Strategies for achieving environmental policy integration at the landscape level. A framework illustrated with an analysis of landscape governance in Rwanda

Cora van Oosten[a,*], Assumpta Uzamukunda[b], Hens Runhaar[c,d]

[a] Wageningen University & Research, Wageningen Centre for Development Innovation P.O. Box 88, 6700 AB Wageningen, The Netherlands
[b] Food and Agriculture Organization of the United Nations P.O Box 1502, Kigali, Rwanda
[c] Forest and Nature Conservation Policy Group, Wageningen University and Research, P.O. Box 47, 6700 AA, Wageningen, The Netherlands
[d] Environmental Governance Group, Copernicus Institute of Sustainable Development, Utrecht University, P.O. Box 80, 115, 3508TC, Utrecht, The Netherlands

ABSTRACT

Environmental Policy Integration (EPI) refers to the incorporation of environmental concerns into sectoral policies in order to reduce policy incoherence and achieve synergies to more effectively address environmental problems such as environmental degradation. Landscape governance can be considered as a specific, spatial manifestation of EPI: it aims to balance agricultural production, nature conservation and livelihood needs at the landscape level through multi-stakeholder decision making. Despite their common focus on policy conflicts, both concepts have been elaborated in largely isolated bodies of literature, while little is known about their common concern of how actors at the landscape level deal with these policy conflicts. This paper addresses this under-explored theme, by drawing from both EPI and landscape governance theories, and adding new insights from institutional and innovation literature. We develop a framework specifying how actors at local, district and national levels deal with policy conflicts and employ strategies to overcome them. We illustrate the analytical framework with a case from Rwanda, where landscape restoration has become a new policy area which has brought sectoral policy conflicts to the fore. We characterise these policy conflicts, and analyse the ways in which local, district and national actors manage to overcome them, by using the landscape as a functional regulatory space for policy integration. What we learn from this case is that EPI is not just designed at national levels by formally assigned policy makers, but it *happens* in landscapes where landscape actors define their priorities and set hierarchically defined policy objectives to their hand. They flexibly fit in and conform to existing rules yet informally combining these to suit their spatial context; or they entrepreneurially stretch and transform the rules, while seeking alliances with policy makers to have the outcomes institutionalised. In both cases they contribute to solving policy conflicts in both the horizontal and the vertical sense. By doing so, we show the usefulness of the framework for identifying policy conflicts and contributing to policy integration at the landscape level.

1. Introduction and aim of the article

Whereas the concept of Environmental Policy Integration (EPI) is long established (Lafferty and Hovden, 2003; Persson, 2004; Runhaar et al., 2014), landscape approaches are relatively new in their aim to effectively contribute to environmental protection by integrating agricultural production, nature conservation and livelihood options at the landscape level (e.g. Sayer et al., 2013; Reed et al., 2015). Landscape governance in particular refers to the process of spatial decision-making within the socio-ecological boundaries of place. Landscape governance is both an empirical observation and a normative idea based on the

principles of place-based multi-stakeholder dialogue, negotiation and spatial decision-making, and aims to achieve environmental, economic and social objectives simultaneously (Reed et al., 2015). While EPI has its origins in sectoral policies and assumes that coherence can be achieved through better coordination across policy domains, landscape governance is more complex, as it cuts across boundaries of sectors and scales (Buizer et al., 2016; Van Oosten, 2013, 2014). Landscape governance has attracted attention in the global debate on forest landscape restoration, which not only criticises the often observed disconnect between those who set restoration targets, and those who are to implement activities and sustain the outcomes (Holl, 2017). It also

criticises the incoherence between sectoral policies which strive for restoration, but are implemented through fragmented governance structures and conflicting policy objectives (Scarlett et al., 2016). This is particularly the case in countries where political-administrative boundaries are arbitrary constructs, not in line with the socio-ecological processes of landscapes, leading to policy conflicts on the ground (Görg, 2007; van Oosten, 2013, 2014).

Much is known about ways to achieve policy coherence through better coordination between sectoral policies at the national level, but relatively little is known about the way in which state and non-state actors experience policy conflicts at the landscape level, and the strategies they employ to overcome these policy conflicts. This paper addresses this knowledge gap by drawing from both EPI and landscape literature, and enriching this with institutional and innovation literature, to gain new insights on how landscape actors deal with policy conflicts. By so doing, we shed light over these strategies as 'consciously intended courses of action', purposefully developed to overcome policy conflicts on the ground (Mintzberg, 1987). We develop an analytical framework, which we illustrate with an empirical case from Rwanda, to help us apply the framework systematically, thereby revealing how these strategies work and whether landscapes could serve as a functional space for these.

We have structured our case study around three research questions:

1 How do conflicting policies manifest themselves at the landscape level?
2 What strategies do state and non-state actors employ to address these conflicting policies?
3 What are the implementation logics to effectuate the strategies, and contribute to EPI?

2. Analytical framework: policy conflicts, strategies employed, and means of implementing these strategies

In this section we present our analytical framework, which is built upon four strands of the literature: EPI, landscape governance, institutional and innovation literature. We believe that their complementarity allows for better understanding of how policy integration is negotiated through multiple levels of governance, and of the role of individual landscape actors in this process.

2.1. EPI, landscape governance and policy conflicts at the landscape level

The principle of EPI refers to the incorporation of environmental concerns into other policy areas to overcome policy conflicts (Persson, 2004; Runhaar et al., 2014). In EPI literature sometimes a distinction is made between 'procedural' and 'substantive' purposes of integration (Runhaar, 2016). Following this logic we make a distinction between policy conflicts that can be substantive or procedural in nature (ibid.). Substantive conflicts are related to conflicting policy objectives, and are manifested in incompatibility between, for example, agricultural objectives of achieving food security versus forestry objectives aiming at large-scale reforestation of agricultural land. Procedural conflicts are related to the lack of transparent and participatory procedures in (spatial) decision-making. As a consequence stakeholders may not be given sufficient opportunity to put their priorities on the policy agenda, which thus can result in substantive conflicts where policy objectives from sectors and stakeholder interests do not align.

In this paper we consider landscape governance as a specific, spatial manifestation of EPI, as it aims to balance agricultural production, nature conservation and livelihood needs at the landscape level. However, landscape governance not only focuses on formal governance structures and jurisdictions (as EPI often does) but also follows the socio-ecologically defined boundaries of landscapes. This makes landscape governance more complex than EPI, as it transcends sectoral and administrative boundaries. This brings landscape governance often in

an 'institutional void' leading to additional policy conflicts, as there is no single legal basis for decision-making at the landscape level where multiple interpretations of jurisdictions, territorialities and boundaries overlap (Smith and Raven (2011), Hajer, 2003; Scarlett et al., 2016; Robinson et al., 2017). This is problematic because of the multiple rules according to which politics and policy measures are to be agreed upon (Hajer, 2003, quoted by Wejs, 2014). From a landscape perspective, it is therefore necessary to create place-specific institutions or "new spatiality" where policy integration can be achieved (Hajer, 2003), but this can only happen if landscape actors behave creatively and entrepreneurially in order to address conflicting policies, and tailor these to the spatial realities of place. This suggests that landscapes could provide a functional space, as they are intrinsically multilevel and created by actor networks and synergies between the socio-spatial realities of place (substance) and local leadership (process). It is this socio-spatial identity that allows for integrated landscape propositions to be built, and people and politics to be reconnected to the specific characteristics of place (Görg, 2007; Scarlett et al., 2016; van Oosten et al., 2014). This is in line with Buizer et al (2015), who state that integrative processes are products of place-based actor networks that view landscapes 'as a whole' and that can contribute to policy integration 'from below' (Arts and Buizer, 2009; Buizer et al. 2015).

How should the results of integration processes be interpreted? In EPI literature this issue has been elaborated by various authors. Underdal (1980) argues that the output of successful integration is consistency in policies, which means removing contradictions between policies (both in a horizontal and vertical perspective). Horizontal consistency refers to consistency on one policy level, meaning that all executive agencies at a given policy level pursue the same policy to a given issue. Vertical consistency refers to consistency across different levels, implying consistency from (inter)national to local policies. Whereas vertical policy integration signifies administrative responsibility 'up and down' within one policy arena (Lafferty and Hovden, 2003), horizontal policy integration is more problematic as it is about cross-sectoral interaction, entailing the negotiation of policies between different sectors pursuing alternative sometimes conflicting objectives (ibid.). However, integration can also go a step further by trying to bring environmental objectives on equal terms with sectoral objectives ('harmonisation') or even by favouring environmental objectives over sectoral objectives ('prioritisation'; Persson et al., this issue).

Too often, the rigidity of administrative and political borders and the strength of sectoral interests and preferences are too strong, leading to small-scale and partial solutions (Stead and Meijers, 2009). Whereas the process of horizontal policy integration may provide an intersectoral platform for conflicting policy objectives to be harmonised (Lafferty and Hovden, 2003), the problematic nature of boundary mismatch remains, and is hardly touched upon. Landscape governance therefore adds a layer to EPI, by looking at landscapes as a functional space in which inter-policy coherence, trans-territorial regimes and multilevel governance are considered simultaneously (Varone et al., 2013; Robinson et al., 2017). Such a functional space requires a spatial shift from jurisdictions to, for instance, a landscape or river catchment, to better fit in place (Balsiger et al., 2015; Huitema and Meijerink, 2010). This brings us to the role of multilevel actor networks which are able to move across sectors and scales and make policy integration truly happen (Mullally and Dunphy, 2015; Runhaar et al., 2014)

2.2. Strategies of landscape actors to overcome policy conflicts at the landscape level

Landscape actors employ various strategies to overcome policy conflicts. If the conflicts are substantive, they try to get local production practice to conform to sectoral policies, and to make their own priorities fit into existing policy frames (Mintrom, 1997; Smith and Raven, 2011). When the outcome fits in and conforms to existing policy frames they can be referred to as productive and institutional 'bricolage', or the
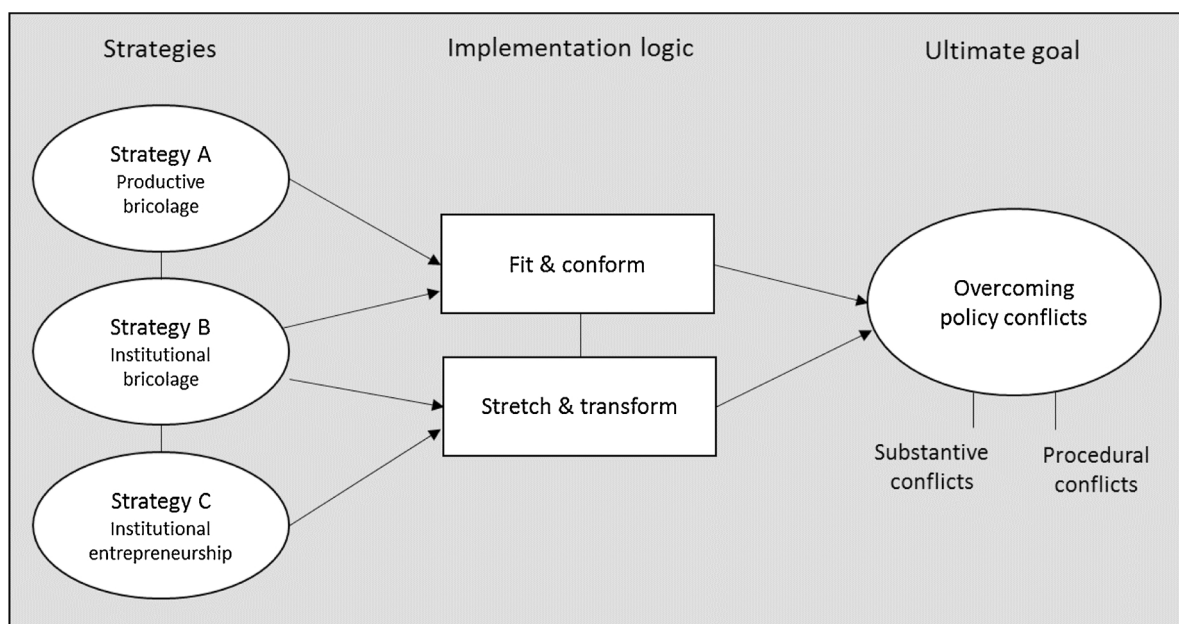
Fig. 1. Strategies for overcoming policy conflicts.

'do-it-yourself' blending of productive practice and regulations. The concept of productive bricolage was introduced by Ros-Tonen, who sees productive bricolage as a means for landscape actors to 'flexibly craft together various productive options and their associated impacts on the landscape' (Ros-Tonen, 2012, p. 17). She describes productive bricolage as a process aimed not only at coping with livelihood stresses, but also at seizing opportunities and creatively building economic diversity at the local level. Ros-Tonen distinguishes between economic diversification 'by necessity', as a response to external forces; and diversification 'by choice' in which the options to choose from emerge from the multilevel interactions between the actors involved. Diversification by necessity shows a more responsive behaviour, whereas diversification by choice shows more pro-active and entrepreneurial behaviour.

However, productive bricolage alone is not enough to overcome substantive conflicts, as production systems are often embedded within sticky institutional frames, requiring additional 'institutional bricolage'. This term was introduced by Cleaver, who describes it as the unconscious yet creative process of blending old, place-based institutions with modern institutions, thereby crafting new institutional arrangements that fit into the specific realities of landscapes (Cleaver, 2002; Cleaver, 2012). Examples of such institutional arrangements are landscape or river catchment committees which are tasked with managing larger landscapes that transcend administrative boundaries but that are not always mandated to take formal decisions. The outcomes of both productive and institutional bricolage are seen as 'reactive', as they aim to reform production systems but within the boundaries of existing policy frames. More pro-active strategies are employed by so-called 'institutional entrepreneurs': actors who manoeuvre strategically between sectors and scales, thereby stretching and transforming sticky institutional relationships and instigating more fundamental institutional change (Bulkeley, 2010, Wejs, 2013). Wejs (2013) identifies strategies to build local and trans-local networks which are used to negotiate for more integrated policy options that suit local realities. In the long run, such entrepreneurial behaviour may lead to policy networks having the transformative power to formally change policy frameworks and create a functional space in which policy integration can happen (Mullally and Dunphy, 2015, Nilsson and Eckerberg, 2007; Hogl et al., 2016; Huitema and Meijerink, 2010).

Fig. 1 visualises the three strategies of productive bricolage, institutional bricolage and institutional entrepreneurship, together with their implementation logic, which may be either to fit in and conform to

the rules, or to stretch and transform the rules, so as to overcome substantive and procedural policy conflicts.

3. Illustrating the analytical framework: landscape governance in Rulindo district, Rwanda

In order to illustrate the framework and identify some specific strategies that actors use to overcome conflicting policies at landscape level, we have opted to present an illustrative single case study. We have chosen Rwanda, which is known for its rapid development and burgeoning economic growth, but also for its centralised governance system, where national policies on land, agricultural and forestry are conflicting, leading to policy conflicts on the ground. Rwanda was the first African country to contribute to the Bonn Challenge (GPFLR, 2015),[1] which has triggered the debate on forest landscape restoration as a new policy area; this has revealed incompatibility between sectoral policy domains (agriculture, forestry, land). Within Rwanda, we chose the district of Rulindo (Northern Province) for an in-depth study, for two reasons: 1) Rulindo is actively experimenting with forest landscape restoration, initiated by dynamic state and non-state actors; and 2) although Rulindo is a district, it is also part of the wider Nyabugogo catchment, which provides water to the capital of Kigali and thus it offers opportunities for adopting a landscape perspective.

3.1. Introduction to the case study

In Kinyarwanda, the official language of Rwanda, the word 'landscape' is translated as '*Ibisiza n'imisozi*' meaning 'the valleys and the hills', in which 'hills' refers to the territory, habitat or home of people. Traditionally, Rwandans consider their landscapes to be multifunctional, and the historically evolved agro-silvo-pastoralism reflects people's needs for food and subsistence income (Biggelaar, 1994). Trees are planted to provide fuelwood, medicine, and timber, and to combat

---

[1] The Bonn Challenge was initiated in 2011 by international organisations, governments and private companies, with the aim of restoring 150,000,000 ha of degraded landscapes throughout the world by 2020. Individual countries can make a pledge, after which they are held accountable for meeting their targets. The Bonn Challenge fits in with the Convention on Biological Diversity (CBD), which aims at restoring 15% of all degraded land areas by 2020 (Aichi target 15) and with the UNFCC climate change convention and its REDD framework aiming at increasing global carbon stocks.

soil degradation. 'Good farmers' (*abahinzi-boroze beza*) are locally defined as farmers able to produce a surplus because they have a reasonably-sized farm, a variety of trees, and soil made fertile by manuring (Biggelaar, 1994; Ndayambeje et al., 2013). This integrated practice changed, however, during the build-up to the Rwandan Civil War: increasing pressure on arable land forced farmers to shorten fallow periods and expand onto steep slopes (Bigagaza et al., 2002; Musahara, 2006; Musahara and Huggins et al., 2005). Average plot sizes dropped from 2 ha in 1960 to only 0.35 ha in 2007 (Sagashya et al., 2009).

After the war ended in 1994, massive resettlement of post-war returnees led to a high concentration of people in ecologically fragile areas, which was rapidly responded to by large-scale reforestation (Uzamukunda, 2016). The reforestation entailed centrally designed food-for-work tree planting schemes, in which Eucalyptus was planted: a fast-growing multi-purpose tree suiting the need for soil fixation, timber and firewood. It was after this rapid-response period that policy frameworks on land tenure, forestry and agriculture were developed. Reforestation remained a responsibility of the Ministry of Natural Resources, while the Ministry of Land embarked upon a massive operation of land registration and the Ministry of Agriculture developed policies on agricultural productivity. All these activities were expected to raise agricultural productivity, stimulate market development, facilitate service delivery and promote reconciliation. And they did, but they also led to erosion of the endogenous vision of integrated landscapes, a fragmentation of policies, and policy conflicts on the ground.

Rwanda was the first African country to contribute to the Bonn Challenge (GPFLR, 2015).[2] It pledged to restore 2 million ha by 2020. But given that the area of the country is 2.6 million ha, the pledge implies that almost the entire rural area will have to be restored, and that trees will have to be integrated into existing agricultural and pastoral systems through a 'tree-on-farm' or agroforestry approach. However, agroforestry does not fit in either the agricultural policy or the forestry policy. Making restoration plans fit into sectoral policies is therefore a struggle which requires compromises to be made about set priorities.

3.2. Data collection

Our data are based on four different data collection techniques. First, we conducted a review of Rwanda's environmental policies over the past decade within the light of forest landscape restoration (forestry, natural resources, agriculture, decentralisation). We checked them on their inter-policy coherence and potential substantive and procedural conflicts (Teheux, 2014; Leone, 2015). This review provided us with insight on the potential policy conflicts to be encountered during our interviews and focus group discussions. An overview of the policies reviewed is provided in appendix 1.

Second, we used purposive selection to select 17 stakeholder representatives to be subject to in-depth and semistructured interviews. Selection was done on the basis of sectoral representation (government, civil society, private sector), level of operation (local, district, national) and gender. As for the government representatives we ensured representation of both technical staff and political authorities. As for farmers, we ensured that different types of farmers were represented (commercial farmers, subsistence farmers and horticulturalists, having plots on either the hillslopes or in valleys). This, with the objective to verify whether the policy conflicts identified in the review are experienced indeed, and how these are dealt with within different sectors, by actors having different roles, positions and operating at different levels. The interview questions focused on: how do state and non-state actors experience policy conflicts; which strategies have they employed to overcome these; what is the role of district staff and authorities as brokers between national policies and local realities; and how is the

responsiveness of national policy makers to better align sectoral policies? The transcribed interviews were coded according to the categories of conflicts (substantive and procedural), the strategies (productive bricolage, institutional bricolage, institutional entrepreneurship), and their implementation logic (fit and conform, stretch and transform). A list of interviewees and topics is provided in appendix 2.

Third, we conducted four focus group discussions at the local, the district and the national level. The aim of these focus group discussions was to verify the outcomes of the interviews, and place them within their local, district or national context. An overview of focus group discussions can be found in appendix 3.

Fourth, information was derived from two high-level inter-ministerial workshops: 1) '*Towards a coordinated action for forests and landscape restoration*', organised by FAO in June 2015; and 2) the '*Africa High-Level Bonn Challenge Roundtable*', organised in July 2016, at which the 'Kigali Declaration on Forest Landscape Restoration in Africa' was ratified. A third workshop, organised by FAO in August 2017, was used to share the outcomes of the research, and validate the outcomes with the interviewees. An overview of the workshops can be found in appendix 4.

3.3. The policy conflicts identified

Rwanda's National Constitution states that '*Every citizen is entitled to a healthy and satisfying environment. Every person has the duty to protect, safeguard and promote the environment*' (GoR, 2003). The two main policy guidance documents *Vision 2020* and the *Economic Development and Poverty Reduction Strategy* set out clear and measurable targets for environmental improvement as a prerequisite for development (Teheux, 2014). But achieving these targets is problematic: they are being pursued by different ministries, which are implementing contradictory policies. The result of these are numerous policy incompatibilities, most important of which is the incompatibility between large scale commercial agriculture, environmental integrity and livelihood needs. This major incompatibility is manifested in a variety of policy conflicts, which are both substantive and procedural in nature.

3.3.1. Substantive conflicts

The National Forest Policy states that '*forestry is to be one of the bedrocks for sustainable development*', and aims to have increased the national forested area by 30% by 2020 (GoR, 2010). This is to be done through commercial forestry, private woodlots and 'trees on farm'. Under the Land Law, each household must register its land. Those with small plots are advised to join forces with other smallholders, and operate collectively (GoR, 2013). Rwanda's agricultural policy strives for intensification and regional specialisation through massive 'land consolidation', which implies that once a single best crop has been indicated, farmers should form a cooperative and the government will initiate large-scale land improvement, provide farm inputs, and arrange market access (GoR, 2004). Production targets for consolidated land are set high, to stimulate farmers to concentrate on the main crop and produce maximally. This is not an incentive for the 'trees-on-farm' approach promoted by the Ministry of Natural Resources.

In Rulindo, substantive conflicts are predominantly encountered by farmers who are not allowed to practise their mixed cropping system and are enmeshed in a rigid framework of intensified commercial production through specialisation to achieve food security at the national level. This does not help farmers to achieve their households' livelihood security through mixed cropping and risk spreading within a single space. Substantive conflicts are also encountered by private companies, which are prevented from innovating their production systems and from meeting demand by introducing alternative crops and cropping patterns.

---

[2] http://www.bonnchallenge.org/content/rwanda.

Table 1
Strategies to overcome policy conflicts.

Strategies employed	Actor	Implementation logic	Type of policy conflict
1 Productive bricolage • Diversification of land use • Allowing for diversification/intensification of land use	farmers/companies district staff	fit & conform	substantive
1 Institutional bricolage • Informally changing the rules by combining sectoral rules and regulations • Providing space for dialogue	companies district staff & authorities	stretch & transform	procedural
1 Institutional entrepreneurship • Formalising dialogue and partnerships (internal or transboundary) • Institutionalising partnerships through joint policies & performance contracts	district authorities national authorities	stretch & transform	substantive/ procedural

3.3.2. Procedural conflicts

Whereas Rwanda's traditional land-use practice was integrated, what led to procedural conflicts was the rapid and forceful implementation of the Land Law, agricultural specialisation and intensification, as these have undermined the livelihood stability of subsistence farmers (Pritchard, 2012). The policy of regional specialisation and intensification has forced farmers to concentrate on one crop, which has made them dependent on markets, as they are no longer able to grow their own food crops (Pritchard, 2012, Kathiresan, 2012). Besides this substantive conflict there is a procedural conflict, namely little room for local experience, which is frustrating for farmers (Uzamukunda, 2016).

With regard to the formal restoration programmes, it is the lack of farmers' commitment to take part in forest landscape restoration that can be considered a procedural conflict. Farmers believe forest landscape restoration is the government's responsibility. They do not see themselves as part of the process, as they were neither involved in the design, nor did they contribute their knowledge and experience. Some farmers have lost land to restoration activities, which has intensified the pressure on farmland. Some farmers did not like the species planted in the reforestation area, as they do not produce good timber and because the areas reforested with eucalypts are not very biodiverse, so are not a good source of food and medicinal plants. Neither do they like the large continuous areas of planted forests, as this reduces the availability of farmland. If the choice had been theirs, they would have opted for different trees in different locations, and for agroforestry, even though they realise that large-scale agroforestry would depress agricultural production and hence jeopardise their performance contracts These findings are confirmed by studies carried out in other parts of Rwanda (Uzamukunda, 2016).

3.4. The strategies public and private actors employ to address policy conflicts

Based on our data we identified three main strategies developed by landscape actors to overcome conflicting policies, each of which can be divided into two sub-strategies employed by different actors, and addressing different policy conflicts. Productive bricolage includes diversification/intensification of land use by farmers and companies, and allowing for diversification/intensification of land use by district staff, both used as a means to address substantive conflicts by fitting in and conforming to the existing rules. Institutional bricolage includes informally changing the rules by combining sectoral rules by companies, and providing space for dialogue by district staff ad authorities, both to address procedural conflicts by stretching and transforming the rules. Institutional entrepreneurship includes formalisation of dialogue and partnerships by district authorities and institutionalising these partnerships by national authorities, both to address substantive and procedural conflicts by stretching and transforming the rules. Table 1 shows these strategies and indicates which actor is in charge, which implementation logic is employed, and which type of policy conflict is addressed.

3.4.1. Productive bricolage

Productive bricolage is a strategy employed by farmers and locally operating companies to deal with substantive policy conflicts. In Rulindo, it consists of diversification of land use through mixed cropping, to achieve multiple objectives, reduce risks and enhance sustainability. Farmers participate in land consolidation, yet at the same time they keep small home gardens to grow multiple crops. As one (female) farmer says, *'I know I have to grow maize in the consolidated land area. But I prefer to have a mixed farm including sorghum, cassava and spinach so I swapped my land with my neighbour, who has land outside of the consolidation area'.* Farmers also arrange informal access to plots by renting or swapping land in different agro-ecological zones, (hills, valleys, wetlands), to diversify production and spread their risks. Although this formally runs counter the government policy of crop intensification (monocropping), it can be seen as a means of fitting in and conforming to current government rules. Productive bricolage is also employed by companies such as Shekina Enterprise, which processes the leaves of cassava (*Manihot glazíviovii*[3]). The operations manager of Shekina says *'our leaf cassava is not in the intensification programme, as cassava it is not considered a marketable crop. However, our cassava grows like a tree, hence it fits in the land protection policy, so we advise farmers to plant it around their plots'.* The Sorwathe company produces tea, which falls under the crop intensification programme. Its management introduced trees as a way of maximising tea production. Its production manager says *'we are originally from Sri Lanka, where we are used to agroforestry. Here, we do not call it agroforestry, yet we do plant shade trees to increase our tea production'.* The district staff are aware of these creative interpretations of the rules. Yet they turn a blind eye, as they know the local reality, and understand local livelihood needs. As one agricultural officer says, *'I am from here; I know our land is not suitable for intense maize production. I therefore advise for multiple cropping, but I do not put it in my performance report'.*

3.4.2. Institutional bricolage

Institutional bricolage is employed to overcome procedural conflicts. It is more strategic than productive bricolage, as it does not apply merely to farm or company level. The Shekina and Sorwathe companies introduce innovative production techniques, negotiate with district staff to flexibly apply the rules, and mobilise their business networks for necessary investment. By so doing, they do not just fit in and conform to the rules but instead stretch the rules, to create more room to manoeuvre productively. As Shekina's operations manager says, *'the district promised to include leaf cassava in the crop intensification programme if we increase our investment and enlarge our processing capacity accordingly'.* District staff also employ institutional bricolage. By not only tolerating but also stimulating innovations they stretch the rules, as a deliberate strategy to avoid conflict and build relationships with their constituencies. They create room for dialogue, and they combine elements

---

[3] Well known is the cassava that produces tubers (*Manihot esculenta*). Less known is the locally grown cassava that produces large and juicy leaves (*Manihot glaziovii*). In contrast to *M. esculena*, *M. graziovii* can grow up to 10 m high, and therefore looks like a tree.

of the crop intensification programme and the land protection programme, thereby allowing for mixed cropping to be practised. As one district staff member says, '*contradicting policies only exist in Kigali. In Rulindo, we have more room to manoeuvre. We know the conflicts between forestry, agriculture, and land, so we have to be creative: mediate, stretch and combine rules as much as we can*'. Formal space for dialogue is created by the district authorities, through the Joint Action Development Forum (JADF).[4] The aim of JADF is to bring together local governments, private companies and non-governmental organisations operationalise the country's decentralisation policy. In many districts, JADF is seen as a mandatory mechanism for strengthening central government control. But in Rulindo, JADF provides a platform for state and non-state actors to discuss contradictory policies and to find locally fit solutions. Governmental actors use JADF to build relations and engage citizens. Non-governmental actors use JADF as a strategy to overcome procedural conflicts and have their say. All together, they stretch and transform the rules, to make them fit local realities.

3.4.3. Institutional entrepreneurship

Institutional entrepreneurship is employed by district authorities, in order to think beyond the district boundaries and engage in larger policy networks. They take advantage of Rulindo's strategic location in the lower part of the Nyabugogo Catchment to negotiate a 'payment for environmental services' (PES) mechanism with the adjacent city of Kigali. They negotiate for the restoration of the degraded catchment, while Kigali's Water and Sanitation Corporation (WASAC) covers the costs. As one of the district authorities says, '*we are part of a larger area. We provide water to Kigali; let Kigali citizens help us save their water sources*'. The newly established Nyabugogo Catchment Committee is a new institutional arrangement intended to oversee implementation of this mechanism in a transboundary and inter-sectoral set-up. This mechanism has the potential to transform policies by creating new functional space for substantive and procedural conflicts to be addressed. District authorities also take part in the *inter-sectoral task force on forest landscape restoration*. This *inter-sectoral taskforce* was established to identify and discuss inconsistency between the different sectoral policies related to forest landscape restoration. Task force members are high-level staff from the Ministry of Agriculture and Ministry of Natural Resources, who frequently participate in national and international conferences, where they are exposed to novel ideas on integrated action, such as forest landscape restoration and climate-smart agriculture. As one task force member says, '*while travelling, we get many ideas on integrated approaches. As we are frontrunners, we want to spearhead these novel approaches in Rwanda and integrate these in our policy process*'. They keep each other updated through a WhatsApp group, thus forming an informal inter-sectoral network. Rulindo's district authorities actively take part, as they see a clear task in informing national authorities on local realities, as one of them says, '*we know the local reality; we have the duty to inform our superiors about policy incoherence, and help them to improve*'. The task force has recently been mandated to oversee the formulation of an inter-sectoral and coherent policy on agroforestry. Institutional entrepreneurship can also be found within the national process of devolving spatial decision-making to the district Councils and JADFs, to channel local and context-specific priorities and align them with national priorities (GoR, 2014). This is to be achieved by changing the individual performance contract system *(Imihigo)* into *Joint Imihigo,* which allows for multi-party performance contracts and fosters coordination between sectoral targets within local constituencies (Hasselskog, 2015; Hymowitz, 2016). As one of the district authorities says, '*we have designed a Joint Imihigo with private companies setting sustainable and locally responsive production targets to be achieved by public and private partners jointly*'.

---

[4] Joint Action Development Fora (JADF) were established across the country in 2007, as part of Rwanda's decentralisation policy. See http://www.rgb.rw/index.php?id=2).

4. Discussion

Our case study shows that substantive policy conflicts are created because of the asynchronous implementation of sectorally defined policies that are at odds with the local practice. It also shows that procedural conflicts are reflected in the lack of institutional mechanisms for allowing citizens to participate in spatial decision-making. However, landscape actors have the ability to develop coping strategies. Through productive bricolage farmers and companies overcome substantive conflicts by diversifying land use, by fitting in and conforming to existing rules. Companies also employ institutional bricolage by negotiating land use and stretching the rules to allow for innovative production practice. District staff employ institutional bricolage not only by turning a blind eye, but also by tailoring informal agreements to create institutional space responsive to livelihood needs and market demands. JADF actively mediates in procedural conflicts by employing institutional bricolage to stretch the rules. District Authorities employ institutional entrepreneurship by navigating between nationally defined policies and local priorities, and influence the policy process. National policy makers employ institutional entrepreneurship by creating space for inter-sectoral dialogue and partnerships.

We know that the empirical evidence presented in the case study is relatively brief. But it should be noted that our case study is not intended to present a generic analysis, but rather serves as an illustration of our analytical framework and demonstration of its applicability and usefulness. It does illustrate how landscape actors are able to overcome substantive and procedural policy conflicts to meet the socio-spatial priorities of their landscape, and create the institutional space to address policy conflicts at different levels. International commitments such as the Bonn Challenge are helpful in this, as they legitimise integrated action at all levels.

Our case study confirms Ros-Tonen's concept of productive bricolage (Ros-Tonen, 2012). Yet it also shows that productive bricolage remains restricted to the level of farm or company, unless combined with institutional bricolage. This confirms the findings of Foli et al. (2017), who contend that novel arrangements for integrated land use hardly move beyond the local level, unless embedded in multilevel networks, leading to broader stakeholder coalitions demanding institutional flexibility to overcome substantive as well as procedural conflicts. Whereas Deans et al. (2017) state that landscape actors' jurisdictional powers are often too limited to enable them to negotiate for locally adapted land-use policies, our case shows that landscape actors are able to stretch and transform the rules if they strategically engage in multilevel networks, and national policy makers are receptive to novel ideas. Building upon Cleaver (2002, 2012), Wejs (2014) and Funder and Marani (2015) we show how the blending of informal and formal rules can lead to institutional change, and have the potential to grow into multilevel networks able to stretch and transform the rules through multilevel policy experimentation. This is in line with Mintzberg (1987) and Smith and Raven (2011), who plead that multilevel policy experimentation can create new institutional space for spatialised policy integration. And this is what landscape governance claims to be: deliberately develop connections across levels and scales, also called 'politics of scale' – responding to landscape priorities and linking to broader physical and socio-political settings and multilevel networks of communication and decision-making (Hajer, 2003; Görg, 2007; Robinson et al., 2017).

5. Conclusion

Our aim was to contribute to EPI and landscape governance literature by elaborating an analytical framework for conceptualising strategies for overcoming conflicting policy objectives, a subject that thus far has not received much attention. In so doing, we set out to answer the following research questions: How do conflicting policies manifest themselves at the landscape level? What strategies do state and non-

state actors employ to address these conflicting policies? And what are the implementation logics to effectuate these strategies, and contribute to EPI?

From the EPI literature we learned that the incorporation of environmental concerns into other policy areas is problematic, because of the existence of substantive and procedural policy conflicts. This is illustrated by our case, where the new policy area of forest landscape restoration is hampered by existing policies on land, forest and agriculture. From landscape governance literature we learned that landscape actors are capable of dealing with these policy conflicts, if they are given the institutional space to develop strategies to either fit in and conform to the rules, or stretch and transform the rules. From institutional and innovation literature we learned that productive/institutional bricolage and institutional entrepreneurship are crucial for actors at various spatial levels to experiment, communicate and form networks across levels and scales. Also this is illustrated by our case, where the debate on forest landscape restoration has triggered bricolage, entrepreneurship, and the discovery of landscapes as new functional regulatory space for doing so. Considering landscape governance as multilevel networks rooted in place, it may be the key for setting local environmental priorities and 'selling' them to higher levels of policy making, for them to be institutionalised in integrated environmental policies that work.

We did not explicitly analyse the outcomes of policy integration in terms of the frequently used triptych of policy coordination, harmonisation and prioritisation (Lafferty and Hovden, 2003; Mickwitz et al., 2009, Runhaar et al., 2009). Neither did we focus on environmental policy integration explicitly, but rather to policy integration in the general sense. Nevertheless, we consider the way in which farmers, district government staff and locally operating companies try to fit in and conform to existing policies fits in the idea of harmonising (sectoral) policies at the landscape level (horizontal policy integration) (Lafferty and Hovden, 2003). The way in which district officials and other entrepreneurial landscape actors try to stretch and transform existing policy frames can be interpreted as harmonisation but also as coordination between different sectoral policies as well as between different levels of policy making (horizontal and vertical policy integration) (ibid.). According to Collier (1997) *all* good policy making would involve a high level of policy coordination which is therefore not restricted to achieving environmental objectives alone. In our case, environmental objectives are not prioritised beforehand, yet landscape actors prioritise those policy objectives which are most relevant to their production model or livelihood, which are mostly spreading risks, multiple cropping and integrated production systems, which happen to be more environmentally friendly than the formal and centrally defined prioritisation of maximum productivity through monocropping.

Acknowledgements

Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.envsci.2018.02.002.

References

Arts, B., Buizer, M., 2009. Forests, discourses, institutions. A discursive-institutional analysis of global forest governance. For. Policy Econ. 11, 340–347.

Buizer, M., Arts, B., Westerink, J., 2015. Landscape governance as policy integration 'from below': a case of displaced and contained political conflict in the Netherlands. Environ. Plan. C: Gov. Policy.

Bigagaza, J., Abong, C., Mukarubuga, C., 2002. Land scarcity, distribution and conflict in Rwanda. In: Lind, J., Sturman, K. (Eds.), Scarcity and Surfeit: The Ecology of Africa's Conflicts. Institute for Security Studies, Pretoria.

Biggelaar den, C., 1994. Farmer Knowledge and Experimentation With Trees and Tree Cultivation in Agroforestry Systems in Rwanda. Dissertation Submitted to Michigan State University, Department of Forestry. University Microfilms International, Bell & Howell Information Company, Ann Arbor, USA.

Bulkeley, H., 2010. Cities and the governing of climate change. Ann. Rev. Environ. Nat. Resour. 35, 229–253.

Cleaver, F., 2002. Reinventing institutions: Bricolage and the social embeddedness of natural resource management. Eur. J. Dev. Res. 14, 11–30.

Cleaver, F., 2012. Development Through Bricolage: Rethinking Institutions for Natural Resource Management. Routledge, New York, NY, USA.

Collier, U., 1997. Energy and Environment in the European Union. Ashgate, Aldershot.

Deans, H., Ros-Tonen, M.A.F., Derkyi, M., 2017. Advanced Value Chain Collaboration in Ghana's Cocoasector: an Entry Point for Integrated Landscape Approaches? Environmental Management, Soringerhttp://dx.doi.org/10.1007/s00267-017-0863-y. April 2017.

Foli, S, Ros-Tonen, M.A.F., Reed, J., Sunderland, T., 2017. Natural Resource Management Schemes as Entry Points for Integrated Landscape Approaches: Evidence from Ghana and Burkina Faso. Environmental Management, Springerhttp://dx.doi.org/10.1007/s00267-017-086608. April 2017.

Funder, M., Marani, M., 2015. Local bureaucrats as bricoleurs. The everyday implementation practices of county environment officers in rural Kenya. Int. J. Commons 9 (1), 87–106. http://dx.doi.org/10.18352/ijc.526.

Global Partnership on Forest and Landscape Restoration (2015) http://www.bonnchallenge.org/content/rwanda.

Görg, C., 2007. Landscape governance: the 'politics of scale' and the 'natural' conditions of places. Geoforum 38, 954–966.

Government of Rwanda (2003, 2004, 2010, 2013, 2014) See appendix 1.

Hajer, M., 2003. Policy without polity? Policy analysis and the institutional void. Policy Sci. 36, 175–195.

Hasselskog, M., 2015. Rwandan developmental 'social engineering': what does it imply and how is it displayed? Prog. Dev. Stud. 15 (2), 154–169. http://dx.doi.org/10.1177/1464993414565533. Sage Publications.

Hogl, K., Kleinschmit, D., Rayner, J., 2016. Achieving policy integration across fragmented policy domains: forests, agriculture, climate and energy. Environ. Plan. C: Gov. Policy 34, 399–414.

Holl, K., 2017. *Restoring tropical forests from the bottom up* - how can ambitious forest restoration targets be implemented on the ground? Science 355 (6324), 455–456. http://dx.doi.org/10.1126/science.aam5432.

Huitema, D., Meijerink, S., 2010. Realizing water transitions: the role of policy entrepreneurs in water policy change. Ecol. Soc. 15 (2), 26. http://www.ecologyandsociety.org/vol15/iss2/art26/.

Hymowitz, D., 2016. Changing It up. AGI, Tony Blair Africa Governance Institute. www.africagovernance.org.

Kathiresan, A., 2012. Farm Land Use Consolidation in Rwanda – Assessment from the Perspectives of Agriculture Sector. Republic of Rwanda, Ministry of Agriculture and Animal Resources, Rwanda.

Lafferty, W., Hovden, E., 2003. Environmental policy integration: towards an analytical framework. Environ. Polit. 12 (3), 1–22.

Leone, M., 2015. Evaluation of the Process Towards Policy Integration in Rwanda. Assessment of the Workshop 'Towards a Coordinated Action for Forest and Landscape Restoration as a Contribution to Sustainable Food and Agriculture in Rwanda'. Wageningen Centre for Development Innovation, Wageningen, Netherlands.

Mintrom, M., 1997. Policy Entrepreneurs and the Diffusion of Innovation. Am. J. Polit. Sci. 41 (3), 738–770. JSTOR. (Jul. 1997) Available at: https://www.researchgate.net/publication/247200471.

Mintzberg, H., 1987. Crafting strategy. Harv. Bus. Rev. 65, 66–75.

Mullally, G., Dunphy, N., 2015. State of Play Review of Environmental Policy Integration Literature, a Report for the National Economic and Social Council, University College Cork. Cork. .

Musahara, H., 2006. Improving Tenure Security For The Rural Poor: Rwanda—Country Case Study. LEP Working Paper #7. Food and Agriculture Organization of the United Nations.

Musahara, H., Huggins, C., 2005. Land reform, land scarcity and post-conflict reconstruction: A case study of Rwanda. In: Huggins, C., Clover, J. (Eds.), From the Ground Up: Land Rights, Conflict and Peace in Sub-Saharan Africa. Institute for Security Studies, Pretoria.

Nilsson, M., Eckerberg, K., 2007. Environmental Policy Integration in Practice: Shaping Institutions for Policy Learning. Earthscan, London.

Ndayambeje, J., Mohren, G., Heijman, W., 2013. Farm woodlots in rural Rwanda: purposes and determinants. Agrofor. Syst. 87 (4). http://dx.doi.org/10.1007/s10457-013-9597-x. Springer Verlag, Berlin.

Persson, Å., 2004. Environmental Policy Integration: and Introduction. PINTS Policy Integration for Sustainability Background Paper. Stockholm Environment Institute, Stockholm.

Persson, Å., Runhaar, H., Karlsson-Vinkhuyzen, S., Mullally, G., Russel, D., Widmer, A., 2018. Editorial: environmental policy integration: taking stock of policy practice in different contexts. Environ. Sci. Policy (this issue).

Pritchard, M., 2012. Land, power and peace: tenure formalization, agricultural reform, and livelihood insecurity in rural Rwanda. Land Use Policy 30 (2013), 186–196.

http://dx.doi.org/10.1016/j.landusepol.2012.03.012. Elsevier.

Reed, J., Deakin, L., Sunderland, T., 2015. What are 'Integrated landscape approaches' and how effectively have they been implemented in the tropics: a systematic map protocol. Environ. Evid. 4, 2. 2014. http://www.environmentalevidencejournal.org/content/4/1/2.

Robinson, L.W., Ontiri, E., Alemu, T., Moiko, S.S., 2017. Transcending landscapes: working across scales and levels in pastoralist rangeland governance. Environ. Manage. http://dx.doi.org/10.1007/s0026-017-0870-z. May, 2017.

Ros-Tonen, M.A.F., 2012. Non-timber forest product extraction as a productive bricolage process. In: Arts, B., Bommel, S., Ros-Tonen, M.A.F., Verschoor, G. (Eds.), Forest-People Interfaces: Understanding Community Forestry and Bio-Cultural Diversity. Wageningen Academic Publishers, Wageningen, pp. 29–48.

Runhaar, H.P., Driessen, C., Uittenbroek, 2014. Towards a systematic framework for the analysis of environmental policy integration. Environ. Policy Gov. 24 (4), 233–246.

Runhaar, H., 2016. Tools for integrating environmental objectives into policy and practice: what works where? Environ. Impact Asses. Rev. 59, 1–9.

Sayer, J., Sunderland, T., Ghazoul, J., Pfund, Jean-Laurent, Sheil, D., Meijaard, E., Venter, M., Boedhihartono, A.K., Day, M., Garcia, C., van Oosten, C., Buck, L., 2013. Ten principles for a landscape approach to reconciling agriculture, conservation, and other competing land-uses. PNAS 110, 8349–8356.

Sagashya, D., English, C., 2009. Designing and establishing a land administration system for Rwanda. Technical and economic analysis. In: FIG-WB Conference, Land Governance in Support of the MDGs: Responding to New Challenges. World Bank, Washington D.C..

Scarlett, L., McKinney, M., 2016. Connecting people and places: the emerging role of network governance in large landscape conservation. Front. Ecol. Envion. 14 (3),

116–125. http://dx.doi.org/10.1002/fee.1247.

Smith, A., Raven, R., 2011. What is protective space? Reconsidering niches in transitions to sustainability. Res. Policy 41 (2012), 1025–1036. http://dx.doi.org/10.1016/j.respol.2011.12.012. Elsevier.

Stead, D., Meijers, E., 2009. Spatial planning and policy integration: concepts, facilitators and inhibitors. Plan. Theory Pract. 10 (3), 317–332.

Teheux, C., 2014. Where Restoration Meets Policy – Enabling Policy Strategies for Landscape Restoration in Rwanda. Wageningen Centre for Development Innovation, Wageningen, Netherlands.

Underdal, A., 1980. 'Integrated marine policy: what? why? how?'. Mar. Policy (July), 159–169.

Uzamukunda, A., 2016. Actor Networks and Power Relations in Forest Landscape Restoration. A Comparative Case Study of Gishwati and Mukura Landscapes, Rwanda. MSc Thesis. Wageningen Forest and Nature Conservation Policy Group, Wageningen University, Netherlands.

Van Oosten, C.J., 2013. Restoring landscapes—Governing place. A learning approach to forest landscape restoration. J. Sustain. For. 32, 659–676.

Van Oosten, C., Gunarso, P., Koesoetjahjo, I., Wiersum, F., 2014. Governing forest landscape restoration: cases from Indonesia. Forests 2014 (5), 1143–1162. http://dx.doi.org/10.3390/f5061143.

Varone, F., Nahrath, S., Aubin, D., Gerber, J.D., 2013. Functional regulatory spaces. Policy Sci. 46, 311–333. http://dx.doi.org/10.1007/s11077-013-9174-1.

Wejs, A., 2014. Integrating climate change into governance at the municipal scale: an institutional perspective on practices in Denmark. Environ. Plan. C: Gov. Policy 32, 1017–1035. http://dx.doi.org/10.1068/c1215.