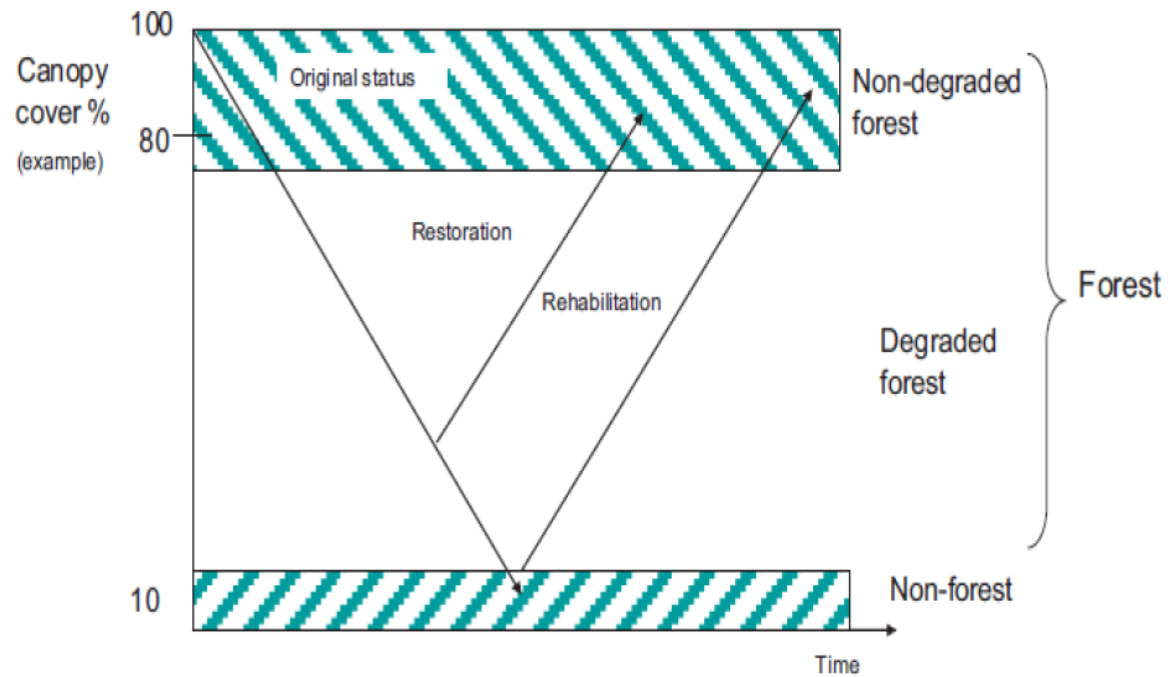# The role of formal institutions in forest decline: exploring institutional failure

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Supervisors: Professor Laura Secco (UNIPD), Professor Francesco Carbone (UNITUS)
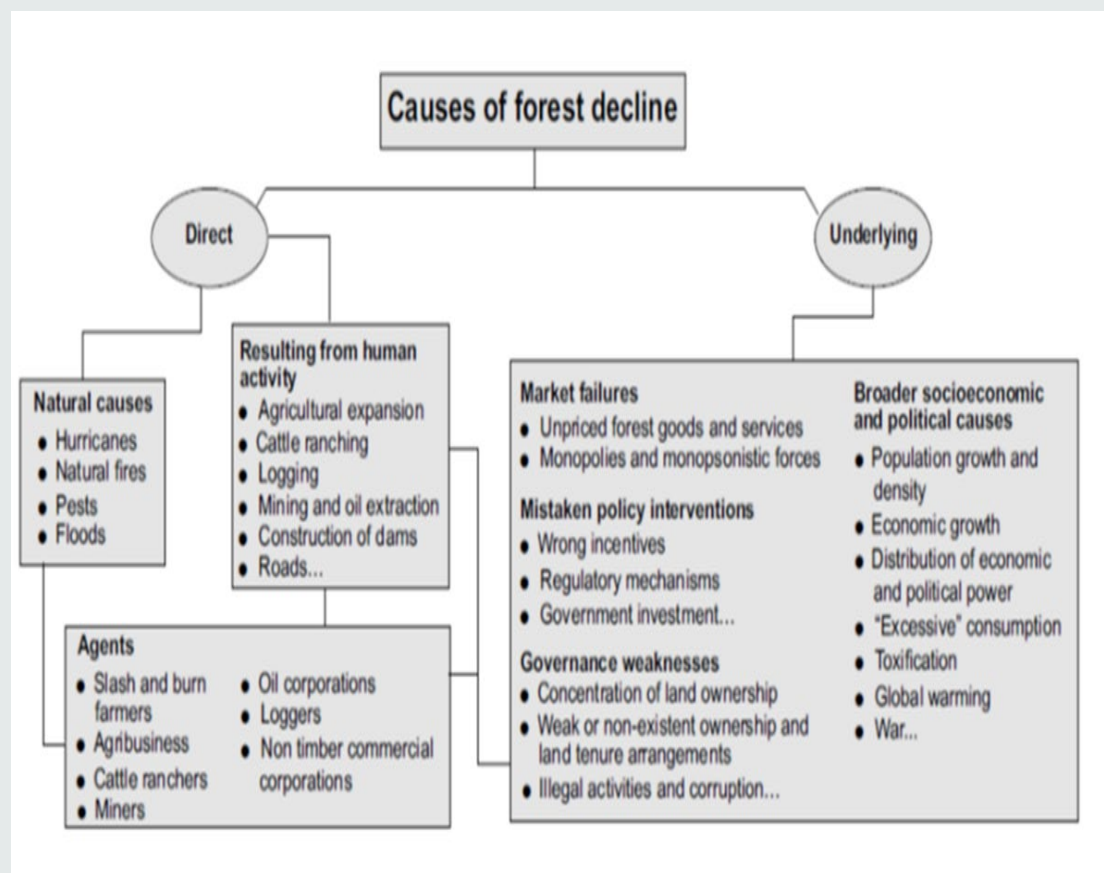
Forest Decline

Deforestation

Forest cover minimal absent

Land use change immanent

Degradation

Multiple agents

Reduced resilience and resistance

Jeopardized productivity

Disturbance

Natural or anthropogenic

Changes in return intervals or frequency

Causes of forest decline

Direct

Natural causes
- Hurricanes
- Natural fires
- Pests
- Floods

Resulting from human activity
- Agricultural expansion
- Cattle ranching
- Logging
- Mining and oil extraction
- Construction of dams
- Roads...

Agents
- Slash and burn farmers
- Agribusiness
- Cattle ranchers
- Miners
- Oil corporations
- Loggers
- Non timber commercial corporations

Underlying

Market failures
- Unpriced forest goods and services
- Monopolies and monopsonistic forces

Mistaken policy interventions
- Wrong incentives
- Regulatory mechanisms
- Government investment...

Governance weaknesses
- Concentration of land ownership
- Weak or non-existent ownership and land tenure arrangements
- Illegal activities and corruption...

Broader socioeconomic and political causes
- Population growth and density
- Economic growth
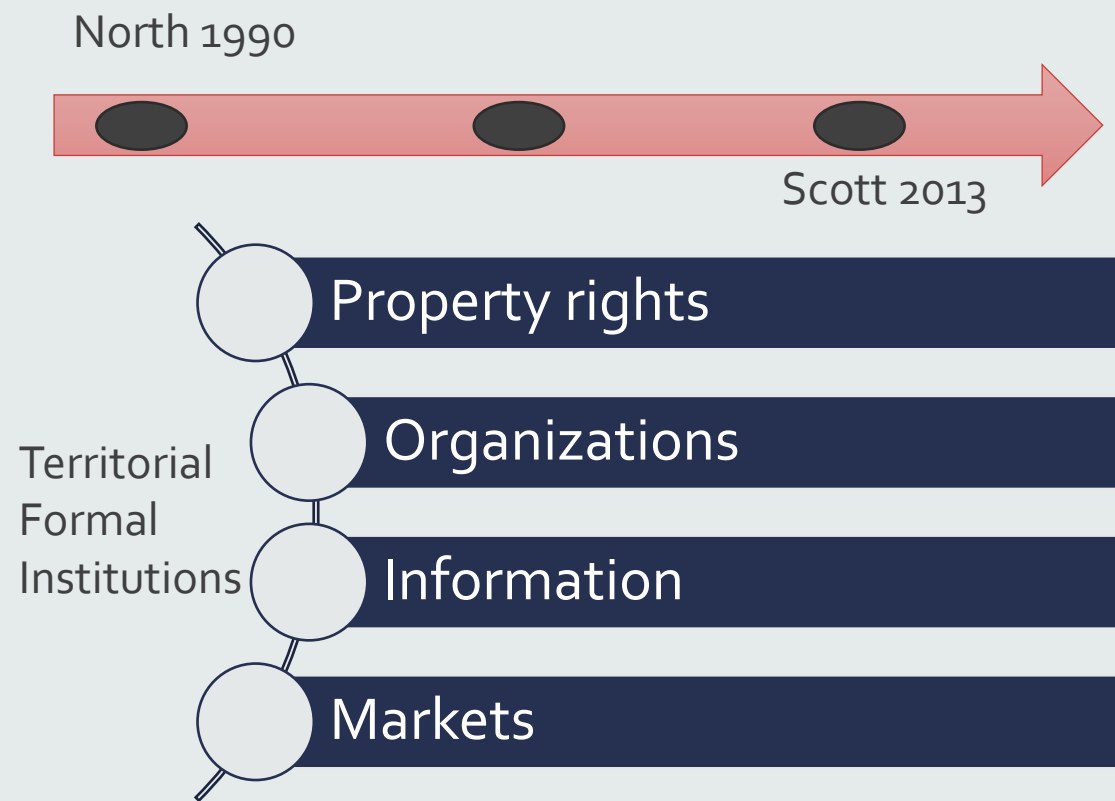- Distribution of economic and political power
- "Excessive" consumption
- Toxification
- Global warming
- War...

Contreras-Hermosilla, 2000

Table 1. Disaggregation of global and regional tree cover loss by driver for the period 2001 to 2015. Map-based estimates are based on Global Forest Watch data (3) and a driver of tree cover loss from the current study. Sample-based estimates are based on the validation sample of 1565 randomly selected 10 × 10 grid cells from the current study. Uncertainty of sample-based estimates represents a 95% confidence interval.

| Region | Map-based estimates | | | | | | | Sample-based estimates | | | | |
| | Hansen et al. (3) | | Current study: Driver of tree cover loss | | | | | Current study: Driver of tree cover loss | | | | |
	Tree cover loss (Mha, 2001–2015)	Tree cover loss (% of global total, 2001–2015)	Deforestation	Shifting agriculture	Forestry	Wildfire	Urbanization	Deforestation	Shifting agriculture	Forestry	Wildfire	Urbanization
North America	70	21%	1%	<1%	56%	40%	2%	2 ± 1%	1 ± 1%	48 ± 11%	48 ± 11%	1 ± 1%
Latin America	78	25%	56%	31%	13%	1%	<1%	64 ± 8%	24 ± 7%	9 ± 3%	<1 ± <1%	<1 ± <1%
Europe	15	5%	None	<1%	99%	1%	None	None	<1 ± <1%	95 ± 5%	5 ± 5%	None
Africa	39	13%	4%	92%	4%	<1%	<1%	2 ± 1%	93 ± 3%	4 ± 2%	<1 ± <1%	1 ± 2%
Russia/China/ South Asia	64	20%	<1%	<1%	41%	58%	<1%	2 ± 2%	1 ± 1%	38 ± 12%	59 ± 12%	<1 ± <1%
Southeast Asia	39	13%	78%	9%	13%	<1%	<1%	61 ± 13%	20 ± 10%	14 ± 6%	2 ± 6%	<1 ± <1%
Australia/ Oceania	10	3%	7%	10%	29%	53%	1%	8 ± 6%	10 ± 4%	19 ± 9%	62 ± 14%	1 ± <1%
Global	314	100%	25%	21%	31%	22%	<1%	27 ± 5%	24 ± 3%	26 ± 4%	23 ± 4%	1 ± <1%

Curtis *et.al.*, 2018

North 1990

Scott 2013

Territorial Formal Institutions

- Property rights
- Organizations
- Information
- Markets

|	PILLARS		
	Regulative	*Normative*	*Cultural-cognitive*
SYMBOLIC SYSTEMS	Rules Laws	Values Expectations Standards	Categories Typification Schemas Frames
RELATIONAL SYSTEMS	Governance systems Power systems	Regimes Authority systems	Structural isomorphism Identities
ACTIVITIES	Monitoring Sanctioning Disrupting	Roles, jobs Routines Habits Repertoires of collective action	Predispositions Scripts
ARTIFACTS	Objects complying with mandated specifications	Objects meeting conventions, standards	Objects possessing symbolic value

DPSIR Model

Policy Cycle
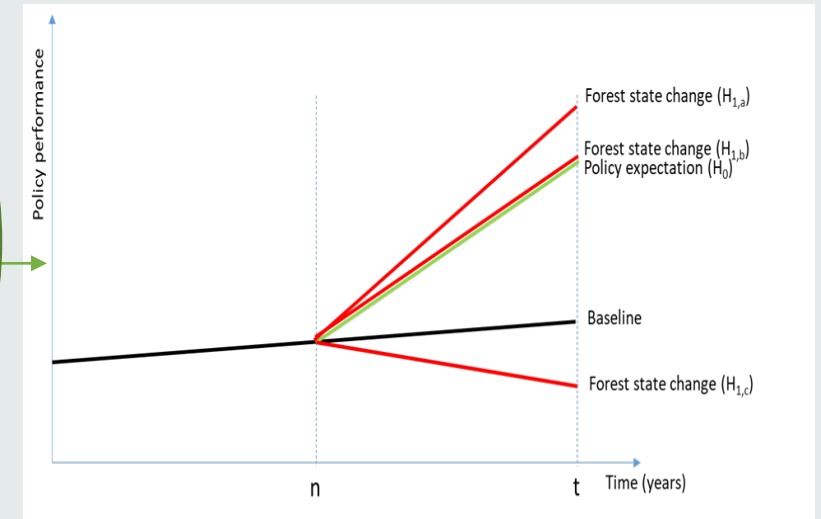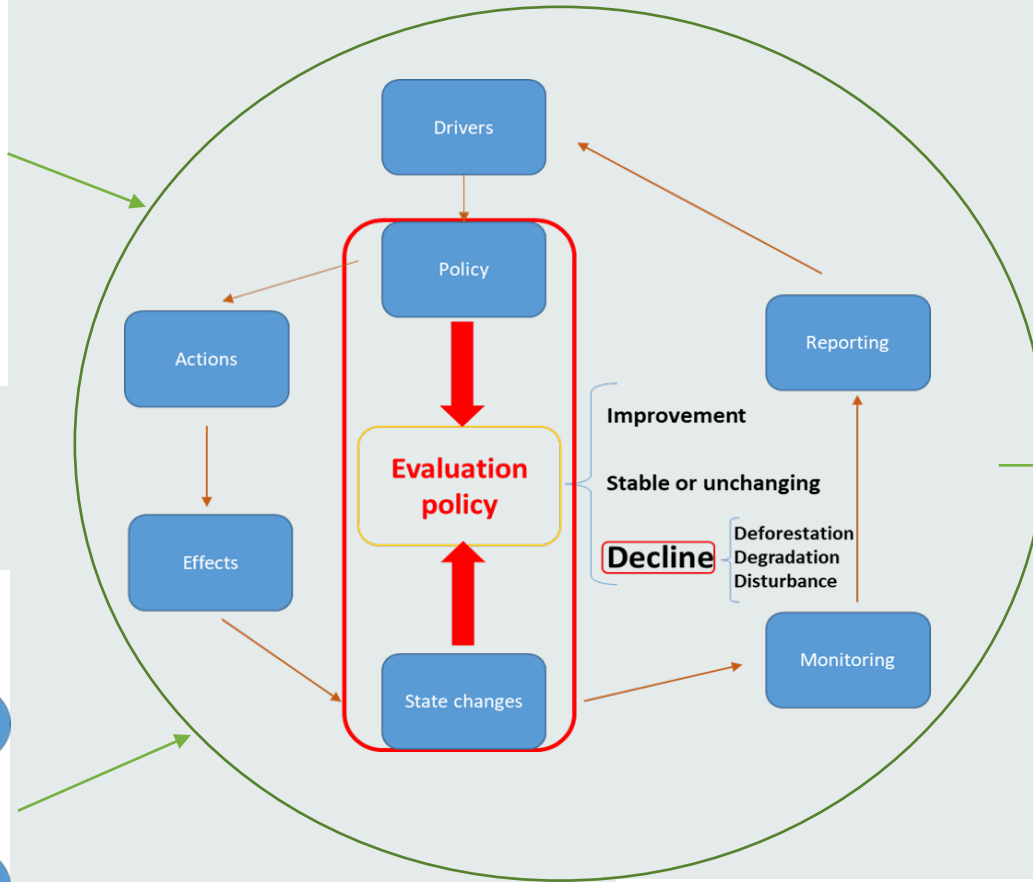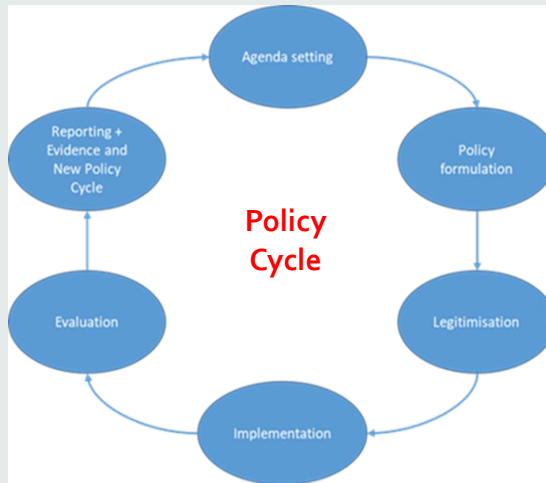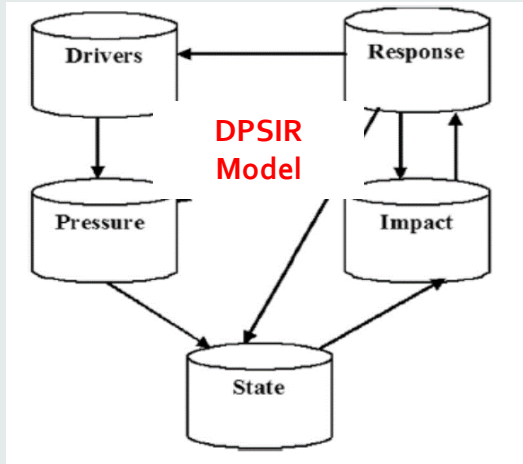
Policy Evaluation Analysis

1.) Positive
2.) Stable
3.) Problematic

Context	
Literature review	Established link between formal institutions and forest decline
Time	
Forest policy	1970-current-direct relevance to forest land use administration regulation
Effects/State Changes	Focus on changes to forest estates spatially and temporally. Key variables i.e. Structure, species competition, land use etc.
Activities	
Framework and PEA Application	Content analysis 4 case studies Cross case content analysis

CS3: Maine/USA

CS1

CS2
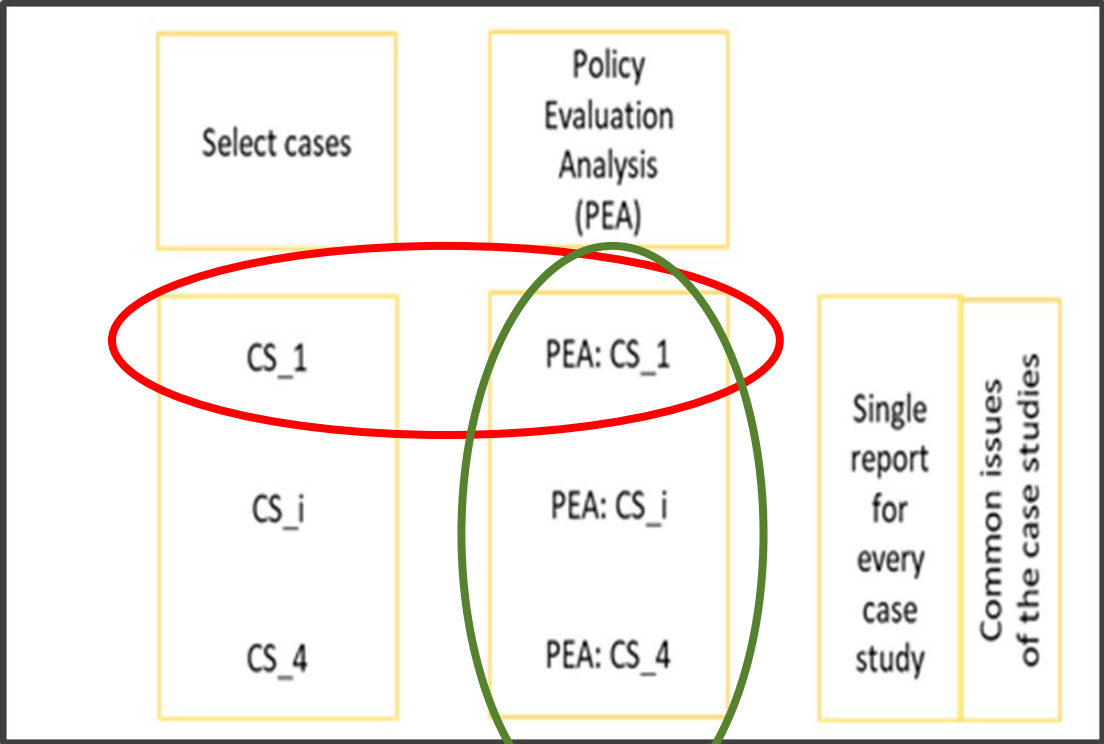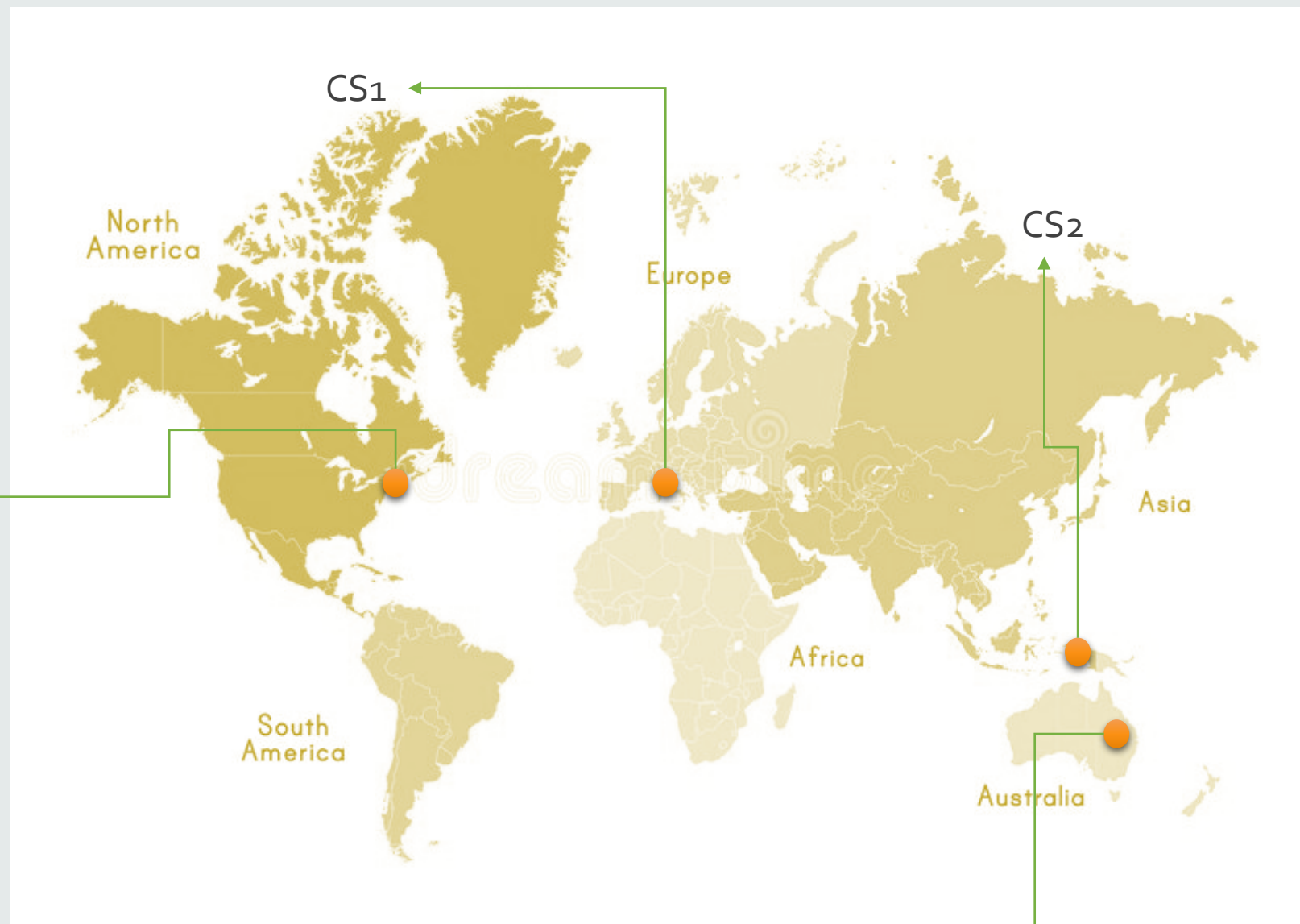
CS4

Drivers
Maine Forest Service

Policy focus
Maine Forest Practice Act 1989

Actions
Restrictions/Regulations /instruments/taxes

Effects
Significant restructuring of timberland ownership

State changes
Structural and spatial changes

Case study Maine
PEA Application
Content analysis

Monitoring
Robust - multiagency, multi-level, multi institutional

Reporting
Periodic - publicly available across most cases

PEA cross content analysis

Drivers

State/Federal territorial resource institutions

Policy

Variance in scope and accuracy

Actions

Mix of regulations & financial instruments incentives, penalties attached specifically to a formal institution

Effects

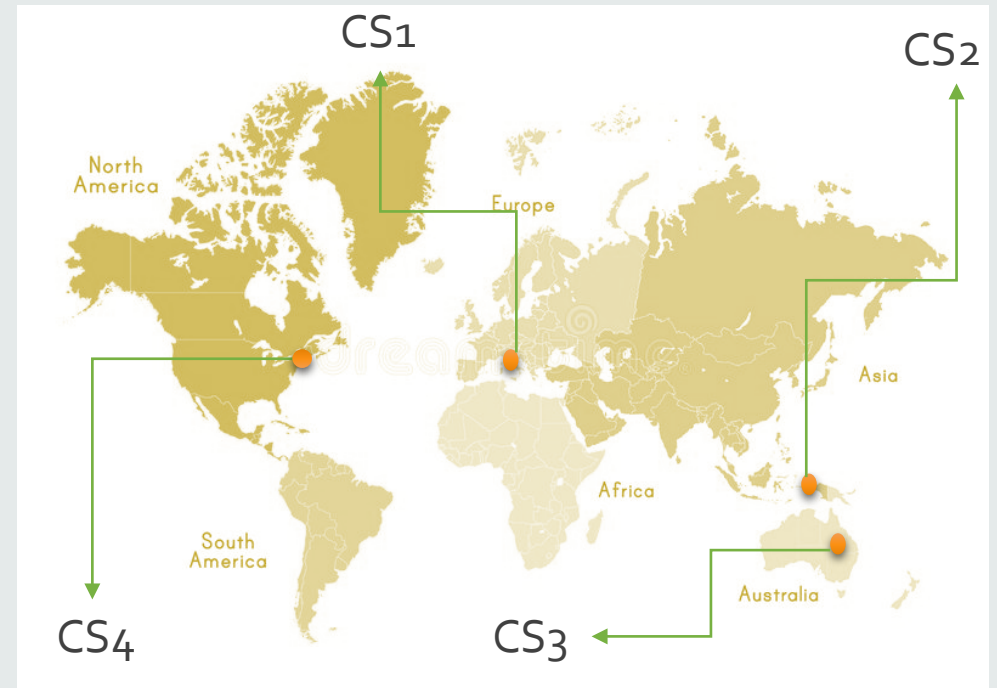Significant changes to forest resources over policy period

State changes

Cited persistent forest decline despite institutional associated policy amendments

Monitoring

Mixed method approaches and fairly comprehensive across all cases

Reporting

Publicly available, transparent, cyclic

Institutional failure
- Information asymmetries public/private actors & institutions
- Weak regulation enforcement/Capacity
- Legacy constraints/Path dependence
- Role legitimization
- Structural/arrangement weakness

Under some circumstances, Institutional failure, Indirectly, causes forest decline

Where combinations of the above leads to the decay in forest institutional administrative relevance or power to operationally incorporate national and sub-national policy objectives and as such address forest decline systematically and effectively.

Conclusion

- PEA application

- Linking formal institutions and forest decline

- Limitations and Future Research