productivity (Krätli and Schareika 2010). For these reasons, indigenous pastoral practices have an in-built flexibility and adaptability, and they have evolved by building on the strengths of scientific knowledge through tried and tested formulas. Mobile technology has enhanced the ability of herders to locate good-quality grazing areas, and freed them to explore other livelihood opportunities, which is changing the power dynamics between genders and generations.

As pastoralists are more marginalised than the settled population, and are not offered access to education, they are not able to make or
influence decisions about land and water access that impact their daily life. They do their best to adapt to changing situations, using their indigenous knowledge. However, such knowledge needs to be interlinked with scientific knowledge if sustainable development and modernisation of the sector are the goal (Sulieman and Ahmed 2013). In addition, the recognition of local innovativeness by pastoralists provides an entry point for a bottom-up approach to supporting adaptation to much more than climate change (GebreMichael et al. 2011).

Attempts to replace traditional land use practices with modern techniques have simply exacerbated poverty, degradation and conflict. ‘In the face of climate change and increasing uncertainty in the drylands, the need to reframe policy and practice has never been greater. The future must be built on sound scientific information, local knowledge, informed participation and the wisdom of customary institutions that emphasise social equity, ecological integrity and economic development’ (Hesse 2011, 1). The recognition of IK and the integration and hybridisation of different knowledge systems must be taken on board by both researchers and policy makers.

Challenges are here to stay, and it will be the duty of the next generation of scientists, policy makers, social movements, the communities and other stakeholders to salvage the situation, and I hope this book contributes to that struggle – which is going to be tough, but winnable. In Nelson Mandela’s great spirit, ‘after climbing a great hill, one only finds that there are many more hills to climb’ (Mandela 1994, 751). Nothing is impossible.