

From command-and-control to good forest governance: A critical interpretive analysis of Lithuania and Slovakia

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Abstract

As countries with a socialist history, Lithuania and Slovakia have experienced radical transitions in all societal spheres. Despite economic liberalization and privatisation, both countries retain centralized forest management systems. Our study suggests a new methodology for assessing to what extent forestry in a given country is steered by command-and-control as opposed to more adaptive forms of governance. Our 'Critical Interpretive Analysis' (CIA) differs in several important aspects from more positivist methods prevalent in recent comparative analyses of forest policies in (post)transitional countries. The analysis involves five criteria, four of which (Efficiency, Equity, Transparency and Participation) are established principles of good governance, and a fifth criterion (Adaptiveness) stemming from the concept of adaptive governance. We found that Lithuania and Slovakia perform best for Transparency, primarily due to extensive availability of information about forest resources. Performance on the other criteria is poor; many of the shortcomings stem from excessive regulation that curbs the decision freedom in all forests irrespective of their ownership or functional priorities. We conclude that forest governance still largely follows the command-and-control traditions in both countries.

Highlights

- We conducted critical interpretive analysis of forest governance in two countries
- Applied criteria: Efficiency, Equity, Transparency, Participation, and Adaptiveness
- The shift from command-and-control in Lithuania and Slovakia has been very limited
- Both countries score highest on Transparency, with poor performance on other criteria

1. Introduction

In political science, command-and-control is usually understood as public policy that relies on strong regulation rather than financial incentives. Implementation of such policies is straightforward, based on prescription, prohibition or permission, and involves sanctions if necessary (Karp and Gauling 1995; United Nations Statistics Division 1997; Heritier 2002). Characterised by a large degree of authoritative centralization, command-and-control leads to rigid legislation, high levels of bureaucratic hierarchy and dominance of expert knowledge (Pahl-Wostl 2009). Many sources claim

such regulation systems are economically ineffective due to high compliance costs (e.g. Tietenberg 1990, Gunningham and Sinclair 2002). Still, some scholars claim that the command-and-control model can be efficient (Cole and Grossman 2002), especially where there is a need to regulate the behaviour of many agents or to enforce explicit environmental standards (Wiesmeth 2012). In forestry, command-and-control is often linked with the verification of timber source legality; however, it is likely to have limited effects in controlling illegal activities unless paired with incentive-based instruments (Lawson and MacFaul 2010; Sist et al. 2014). Moreover, strong regulation is often criticized for limiting space for improvement: once the regulation is satisfied, agents have no incentive to perform even better (Greenlaw et al. 2017).

Throughout the 20th century, many jurisdictions relied heavily on command-and-control (Karp and Gauding 1995; De Roo 2003), especially in countries practicing totalitarian socialism (Lazdinis et al. 2007). Recent socio-political trends, such as the deliberation paradigm and forest sector internationalization, have induced changes in forest governance (Arnouts et al. 2012; Maryudi et al. 2018). One clear trend in many countries is the shift “from government to governance”, i.e. from strictly hierarchical state-dominated to more deliberative governance (Howlett et al. 2009; Arnouts et al. 2012; Arts 2014). Despite this trend and despite the transition from planned to market economies, environmental and forest policies in post-socialist countries often retain many traits of command-and control (Klůvanková-Oravská et al. 2009; Brukas 2015; Nichiforel et al. 2018). Its endurance could be partly explained by ideological and institutional path dependence. Forestry education in the socialist era often relied on “classical” forest management concepts (e.g. the theory of the normal forest) and on the opinions of weighty experts. Foresters were often trained to strictly follow guidelines elaborated by central authorities (Lawrence, 2009). Common problems in these countries’ forest sectors included lack of public participation, transparency and accountability and excessive state involvement in management of private forests (Herbst 2002; Lazdinis et al. 2005). Almost three decades have passed since the major change of the political and economic systems but the tensions between regulatory conservatism and more lenient approaches to governance remain critically important but poorly understood.

Lithuania and Slovakia are good case study countries for comparing the evolution of forest governance. Both have important forest sectors but also pronounced differences in various facets of forest policy. They have similar extents of forest cover and both apply segregative forest management through extensive forestland zoning. Different paces of state forestry administration reform constitute one of the most important differences.

Despite economic and political upheaval, the forest sector of both countries still struggles to adapt command-and-control approaches to their new circumstances, such as a market economy, increased environmental consideration or new forest ownership structures (e.g. Brukas 2015; Brodrechtova 2016). In this study we aim to evaluate how far the case countries have moved away from command-and-control, by judging their evolution toward the good governance ideal, but also by juxtaposing the two countries against each other. For this, we employ a *critical interpretive analysis* (CIA) that differs substantially from the more positivist approaches prevalent in most recent comparative analyses of forest governance.

2. Method and materials

2.1 Setting the stage: A critical interpretive analysis (CIA)

Forest governance is a complex system shaped by multiple interrelated agents and producing multiple interrelated outcomes. This makes assessing forest governance an intricate endeavour, and there is no recipe for the “most proper” procedure. Comparative analyses between countries and/or

institutions are often employed, juxtaposing critical elements in the assessed systems. When elaborating a fitting methodology, we see the need to make two important choices that critically shape analytical outcomes and their interpretation. First, it is important to consider whether a study only benchmarks the studied systems relative to each other or if it also assesses the “goodness” of a system in terms of certain ideal or desired states. Second, it is necessary to consider the fundamental epistemic focus of quantitative versus qualitative analysis. In this section, we first attend the ‘3L model’ that, to date, has been the most popular method for benchmarking studies of forest governance in (post)transitional¹ countries of Central and Eastern Europe. We will highlight the strengths but also point out weaknesses of 3L, which, in turn, will justify the choice of our CIA methodology.

The 3L benchmarking method developed by Professor Max Krott and his associates (Krott and Sutter 2003, Krott and Stevanov 2008) stands out due to its systematic application during the last decade, not least in the countries of the ex-socialist realm in Central and Eastern Europe (Stevanov and Krott 2013; Chudy et al. 2016; Stevanov et al., 2018). 3L attempts to link three layers: the policy programme layer where the political aims are formulated; the theory layer, where theories of social and natural science are used to justify the choice of the evaluation criteria; and the empirical layer, where the indicators derived from policies and theories are measured. The results are then plotted on spider diagrams, juxtaposing the criteria for the institutions under comparison. The fixed set of eight criteria is scored on a unified scale using around 20 indicators, considered to have universal applicability for assessing state forest organisations, irrespective of country or region (Stevanov and Krott 2013).

In our judgement, the 3L benchmarking model has positively contributed to forest policy scholarship in multiple ways. First, it has highlighted the importance of not only looking at outputs or outcomes but also considering the factors that drive current and future performance. Second, the model devised a set of relatively simple and intuitively appealing criteria enabling it to capture important but often neglected facets of governance. Third, the results are presented in a way that facilitates comparison and easy comprehension of the assessment. We do, however, see important shortcomings. We are unconvinced of the positivist stance of universally-applicable criteria with reference to policies and theories. Although 3L studies repeatedly highlight the importance of the theory layer, the actual explanation of the theory behind it is largely missing. Also, the 3L model entails an internal contradiction between the claimed relevance to national policy priorities and the universal applicability of a fixed set of criteria. In our view, assessments of forest governance or forest organisations emerge from the research aims, the qualities of the assessed system and the prerequisites of the assessor. The combination of these features is unique for any particular study.

In our study, we apply CIA that, compared to 3L (Table 1) is (i) less theory driven and more problem driven², (ii) not limited to comparative benchmarking of the studied systems but also assesses them in terms of their progress toward the ideal of good and adaptive governance (cf. Section 2.2), and (iii) strives for thorough contextualised analysis, rather than simplifying the inherent complexity to a set of numbers.

Table 1. Comparison of methodologies for comparative analysis of forest governance

¹It could be debated whether the ex-socialist countries in Central and Eastern Europe should still be labelled as transitional. The pace of transition has varied greatly across the region (Havrylyshyn 2006). The transition to a market economy in Lithuania and Slovakia was largely completed in the 1990s. However, societal structures and ideologies retain the legacy of the socialist period. The term “(post)transitional” suitably accommodates these ambiguities.

² In this regard, we can make parallels to the comparison of the logico-scientific versus narrative approaches in studying the historical processes, see (Brukas 2015) for details.

	3L (Krott and Stevanov, 2008)	CIA (our study)
Epistemic foundation	Positivism	Interpretivism
Analytical focus	Objective fact-finding	Critical interpretation
Claimed applicability	Fixed, universally applicable set of criteria and indicators	Flexible set of criteria, <i>ad hoc</i> for a study
Comparative baseline	Unified scoring of the compared systems	Contextualised assessment in relation to the desired “ideal”

Studies based on the 3L model rely on presumed “objective” assessment of the system based on the set of universal criteria. In contrast, we employ critical assessment rather than objective scoring. In other words, we strive to elicit the crucial components of the system, spotlighting those aspects that are most critical in fulfilling the performative potential. In doing so, we strive to pay attention to the context, providing detailed descriptions and explaining causal links rather than scoring separate components on a unified scale. Furthermore, we acknowledge that assessments of complex social or socio-ecological systems inevitably entail a high degree of interpretation by the analyst. Based on their analytical prerequisites and knowledge of the system they must first assess which components are decisive and then devise corresponding sets of criteria.

Taking a specific example, the 3L model’s criterion of “profits from forests” is also highly relevant for our study, as will be shown in the coming sections. However, in our opinion a snapshot of profit per hectare as the single indicator provides only a crude estimate of economic performance. Instead we recommend analysing performance over a longer time period (*inter alia*, for reducing the influence of short-term market fluctuations), to complement the assessment with additional criteria (such as contribution to the national finances via taxes) and to examine the drivers behind the profitability (such as administrative reforms). Taking another example, 3L’s “sustained forest stands” criterion is of little interest for critically assessing forest governance in Lithuania and Slovakia. Interpreted in the classical meaning of sustainable management for long-term non-decreasing timber flow, forest management is highly sustainable in Lithuania and Slovakia, as in most (or all) European countries. Also, 3L’s indicator of coverage by forest management plans is a dubious measure for evaluating sustainability. In our view, the necessity to adapt to changing societies and increasing risks such as climate change makes the adaptiveness of forest management a more important criterion than sustained forest stands. After scrutinising 3L’s criteria, we concluded that a different set of criteria is needed for the purpose of CIA in our study.

2.2 Assessment criteria

As the key principle, we attempted to devise a set of criteria that would spotlight the important performative aspects of forest governance in societies under rapid, transformative changes. Most of the adopted criteria (Efficiency, Equity, Transparency and Participation) have been included as key pillars of good governance in several analytical frameworks (UNDP 1997; FAO 2011; Wingquist et al. 2012; Davis et al. 2013). We do, however, provide our own interpretation of the criteria (Table 2) relevant to the aims of this study. The fifth criterion (Adaptiveness) stems from the concept of adaptive governance.

Table 2. Criteria used to analyse forest governance in this study

Criterion	Selected key facets of forest governance
Efficiency	- Contribution of forestry to the national economy - Streamlining of forestry administration, reduced bureaucracy

Equity	- Equitable allocation of forest property rights
Transparency	- Availability of data on the condition of forests - Availability of data on the performance of forest enterprises
Participation	- Representation of different interests in local forestry decision-making and the formulation of national forest policy
Adaptiveness	- Capacity to adapt forest management to changing socio-economic and ecological conditions

2.2.1. Efficiency

FAO (2011) defines efficiency as maximal use of human, financial and other resources without unnecessary waste or delay. Many authors claim command-and-control regulation to be economically ineffective due to its high cost of compliance (Tietenberg 1990, Gunningham and Sinclair 2002). Both case countries implemented reforms to raise the efficiency of state forest administration. With this background, the following research questions are highly relevant: (i) did the transition to a market economy increase the relative economic contribution of the forest sector to the national economy? (ii) did the transition reduce bureaucracy and raise the organizational efficiency of forest administration?

To answer these questions, we first look at the dynamics of profitability during 2001-2016, which includes the pre-reform and post-reform period in Slovakia. Latvia was included in the comparison, as a benchmark of high profitability after reform during the same years. Second, we analyse the amount of taxes paid to state budgets. Third, we compare the numbers of employees in field and in administration of state forest organisations. For straightforward comparison, all indicators are normalised to performance per hectare and/or employee.

2.2.2. Equity

Since the 1990s, both case countries have aimed to achieve social justice by restitution of forest properties to their pre-socialist owners (or their heirs). However, true justice cannot be restored by simply awarding an ownership title. The genuine privileges of ownership are characterised by the bundle of property rights and duties allocated for the owners in question. We formulated the following research questions on the equity dimension: (i) Did restoration of property rights give forest owners sufficient autonomy to exercise substantive decisions in managing their property?, and (ii) Do the forest owners have the equal possibilities to get income from their properties?

To answer these questions, we first perform a descriptive analysis of the legal restrictions applied to the private forest owners in the case countries. Secondly, drawing from Brukas et al. (2015) we show the differences in potentially attainable Net Present Value (NPV, using a 3% discount rate) in management zones with different degrees of restrictions, following the management regimes prescribed for so-called forest groups in Lithuania. We take average statistical conifer stands and compare the potential economic performance with analogous forest stands in Sweden where forest owners enjoy high decision freedom in forest management.

2.2.3. Transparency

Studies on “good governance” (Graham et al. 2003; Wingquist et al. 2012) frequently use criteria of transparency and accountability. Transparency pertains to, among other aspects, facilitating access to information, thus creating better prerequisites for diverse stakeholders to get insight into matters of concern (UNDP 1997). The key attributes of transparency are availability, comprehensiveness and

timeliness of information. The concept of accountability is closely related to transparency and refers to the obligation to provide information to stakeholders (Davis et al. 2013). In the context of our study, it is pertinent to ask whether the socio-economic transition and democratisation of society led to increased transparency in the forest sector.

To assess this, we focus on the availability of forest resource data and on performance of state forest enterprises (SFEs). First, we critically examine the national forest inventory systems and the available forest statistics. As to the performance of enterprises, we analyse their reporting practices following the methodology of Liubachyna et al. (2017). This method rests on the analysis of annual enterprise reports, assessing their contents and quality. The set of indicators is based on the principles of the Global Reporting Initiative (GRI), where each indicator is scored on a three-point scale from 0 (principle not applied in the assessed report) to 2 (principle fully applied). By virtue of assessments by Liubachyna et al. (2017), our findings can be benchmarked against a large number of SFEs in other European countries.

2.2.4. Participation

We adopt FAO's (2011) definition of participation as the involvement of citizens and stakeholders in decision-making, either directly or through legitimate intermediaries representing their interests. As forests provide multiple and increasing services, a genuine representation of diverse interests through public participation is seen as an important prerequisite of good governance (Wingquist et al. 2012). Command-and-control governance was often criticized for the over-dominating role of the state and lack of public participation (Kooiman 1993; Baker 2009; McManus 2009). The democratization, international influences and promotion of multiple forest values in both countries have prompted new venues for the citizen participation. This leads us to formulate the following research question: Did the socio-economic transition lead to wider public participation and representation of different interests in public forest policy arenas?

To answer this, we critically assessed the interests, activities and power of forest-related organisations. In particular, we assessed the ability of non-state actors to influence forest-related processes at different levels, from local to national. Finally, we looked at the development of National Forest Programmes in both countries. Cumulatively, such analyses can indicate how far the forest-related processes have advanced on Arnstein's (1969) ladder of citizen participation.

2.2.5. Adaptiveness

Adaptive forest management can be defined as a problem-solving approach that is capable of adapting to changing conditions and not extensively reliant on fixed sets of instructions. Thus, adaptive forest management is deemed to be especially relevant in forestry, where decisions often need to be taken under high uncertainty and have long-term implications (Elbakidze et al. 2010). Increasingly rapid societal changes and global challenges like climate change call for more adaptive modes of governance (Brugnach et al., 2008; Hurlbert and Diaz, 2013; Karpouzoglou et al. 2016). With this in mind, we raise the following research question: Did the case countries create suitable institutional and legislative prerequisites for increased adaptiveness of forest management to changing socio-economic and environmental conditions?

Answering this, we analyse the legislative steering and approaches to planning and control, with a focus on the available decision space to adapt forest management to changing social (e.g. as expressed through market signals) and natural (e.g. increasing risks due to climate change) systems. We focused institutional changes compared to the socialist past, stressing those drivers that have the most significant implications for adaptive capacity in the management of state and private forests.

2.3. Basic data on the case countries

Located east of the Baltic Sea, Lithuania is the largest of the three Baltic states with a total area of 65,300 km². One-third of the total area (33.5%, about 2.2 million ha) is covered by forests (Fig. 1). Coniferous species prevail, composing 56% of the forest area (DGSF 2016). The topography of Lithuania is flat, with the highest point of the country only 292 m above sea level. Slovakia is situated in central Europe and covers a territory of 49,000 km², 41% of which (about 1.9 million ha) is forested (Fig. 1). The diversity of species in Slovak forests is rather high, with 39% of forest area covered by conifers, and 61% with deciduous species (MARD of the SR 2016). The relief of Slovakia is dominated by the West Carpathian Mountains, with the highest peak 2655 m above sea level. Relative to Lithuania (Galvonaitė et al. 2007), Slovakia exhibits a wider span of climatic conditions (Michaeli 2015). However, both countries achieve similar forest growth according to their national forestry statistics (Table 4).

Table 4. Selected features of the forest sectors in Lithuania and Slovakia (Sources: Kovalčík 2017; DGSF 2016; MARD of the SR 2016, Brodrechtova et al. 2016; FAO 2014 (a, b))

	Lithuania	Slovakia
Share of the forest sector in the Gross Domestic Product	2.9 %	0.6 %
Forest ownership structure (% by area):		
- State	50%	40 %
- Private	40%	10 %
- Municipal	-	20 %
- Community, agricultural cooperatives & church	-	11 %
- Unknown/under restitution	10%	19 %
Forest groups/zones with prescribed forest management regimes (% by area)		
Strict nature reserves	1 %	2 %
Special purpose with restricted management	12 %	10 %
Protective	15 %	17 %
Commercial	72 %	71 %
Average size of private forest estates (ha)	3.4	2.8
Prevailing silvicultural system	Even-aged management	Shelterwood systems
Mean annual increment (m ³ /ha/year)	6.0	6.4
Prevailing species (minimum allowable rotations ages in commercial forests)	pine (101), spruce (71), birch (61)	beech (90), spruce (80), oak (90-150)

Both countries share several centuries of history on the peripheries of large European empires. After the end of the First World War in 1918, Lithuania had a period of independence until 1940, when it was annexed into the Soviet Union. Setting aside the German occupation between 1941-1944, Lithuania was part of the Soviet centralised planned economy for five decades. In 1990 it regained independence with the ensuing transition to a market economy (Eidintas et al. 2013). Similarly, Slovakia broke from its imperial past in 1918 when it formed a new geopolitical unit, Czechoslovakia. Since 1948 Czechoslovakia was part of the Eastern Bloc with a planned economy. The transition to a market economy started in 1989, and in 1993 Czechoslovakia split into independent Czech Republic and Slovakia (Bartl and Skvarna 2002). Both Lithuania and Slovakia joined the European Union in 2004.

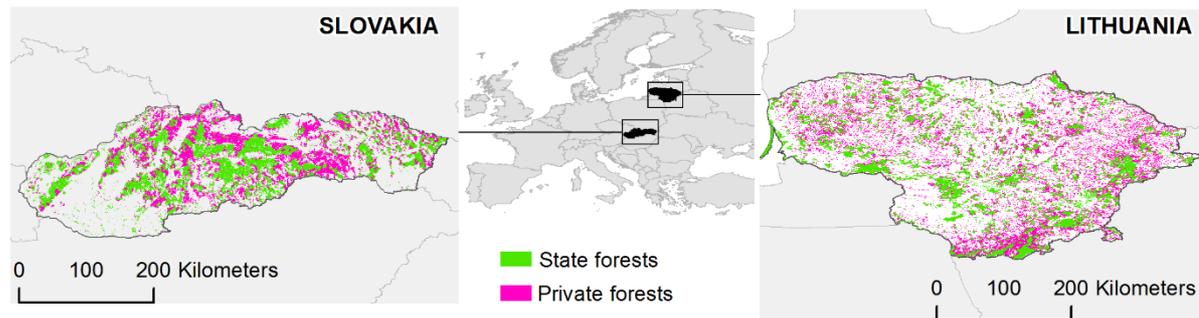


Fig. 1. Forest distribution by ownership in Lithuania and Slovakia

2.4. Study materials

The data were collected through open-ended qualitative interviews with forest stakeholders in both case countries and through extensive desktop research.

Performed during two rounds in the frame of EU and national research projects, our interviews targeted a variety of stakeholders at national and regional levels including forestry authorities, managers of state forests, private forest owners, timber industries and trade, science and education, and non-governmental organisations (NGOs). The interview guides included open-ended questions on, *inter alia*, current conflicts and problems in forestry, actors' interests and power, interactions between stakeholders and their groups, sources and quality of information about forests and forestry. The first round took place in 2012, focusing on the drivers behind current forest management at national, landscape and estate scales. Further details regarding the interview methodology can be found in (Brukas et al. 2018) for Lithuania (58 respondents) and in (Brodrechtova et al. 2018) for Slovakia (50 respondents). The second round was conducted in 2016 (Lithuania) and 2016-2017 (Slovakia) and was more future-oriented, investigating, among other things, approaches to forest management and modelling that are better geared to meet the challenges of a rapidly-evolving socio-economic context and the threats posed by climate change. Lithuanian interviews covered 21 respondents from 11 organizations, the individual interviews lasting from 30 minutes to 2 hours. In Slovakia, 30 interviews were conducted with various stakeholders such as forest owners, state forest and environmental administration, (environmental) NGOs, and businesses (Brodrechtova et al. 2016). The in-person interviews lasted between 45 and 120 minutes.

The desktop research involved examination of the pertinent scientific literature and popular scientific publications, legal acts, reports of SFEs and forest statistics. Parts of our CIA relied heavily on expert opinions by members of our research team that in each of the case countries included experts on forest policy, forest management planning, economics and silviculture.

4. Results

4.1. Efficiency

By the end of the Soviet era, two-thirds (68%) of Lithuanian forests were managed by SFEs, the remaining third being allotted to collective farms (Teder et al. 2015). The SFEs were built around the model of so-called complex forestry, where all activities, from seeding to timber processing, are executed by internal labour, following prescriptions of forest management plans (FMPs). Due to peculiarities of the Soviet economy, economic efficiency received low priority, the focus instead being fulfilling rather modest cutting volume targets. After regaining independence in 1990, Lithuanian state forestry retained this basic structure with a high number of SFEs (42) each managing a relatively small forest area (25,000 ha on average). Though timber processing and forest control functions were gradually withdrawn, state enterprises retained most other functions. Starting in 1996, SFEs were subordinated to the Directorate General of State Forests under the Ministry of Environment which, however, led to little change, other than increasing their bureaucratic clout (Brukas, 2015), with additional operational tasks and reporting. During the 1990s, the SFEs followed the principle of economic self-sufficiency that stipulates the need to cover costs with income. Income taxes on state enterprises were introduced in 1994 and raised in 2011 when the country faced economic crises. Since 2015, Lithuanian SFEs pay a 50% profit tax as do all state enterprises and an additional 15% tax on income from the sale of roundwood and standing forest.

A similar model of “complex” forestry was also pursued in Slovakia, where SFEs managed 99.1% of forests until 1990 (Sarvašová and Tutka 2005). Only 0.8% of forests were used by agricultural cooperatives and 0.05% were managed by private forest owners. Forest management was mainly commercially oriented; for instance, non-native species were planted for timber production aiming for high and even timber yields. A series of institutional reforms took place in the early 1990s, culminating in 1999 with the establishment of the state-owned forest enterprise *Forests of the SR* from a merger of six regional SFEs. Nowadays, the state-owned forest enterprises (including military forests) manage 53% of the forests (MARD of the SR 2016). *Forests of the SR* is the biggest player managing 886,000 ha which corresponds to 44% of the Slovakian forest area (Forests of the SR, 2016). The income from the timber, especially from coniferous roundwood, is the main source of financing for the enterprise. However, it has been decreasing (Fig. 1) due to increasing calamity felling and decreasing coniferous resources. While the income of all state-owned enterprises in 2016 was 9.22 €/ha, the income of non-state forests is more than four times higher (MARD of the SR 2017). This income difference persists over the years due to factors such as management of non-restituted forests with banned felling, limited options for the use of public funds, preservation of employment, or political influence. Moreover, compulsory delivery of a fixed part of the net income to the state budget was introduced in 2012. The obligatory delivery of five million euro in 2016 has constituted approximately 70% of the net income of *Forests of the SR*. This is separate from income tax, which in Slovakia is generally 21% of profit.

The performance of Lithuanian state forestry has been questioned (e.g. by Domarkas and Varapnickas 2006, Dudutis and Lazdinis 2008), using a number of arguments including inferior profitability compared to neighbouring Latvia. Indeed, the indices in Table 5 reveal that, with a significantly smaller number of employees, the Latvian SFE *Latvia's State Forests* (LVM) reached a higher economic efficiency (Table 5, Fig.1). Despite similar aims and instruments (centralization and outsourcing), the 1999-2000 reform of state forestry in Latvia and Slovakia brought different outcomes. After a 2-3 year period of adjustment, the profits of Latvian SFEs rose rapidly, entailing substantial fluctuations due to timber markets. In contrast, the Slovakian *Forests of the SR* exhibited low profitability during the entire period, with a rather modest growth since 2011. Lithuanian forest enterprises have had somewhat lower profits than the Slovakian *Forests of the SR* since 2011 and were utterly outperformed by the Latvian LVM during the entire period (Fig.1).

Table 5. Selected performance indicators in the SFEs of Lithuania, Slovakia and Latvia (DGSF 2016, LVM 2016, *Forests of the SR* 2016)

Indicator	Country		
	Lithuania	Slovakia	Latvia
Number of field employees in state forest enterprises	1878	1260	925
Number of administrative personnel in state forest enterprises	1930	2268	342
Total number of employees in state forest enterprises	3808	3528	1267
Number of employees in state forest administration (ministerial level and state forest services)	196	240	183
Forest area per employee, ha	343	251	1097
Forest area per field employee, ha	696	703	1502
Harvested wood per employee, m ³ /year	1024	1225	4388
Profit per employee, €/year	2294	2427	45990
Profit, €/year/ha	6.7	9.7	41.9
Average tax paid, €/year/ha	1.47	2.38	5.68

Source: *Financial statements for 2016 of DGSF 2016, LVM 2016, and Forests of the SR (2016)*

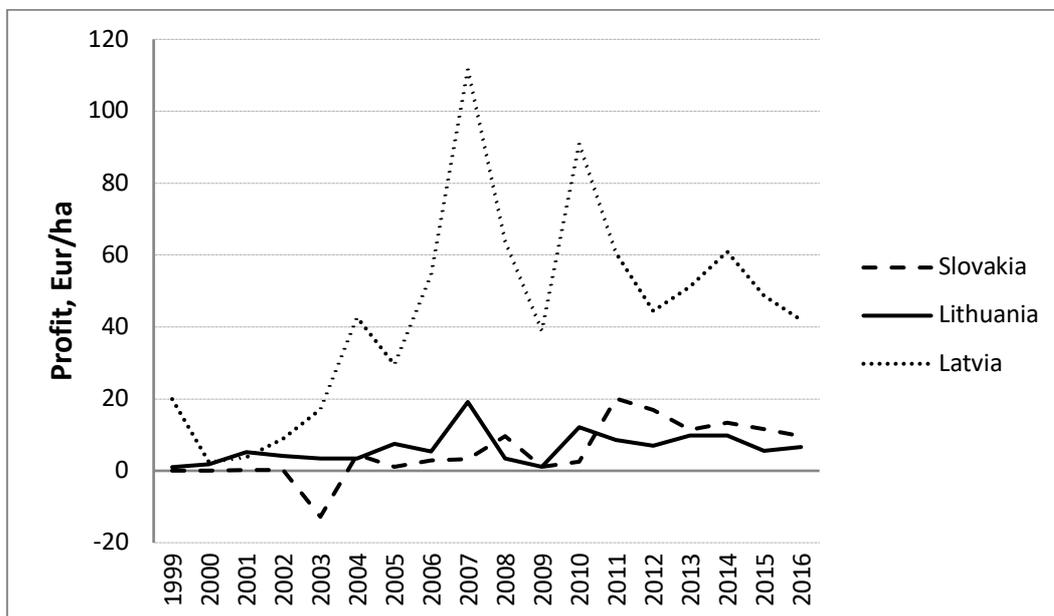


Fig.1. Dynamics of profits (before taxes) of SFEs in Latvia, Lithuania, Slovakia from 2000-2016

Source: *Financial statements of 2001 - 2016 of DGSF, LVM, and Forests of the SR*

The “optimal” number of state enterprises in Lithuania and associated management effectiveness have been questioned over the years by many authors (Deltuvas 1997, Deltuvas et al. 2006, Domarkas and Varapnickas 2006, Dudutis and Lazdinis 2008, Brukas 2011, Kavaliauskas and Činga 2011) but any attempts at reform were fiercely rebuked by the Directorate General of State Forests and the enterprises, supported by powerful political allies, particularly the Social Democratic Party. Spurred on by OECD membership requirements, in 2016 the Lithuanian government proposed a merger into one SFE, purporting efficiency through centralisation and streamlined administration.

The opposing parties used employment in the rural areas as the key counterargument. Withstanding multiple pressures, the government launched the new centralized forest enterprise on January 1st, 2018. Effects of the reform remain to be seen.

The Slovakian experience showed that centralization of *Forests of the SR* in 1999 produced mixed results. Overemployment was reduced via outsourcing (Ambrušová and Marttila, 2012, Štěřbová et al. 2016) allowing payroll reduction but also decreasing quality in some forest management activities such as artificial forest regeneration, precommercial thinning, and increased rates of damage to trees remaining in forest after harvest. These changes led to short-term contracts with subcontractors, insufficient or missing funds for technological updates, and slow innovation (Štěřbová et al. 2016; Štěřbová et al. 2018). As stated by a representative of a company providing forest management services: “*The reduction of workforce in state-owned enterprises caused problems concerning work safety in forests, low prices and quality of services* [contractors].”

The most salient finding of our comparison is that LVM in Latvia was considerably more profitable (Table 5, Fig.1), while maintaining substantial investments in silvicultural measures. Two main factors are seen as the major barriers to increased efficiency in *Forests of the SR* (Suchomel and Gejdoš 2014; Brodrechtova et al. 2018): (i) the losses resulting from timber sales due to long-term contracts with disadvantaged conditions for the enterprise, clientelism, informal networking and political involvement in timber sales causing unfair pricing and distribution of timber, and (ii) the losses resulting from the persisting overemployment, political nominations and personal patronage at all organizational levels.

Summarizing our findings, we can state that in both case countries: (i) the contribution of the forest sector to the state budget remains stable, but low; and (ii) the high number of administrative personnel leads to the excessive bureaucracy in the state forest sector.

4.2. Equity

Private forest property rights were abolished after World War II in Lithuania. In Slovakia, property rights were *de jure* preserved but actual user rights were taken away in 1977. Restitution of property or user rights in both countries began in the early 1990s (Sarvašová and Tutka, 2005; Brukas 2015). The current shares of non-state owned forests are similar, 40% (873,000 ha) in Lithuania and 41% (827,000 ha) in Slovakia. However, in Slovakia the non-state forest ownership structure is more diverse, including private, municipal, community and church forests, while in Lithuania all non-state forests are in private hands (see Table 4). The restitution process has faced substantial struggles and is still incomplete, with “reserve for restitution” forests covering around 10% in Lithuania and 19% in Slovakia (DGSF 2016; MARD of the SR 2016).

Private forests are owned by hundreds of thousands of individuals with large variation in their objectives and approaches to forest management (Stanislovaitis et al. 2015; Ambrušová et al. 2015; Dobšinská and Sarvašová 2016; Feliciano et al. 2017). Lacking tradition, poor management skills and small property sizes all contribute to passiveness by a substantial share of private forest owners. Many private forests in Lithuania are unmanaged or managed passively. On the other hand, the share of forests intensively managed by profit-oriented owners is increasing, currently constituting an estimated 20% of the area of private forests (Stanislovaitis et al. 2015; Mozgeris et al. 2017). This intensification process has been in part driven by foreign, primarily Scandinavian, investments into forestland.

Slovak state and non-state forests are managed with more or less the same intensity (MARD of the SR, 2017). This could be due to the existence of obligatory FMPs framing roughly the same limits for incomes from wood harvests and large-area disturbances irrespective of ownership form. But the

differences exist in silviculture and tending – for instance, non-state subjects show a tendency to neglect costly silvicultural treatments in very young even-aged stands regarded as long-term investments in economic value and ecological stability. The overall intensity of forest management in non-state forests of Slovakia is slightly higher than in Lithuania, making harvest-increment ratios of around 80% and 70% respectively, according to the official national statistics (MARD of the SR 2016; DGSF 2016).

Building upon the legacy of the socialist period, both countries apply strict zonation of forests with significant impacts on forest management. In Lithuania, detailed zoning of forestland was performed in the mid-1990s, before the restitution process gained impetus. This process institutionalised injustice since varying environmental restrictions were imposed on the different forest zones without allowing future landowners to appeal them. Brukas et al. (2015) quantified the overall significant impacts on the economic value of forest properties (Table 6) and Brukas et al. (2018) illustrated individual outcomes, based on qualitative interviews with forest planners. Planners are concerned with the resulting injustice, as can be seen in this example: *“That 6-7 ha recreational [forest] plot with a large area of Group II is an evident example of the harm that the state causes to a person [owner]. It is not understandable why it is recreational, one could pay 150,000 Litas [43,443 euro if it was commercial], but with the FMP prepared mainly for recreation, it is worth around 40,000 [11,585 euro]. That person [owner] really needed money for [paying] his loan to the bank. When getting the forest, he probably knew nothing about the groups.”* Despite severe management restrictions, the owners of properties assigned to group II do not get any compensation from the state.

Table 6: Selected features of Lithuanian forest groups and attainable Net Present Values (NPVs) for an average stand, in comparison to Sweden (Brukas et al. 2013, Brukas et al. 2015, DGSF 2016)

Feature/Forest group	Group I	Group II	Group III	Group IV
Designation	Forest reserves	Protected forests	Protective forests	Commercial forests
Silvicultural activity	Not allowed	Yes	Yes	Yes
Clear felling	-	Not allowed	Up to 5 ha	Up to 8 ha
Minimum allowable rotation, pine/spruce	-	171/ 121	111/ 81	101/ 71
Area distribution of private forests, %	-	9	19	72
Share of attainable NPV, pine, %		11	42	53
Share of attainable NPV, spruce, %		26	72	89

The observed difference in NPV is due to differences in the minimum allowable rotation age (MARA). For example, for an average Scots pine stand (61 years of age) the NPV in Sweden (MARA=65) is € 5,891; while in Lithuanian group IV (MARA=101) the NPV is € 3147, corresponding to 53% of the Swedish NPV.

In Slovakia, the following quote from an environmental NGO worker illustrates the availability of some compensations for restrictions: *“In Slovakia everybody grumbles about nature protection concerning forests and concerning restrictions, however, we already have a system of compensations that does not work 100%, not even 90% or 80%, but it works somehow and non-state subjects can obtain compensation for restrictions in protected areas. But then again what do they [forest owners] get from electric or water companies, and from others that are also restricted? In that case the compensation system does not work as is the case with nature protection. I would not use it as an example, it might be not ideal, but at least it works and is legally claimable, and forest owner can even after years collect his money.”* In addition to these partial compensations, all forest owners

(state and non-state) are exempted from land taxes for protective forests and forests with restricted management. Decisions on some zones and subzones can be affected by forest owners, managers or other stakeholders (Act No 326/2005 Coll. on Forests), but nowadays this right is utilized rarely because re-classification usually leads to even stronger management restrictions. The practical impact of the zoning is that approximately one-third of forest area is oriented to environment and nature protection or some specific social services, being almost excluded from wood production (Table 7).

Table 7: Selected features of Slovakian forest zones (MARD of the SR 2017)

Features	Forest zones		
	Protective forests	Forests with restricted management	Commercial forests
Silvicultural activity	Natural regeneration, no or light thinning	Individual tree selection	Natural regeneration complemented by artificial regeneration, obligatory thinning
Clear felling	Excluded	Excluded	Possible in small plots (up to 7.5 ha)
Minimum allowable rotation, spruce/oak	110/250	100/200	70/90-130
Proportion of non-state forest area (%)	18	7	75

Notably, even in commercial forests private owners face significant limitations on forest management, such as long rotation ages and seasonal harvesting restrictions (Brukas and Sallnäs 2012). Generally, in both countries forest owners must have an officially approved FMP for their properties (Brukas and Sallnäs 2012; Sedmák et al. 2013; Sarvašová et al. 2014; Brodrechtova et al. 2018). However, in Lithuania the plan is required only in case the owner wishes to conduct a final felling, while in Slovakia it is mandatory for all forest owner types and for the entire management period. Nevertheless, in Slovakia the elaboration of FMPs is financed by the state (if the forest owner waives the right to select the planning company) whereas in Lithuania it is at the expense of the forest owner. As it has been assumed that the forest owner might be incapable of following the instructions given by very complicated FMPs that contain a lot of specific terms, descriptions, instructions and regulations for each forest stand (Siry, 2003), their implementation in Slovakia is fully and obligatory transferred to the licensed forest manager unless forest owners possess the licence themselves (the Act No. 326/2005 Coll. on Forests, Bavlšík et al. 2010; MARD of the SR 2016). Forest managers can manage an area of no more than 2,000 ha unless assisted by a person with forestry education for every additional 1,000 ha. Although licensed forest managers are on the payroll of forest owners, they must fulfil their duties as stipulated in Act no. 326/2005 of the Coll. on Forests and must be licensed in the competence of MARD of the SR (Brodrechtova et al., 2016). The forest owner can only affect forest management indirectly, i.e. through proposals or opinions expressed through personal communication with the forest manager (Sedmák et al., 2013).

In the 1990s the forest management regulation of non-state forests in both countries was largely transferred from state forestry while disregarding forest owner aims, diversity and different management conditions (Brukas 2015; Stanislovaitis et al. 2015; Siry, 2003; Sedmak et al, 2013). The state adopted a strong standpoint toward private forest owners considering them as lacking knowledge and experience to make decisions themselves without destroying the forest. For example, some cases of clearcutting in Kysuce and Orava by private forest owners were brought to

light and used as an argument against all non-state forest owners in Slovakia and legislating additional restrictions (Konôpka, 1999). Such a “paternalistic” approach is relevant for other post-socialist countries as well (Dragoi et al. 2011). While the cumulative management restrictions appear to be smaller in Lithuania, the property rights are severely limited in both case countries, in comparison with longer-established European democracies (e.g. Nichiforel et al., 2018).

Answering our research questions, we can state that: (i) both in Lithuania and Slovakia the forest owners’ rights are still limited and (ii) forest owners are forced into the unequal conditions due to forestland zoning and insufficient/ineffective compensation mechanisms.

4.3. Transparency

Slovakia and Lithuania have well-developed systems of forest resource assessment, forest management planning and long-term wood availability projections. These are based on two main types of inventory data: Stand-level Forest Inventory (SFI) and the National Forest Inventory (NFI) that uses sampling methods (Tuček et al. 2015; Šebeň et al. 2015; Kuliešis et al., 2017). Very detailed SFIs are cyclically repeated coupled with the renewal of decadal FMPs in both countries using terrestrial surveys, supported with aerial photography and GIS-driven data sharing and mapping solutions. Stand-level forest information is usually available upon request. While information on forest resources can be considered comprehensive (Kuliešis et al., 2010), several issues can be highlighted, stemming in part from the legacies of the socialist period. First, multiple and partially overlapping inventories are conducted with little consciousness about their added value. For example, Lithuania employs four types of inventories, including the periodically repeated SFI for all forests of the country (until 2018), the national-level NMI, an inventory of mature stands in state forests, and de-facto additional inventories when preparing FMPs in private forests. The accuracy of inventory data is questioned, especially for ocular estimations in SFI (Kuliešis et al. 2017). Airborne laser scanning could reduce costs and increase accuracy of inventories (Bikuvienė 2012; Koreň et al. 2017) but is effectively blocked by current key actors in forest inventory unwilling to depart from established routines and flows of state funding.

Officially introduced in the 1990s in Lithuania and in 2005 in Slovakia, the NFIs are used for forest resource assessment, international reporting, and forest management control using gross increment balances (Šmelko et al. 2008, Bošeľa et al., 2016, Kuliešis et al. 2016). Although the aggregate national statistics from NMI are publicly available in both countries, in Lithuania they are perceived as incorrect by most people. In a national survey, Mizaras (2006) found that 77% of respondents to a national survey believed that the forest area in Lithuania is declining, with only 5% believing the opposite. In reality, forest area has increased by 12% from 1990-2015 and this one of the highest growth rates in Europe (FRA 2016). Lithuania and Slovakia share the common European problem – the primary NFI data are usually available to small number of experts affiliated with inter-organizational relationships and unwilling to let the outsiders in (Baycheva-Merger et al. 2018). Likewise, the style of communication of the aggregate data appears to be outdated with the national statistical yearbooks full of detailed data comprehensible for qualified forestry experts but hard to understand by the wider public.

If the forest resource information is generally available for all forests, the data on forestry performance primarily pertains to state forests. Since 2012, Lithuanian SFEs have published activity and financial reports on their websites. This practice was introduced by special order of The Directorate General of State Forests, very likely due to criticism about lacking transparency. The directorate published financial reports from 2011-2018; however, these reports only included expenses related to internal management. Additionally, some basic economic information such as incomes and revenues of SFEs are publicly available in the Lithuanian statistical yearbook of forestry. Nevertheless, the most informative publication on economic performance of state forestry by the Directorate General of State Forests’ “Indicators of activity ...” has always been considered as

confidential. Moreover, its availability to researchers (among others) has been restricted since 2011. In contrast, the annual reports of the Slovakian enterprise *Forests of the SR*, containing both information on forestry performance and economic results, are available on their webpage back to 2000.

The analysis of reporting practices of SFEs gave a low score for Lithuania (12.7), compared to the average score for nine European countries (19.4) examined by Liubachyna (2017). The only national agencies with lower scores were the Polish State Forests National Forest Holding (12) and the Scotland Forestry Commission (12.5). In contrast, the Slovakian *Forests of the SR* earned 19 points (Table 8).

Table 8: Evaluation of SFE reports in Lithuania and Slovakia (method by Liubachyna et al. 2017)

Country, SFE	Report type	Report content					Report quality								
		Materiality	Stakeholder inclusiveness	Sustainability context			Completeness	Balance	Comparability	Accuracy	Timeliness	Clarity	Reliability	Report sub-score	Average score
				Economic	Social	Environmental									
Lithuania <i>Directorate General of State Forests</i>	Annual Financial	1	0	2	0	0	2	2	0	2	2	2	0	13	12.7
	Activity planning	2	2	2	2	2	1	0	0	1	2	1	0	15	
	Annual activity	1	0	2	1	1	2	0	0	1	0	2	0	10	
Slovakia <i>Forests of the SR</i>	Annual report	2	0	2	1	2	2	2	1	2	2	1	2	19	19

The reports of both countries are dominated by economic indicators and give little attention to stakeholder inclusiveness. Reports are also weak in revealing longitudinal trends. Slovakian reports juxtapose the latest data with the values of at least one previous year. Lithuanian SFEs present only the current year's data. Reliability of the reports is probably the weakest point for the Lithuanian SFEs. None of the three reports prepared by the Directorate General of State Forests was checked by the independent auditor, leaving space for manipulation. Moreover, their latest reports are available only in the national languages, effectively limiting international access.

To sum up, the democratization of the society along with the increased requirements on state organizations raised the overall transparency of the forest sector. However, if the data on forest resources is comprehensive in both countries, the transparency of activities at state forestry organisations is moderate in Slovakia and very low in Lithuania.

4.4. Participation

Increased participation in forest decision making is challenging in post-socialist countries because they have few traditions and institutional arrangements for stakeholder empowerment (Lazdinis et al. 2005). On the other hand, increased participation is pushed from various sides, including: (i) the overall democratisation of society and the legal requirements for public input in planning and implementing

natural resource management (Lazdinis et al. 2009), (ii) the increasing diversity of forest stakeholders with various interests, ranging from commodity-oriented private forest owner associations to amenity-oriented environmental NGOs (Brukas 2015), and (iii) increased public concern for environmental and social values in forestry (Teder et al. 2015).

Despite these pressures, both the Lithuanian and Slovakian forest decision-making arenas remain strongly dominated by the state forestry and environmental authorities that shape forest management requirements (Sarvašová et al. 2013; Brukas 2015; Šálka et al. 2016b; Brodrechtova et al. 2018; Brukas et al. 2018). By number of employees, state forestry organizations in Lithuania heavily dominate the important decision-making arenas, much more than in neighbouring Latvia and Estonia (Lazdinis 2004). Despite restoration of private property rights, the representation of private forest owners by the national organizations in Lithuania is weak, with only a few percent of owners belonging to the respective interest organisations (Brukas 2015). Many forest owners are sceptical about the joining, as an interviewed forest owner put it: *“I’ve heard about forest owner associations. To participate? What’s the reason for that? [...] You should take care of your own [land], no need to look wider. [...] I don’t care about policy, only about my piece of land”*. When analysing the institutional arrangements around forest management planning, Brukas et al. (2011) found that stakeholders other than state forestry organizations have too little power to make a substantial impact in key decisions such as estimating allowable cutting norms at both local and national levels. Even in the case of regional forest management schemes public participation is usually weak or absent, despite legislation that encourages societal input through public hearings (Brukas et al. 2011).

Similarly, in Slovakia non-state forest owners represented by various forest owners associations have limited power to influence forest policy (Brodrechtova et al. 2018, Šálka et al., 2016a). Although forest owners’ participation in the elaboration of FMPs was formally introduced in 2005 (Act No 326/2005 Coll on Forests), their actual role is still minor (Sedmák et al., 2013; Sarvašová et al., 2014). Forest owners do not take part in setting forest management goals, as expert knowledge of planning authorities dominates. One of the reasons given for this has been concern about inadequate forest management in non-state forests (Siry, 2003). As setting up forest management goals is directly related to allowable cutting volumes, to increase it the forest owners sometimes report calamities, but the forest administration does not have the capacity to inspect every case. Participation of the wider public such as municipalities, associations or local people in elaboration of FMP is still rare (Sedmák et al., 2013; Sarvašová et al., 2014) with a few recent positive examples from urban forests of Bratislava and Košice. The best known case of wider public involvement in FMP elaboration, at the Bratislava branch division of the state-owned *Forests of the SR*, successfully increased nature protection and recreation services (e.g., Jenčo, 2019; Sedmák et al., 2019).

Environmental NGOs form an exception of being visible in the national forest policy arena and also being very active in forestry decision-making at the local level in Slovakia (Brodrechtova et al., 2016). The environmental NGOs participate in FMP elaboration, comment on law proposals and court files, and are visible in the media. However, their actions are often surrounded by controversy, as they interfere in forest owners and forest administration activities. As stated by an interviewed NGO actor: *“In my opinion some [environmental NGOs] are fanatical and often for one splinter they do not see the whole forest. Sometimes they have non-constructive and sharp opinions and it is difficult to communicate with them. On the other hand, I think that they are opening very important topics and that they are very important from societal point of view because they bring to one’s attention things that simply do not have advocates. However, it is very difficult to cooperate with them, it is also difficult to communicate [...]”*

Generally, experiences in both countries reveal difficulties in achieving broad representation of interests. In two multi-disciplinary EU projects³, Lithuanian and Slovakian research teams aimed to clarify the key drivers behind forest management and to include various interests in building scenarios for sustainable management of forested landscapes. Despite repeated searches, the Lithuanian team was not able to identify non-governmental organizations or individuals willing to represent environmental or recreational interests at the local level. Instead, the workshops in Lithuania were dominated by representatives of SFEs, state forest service and regional administration of protected areas (Mozgeris et al. 2015). In Slovakia, representatives of some local environmental NGOs participated in the projects.

At the national level, the development of a National Forest Programme (NFP) could be a suitable tool for increased public participation in both case countries, following the internationally-accepted principles of holistic coordination and broad stakeholder participation (Elsasser 2002). Championed by ministerial officials, the National Forest Sector Development Programme 2012-2020 in Lithuania or National Forest Programs for 2007-2013 and 2015-2020 both approved in 2007 in Slovakia could hardly be considered to be true NFPs due to lack of transparent participatory processes (Sarvašová et al., 2014). On the other hand, the process leaders from the Department of Forestry in Lithuania made a conscious effort to listen to the voices of various stakeholders. This was the main reason why the process took about two years and necessitated compromises for many of the targets in the updated programme (Kupstaitis 2012). Such an unprecedented approach gives signs of hope for more deliberative participation in the future.

Relating to Arnstein's (1969) ladder of citizen participation, we observe that in neither country does it rise above the level of consultation (a form of tokenism). This means that there is little promise that the views of the society will be considered by power holders in their routine decisionmaking. So, although in Lithuania the formation of the NFP is supposedly the best example of public participation in forest-related processes, it also didn't go beyond consultation. Despite the broad participation of various stakeholders, the final version of NFP was formed with little regard to the comments sent by the process participants. Thus, we can assume that to some extent it was a kind of formalistic "box ticking" participation process. The explanation for such a deficit of genuine public participation could be that a society in a post-socialist country lacks civic commitment and successful legacies of participatory processes. This poses a tremendous challenge for increased participation and even questions its very rationale.

To sum up, broad representation of various interests is still challenging in both case countries. Most stakeholders are passive and do not believe that substantial benefits can be reaped from active engagement in decision-making processes concerning forestry. Environmental NGOs constitute a notable exception in Slovakia, actively pursuing local interests in FMP deliberation and also taking part in national policy arenas.

4.5. Adaptiveness

In both countries, professional ideology and approaches to forest management are largely inherited from the planned economy period. The ideology is built around the concept of the normal forest originating in the 19th century and aimed at maximising the even flow of timber (Brukas 2015). The inherent inclination to regulate forestry for maximised long-term production has been reinforced by rigidities of the planned economy that rely on detailed planning, legal prescriptions and scrupulous control. Most management provisions from the socialist period have been incorporated and, in many instances, even harshened in legal acts. The amount of forest-related legislation increased

³ INTEGRAL (<https://cordis.europa.eu/project/rcn/99823/factsheet/en>) and ALTERFOR (www.alterfor-project.eu)

dramatically over last three decades⁴. Comparative analyses between Lithuania and Sweden (Brukas and Sallnäs, 2012; Brukas et al. 2013) have revealed substantially more stringent regulation of forestry activities, such as minimum allowable rotation periods or methods to estimate the allowable cut. On the top of that, both Lithuania and Slovakia apply forestland zoning that pre-sets functional priorities for each forest stand at a landscape level (see the Equity section). Legal prescriptions are not only stringent and often amended, but also incoherent. The biggest confusion exists between forestry and environmental laws as pointed out by an actor representing a forest owners association in Slovakia: *“Conflicts exist since introduction of an act on nature and land protection [Act no. 543/2002 of the Coll. on The Nature and Land Protection] because the act on forests [Act no. 326/2005 Coll. on Forests] and the act on nature and land protection conflict in some clauses. This is what we already mentioned concerning processing the calamity when one act prescribes that it should be processed within six months while according to the other act we are required to get permission [...].*

Lithuania and Slovakia thus share a heavy reliance on prescriptive legislation and detailed forest management planning to steer forest management toward a “classical ideal” with little concern for fundamental changes in the socio-economic environment. There are, however, certain differences in the modes of implementation. In *Lithuania*, the system is quite static, especially in state forestry. All forests are assigned to certain functional zones with little practical possibility to change their status. In commercial state forests, FMPs prescribe silvicultural activities following legal stipulations and conservatively-estimated allowable cuts to be followed by forest owners. Private forest owners need to have an officially approved FMP if they wish to conduct a final felling (Brukas and Sallnäs 2012). While owners need to comply with numerous legal restrictions, they still have some space for their own decisions. For example, for private owners, thinning is recommended but not mandatory.

With almost 200 years of tradition, the mandatory FMPs in Slovakia are a major instrument for regulation and control, regardless of the ownership type. Planners are obliged to prescribe very specific mandatory treatments for each stand depending on dozens of stand characteristics, such as site, age, species composition, etc. (Bavlišík et al. 2010; Sedmák et al., 2013; Sarvašová et al., 2014).

The differences and nuances notwithstanding, it can be safely concluded that both analysed countries effectively limit the possibility to adapt forest management to external changes, such as market signals, increased risks or climate change considerations. This applies at the macro level, considering the socio-economic or environmental effects at national or regional scales, and also at the micro level of individual state forest managers or private forest owners.

The highly-steered system not only limits owners in pursuing their personal needs such as a changing household economic situation or individual preferences for various ecosystem services. It also reduces personal initiative, creativity and motivation. Illustrative of this, when asked about the effect of the current legislative system a manager at a Lithuanian SFE answered: *“Those laws [reforestation and afforestation rules] are rubbish, because they are changed too often and with mistakes. How can you fit nature onto the paper?! (...) The workers of the forest enterprise don’t get any courses or new knowledge, they get only updated legal acts and norms (...)”*. This kind of reply indicates managerial resignation as a bizarre outcome of heavy regulatory clout.

We conclude that despite changing conditions, both countries still share a highly-steered legislative approach to forest management. The heavy regulatory clout minimises the adaptive capacity of

⁴ Our test search of the electronic register of legal acts by the Lithuanian Parliament (<https://www.e-tar.lt/portal/lt/legalActSearch>, searched on 04.04.2018) yielded 2132 valid national legal acts containing in their title any form of word “miškas” (“forest” in English). Analyses of legal acts by Brukas et al. (2018) revealed a sharp rise in environmental restrictions in forestry since 1990.

forest governance in both large-scale and routine decisionmaking by private owners and state forest managers.

5. Discussion

5.1 Farewell to command-and-control?

Our research set out to test the overarching hypothesis that, due to the significant changes in the external environment, the case countries have moved away from the command-and-control model of the past to more adaptive forms of governance under a market economy. Our primary finding is that the shift from command-and-control to more adaptive governance has been very limited in both Lithuania and Slovakia, as summarised in Table 9.

Table 9. Summary evaluation of forest governance in Lithuania and Slovakia

Criterion	Evaluation*		Explanation
	Lithuania	Slovakia	
Efficiency	Low	Low	Low efficiency of SFEs in terms of profits and contribution to state welfare
Equity	Low	Low	Severe limitations of property rights. Violations of equity with insufficient or impracticable compensations for restrictions
Transparency	Medium	High	Comprehensive statistics on forest resources available. Information on performance of state forestry is poor in Lithuania and fair in Slovakia
Participation	Low	Medium	Public participation in forest-related processes is weak with the exception of environmental NGOs in Slovakia
Adaptiveness	Low	Low	Heavy conservatism limits adaptive forest governance capacity in Lithuania and even more so in Slovakia.

*Evaluation based on a 3-point qualitative scale: Low-Medium-High, indicating the degree to which the respective criterion moved from command-and-control to good governance.

Seen together, Lithuania and Slovakia perform best on the *Transparency* criterion. Both countries have comprehensive forest inventories and, in turn, comprehensive data on forests of all ownership forms. At least in part, this could be attributable the legacy of the planned economy period. The emphasis on detailed quantitative plans favoured thorough inventories, and their elaborations could in recent years be reinforced by modern technologies. The costs of comprehensive inventories could be questioned; nevertheless, the quality and transparency of the data is high by European standards. The same cannot be said about the quality and accessibility of data on economic performance of state enterprises in Lithuania, which pulls down the country's evaluation for transparency. The rising stakeholder interest in forestry issues might encourage SFEs to increase the quality and accessibility of performance reports, which has already happened in Slovakia and will hopefully be incentivised by state forestry reforms underway in Lithuania.

The progress away from command-and-control has been poor on all other assessed dimensions. SFEs in Lithuania and Slovakia have been able to generate some profits and contribute to state budgets, which is not the case in some other post-socialist countries, notably Russia (Makashina and Talanova 2012). However, when benchmarked against Latvia, both case countries perform modestly in terms of *Efficiency*. High numbers of employees and poor per employee and per hectare performance is an artefact of the multi-layered bureaucratic apparatus that is a common companion of excessive regulation and control (Tietenberg 1990, Gunningham and Sinclair 2002). Our longitudinal analysis of profits also illustrates the widely different outcomes of reforms in state forestry. Economic

performance improved rapidly after reforming the administration of state forests in Latvia. In contrast, despite similar intents, the Slovakian reform did not significantly raise economic efficiency. This gives a potentially useful lesson for Lithuania and other countries attempting reforms of state forestry: increased economic efficiency is certainly possible but by no means guaranteed. The outcome depends on many factors, including the ability of reformers to escape wicked institutional problems, such as political loyalties, clientelism and corruption.

Overall, *Participation* in forest management planning processes in Lithuania and Slovakia is rather weak in terms of both inputs of the wider public and, with a few local exceptions, representation of diverse interests in important decision-making arenas. Similarly, Herbst (2002) found that in most ex-socialist countries in transition the opinion of the general public can be strongly outweighed by state organizations. Such a situation can also be evaluated as a typical trait of command-and-control regimes, which is not compatible with the active involvement of stakeholders (Pahl-Wostl 2009). Without further research, it is hard to tell to what extent the weak participation is a given outcome of the conservatism in the forestry subsystem where expert knowledge dominates and interests of outsiders are regarded with suspicion, and to what extent this a widespread phenomenon in post-socialist societies characterised by weak civic commitment. In this context, the active participation of environmental NGOs forms a notable exception and further research would be needed into why the two countries differ in this particular aspect.

Informed by the findings, our multidisciplinary research team shares the view that the weakest performance in both countries is on the *Equity* criterion. Forest policies are strongly oriented to state forestry, severely limiting property rights. Heavy regulation stems from a lack of trust toward private forest owners, the propensity to seek uniform forest management based on outdated professional ideologies or scientific “truths”, and poor capacities to guide the owners through information and advice. The violations of equity are further aggravated due to forest land zoning, when substantial additional restrictions are imposed on forest owners without their consent and without sufficient financial compensation. Moreover, in Slovakia, legislation hands implementation of FMP over to licensed forest managers, acting as an extended hand of the state. The FMP is so complicated that most forest owners would have to hire a manager anyway. On the positive side, the obligatory forest management in Slovakia ensures at least the minimal required forest operations. In Lithuania a heavy legal load and strict limitations often result in rather passive management of many private forests (Brukas et al. 2013).

The heavy regulations, inherited from the past, were designed for state forestry and do not fit modern non-state forest owners’ needs and their forest management activities. This substantially shrinks the adaptive capacity of forest management in Lithuania and even more so in Slovakia. Stemming from legacies of the socialist period, scrupulous regulation and control align poorly with today’s dynamic socio-ecological context. Tangible changes are however not possible before overcoming the regulatory mentality embedded in governance structures. In our view, there is a dire need to shift the current mix of policy instruments from regulation to financial incentives and especially to informational instruments. However, such a shift is however difficult to accomplish. The system is so entrenched that alternative approaches to handling private forestry are inconceivable to the powerful decision-makers.

5.2 A note on methodology

Two major challenges can be highlighted in conducting comprehensive comparative analyses, as aimed for in this study: (i) it is difficult to achieve the scope and the desired detail of analysis within the space and style conventions of a peer-reviewed paper, and (ii) data collection and interpretation requires considerable time and concerted effort by a multidisciplinary research team. In these respects, the 3L benchmarking with its emphasis on methodological and analytical simplification is

superior to our CIA. While the detail of analysis depends on the aims of the study, overall, we would argue that good understanding of the context and a thorough scrutiny of the analysed aspects are nevertheless necessary for correct interpretations of such complex multifaceted systems. Focusing on selected single measures without sufficient contextual insight might lead to shallow or even misleading conclusions.

One notable difference between the CIA and 3L models pertains to the comparative yardstick or the benchmark against which the chosen objects are evaluated. The 3L model normally does not use any external yardstick and only compares the chosen objects against each other. In CIA we employ an external yardstick, referenced to a desirable “good governance” state, against which the chosen objects are assessed. Setting the targets of good governance is in itself an intricate task. In some cases, we use performance in other countries as yardsticks for chosen dimensions (Latvia for profitability, Sweden for equity, a set of European countries for reporting enterprise performance). In other cases, the desired targets are less explicit, using a certain theory as an approximate qualitative reference (such as Arnstein’s ladder of civic participation) or just indicating a certain desired direction of betterment (as in the case of increased adaptive capacity). From a purely positivistic stance, such an approach could be attacked due to high subjectivity. However, we would argue that subjectivity is inherent in assessing such complex systems as forest governance. Selecting a few quantitative indicators (as in 3L) is in itself a highly subjective decision. In our opinion, an important analytical imperative is to explain the assumptions used. The quality of analysis would not increase by trying to conceal the inherent subjectivity with vague reference to universal theories or by setting qualitative features on quantitative scales. In our specific comparison, Lithuania and Slovakia did not exhibit major systemic differences in their performance. Therefore, analysis based solely on juxtaposition of the two countries would not have been so revealing. When judged against the normative ideal of good governance, we can, in contrast, disclose important deficiencies, helping to highlight areas with the highest potential for improvement.

5.3 Conclusion

It can be concluded that, despite the major societal transition to a market economy and democracy, forest governance in Lithuania and Slovakia is largely stuck in command-and-control approaches. Economic efficiency is low, forest owners lack decision freedom and face injustice, wider public participation is weak, and the adaptive capacity of forest management and governance is low. There is a long way to go toward adaptive governance characterised by flatter hierarchies, lighter regulatory load and greater decision autonomy. This journey will be difficult due to ideological and institutional path dependencies but worth attempting due to major benefits for private forest owners, state forest managers and the societies at large.

Acknowledgements

This study was implemented within the frames of the ALTERFOR project within the Horizon 2020 research and innovation programme under grant agreement No. 676754. The Slovak part of this work was also supported by the Scientific Grant Agency of the Ministry of Education, Science, Research and Sport of the SR and the Slovak Academy of Sciences [grant numbers 15/0715 and 17/0232], and by the Cultural and Educational Agency of the Ministry of Education, Science, Research and Sport of the SR [grant number 009TU Z-4/2019].

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