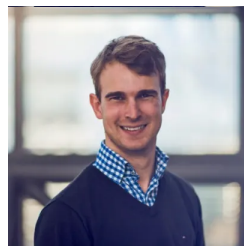


Does Trade Governance adapt to Ecological Change? The Integration of Biodiversity in Preferential Trade Agreements

The poster is a slide with a dark blue background and white text. At the top, it features the title and authors' names: Simon Happersberger (1), David Leclère (2), and Nadejda Komendantova (2). Below this, the slide is divided into five main sections: Introduction - Trade & Biodiversity, Theoretical Framework - Towards a social-ecological systems perspective, Method - A Text as Data Approach, Results - Biodiversity & Participation are linked, and Literature Review - Beyond Dualism. Each section contains a brief summary of the research. At the bottom right, there is a 'Conclusion' section. Navigation buttons for 'HOME', 'CONTACT AUTHOR', 'PRINT', and 'BUY POSTER' are located at the bottom of the slide.

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PRESENTED AT:

The banner features the APSA logo on the left, which includes the text 'apsa AMERICAN POLITICAL SCIENCE ASSOCIATION'. To the right, the main text reads '2022 APSA ANNUAL MEETING & EXHIBITION' in large white letters, with 'Montréal, Québec, Canada • September 15 -18' below it. A green bar at the bottom contains the tagline 'RETHINK, RESTRUCTURE, AND RECONNECT: TOWARDS A POST-PANDEMIC POLITICAL SCIENCE'. The background is a scenic view of a city at sunset.

INTRODUCTION - TRADE & BIODIVERSITY

International trade embodies large amounts of biodiversity pressure through species invasions, and through habitat loss caused by telecoupled consumption. Although trade governance is a key indirect factor for these trends, it has remained understudied how Preferential Trade Agreements (PTA) have adapted to declining global biodiversity. PTAs might evolve towards polycentricity through the participation of stakeholders (Ostrom 2010), or nonlinearly create legal innovations as complex adaptive system (Morin et al. 2017), or react to the interferences of telecoupling in socio-ecological systems (Biggs et al 2021).

LITERATURE REVIEW - BEYOND DUALISM

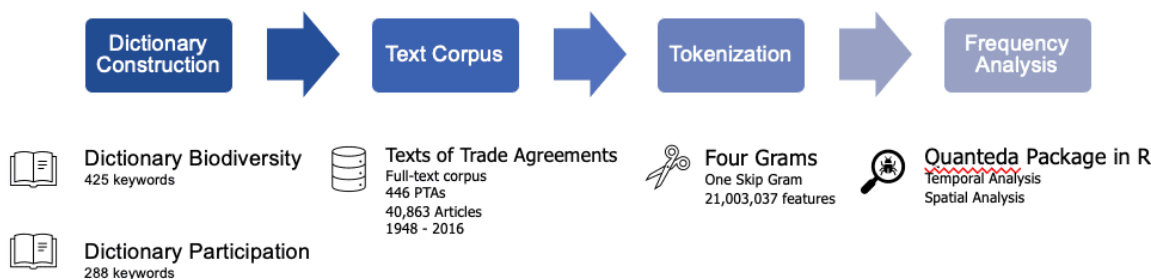
It is common in the trade literature to distinguish between non-trade issues and trade issues (Zamara 1992, Lechner 2016), trade objectives and non-trade objectives (Limão 2007), or trade objectives and non-trade policy objectives (Yildirim et al. 2019, Basedow et al. 2020, Ferrari et al. 2021, Borchert et al. 2021). This study departs from this dualism and adopts a social-ecological systems perspective. From this perspective the "delineation between social and natural systems is artificial and arbitrary" (Berkes and Folke 2002). We problematize the dualist perspective, as "many of the serious, recurring problems in natural resource use and management stem precisely from the lack of recognition that ecosystems and the social systems that use and depend on them are inextricably linked" (Folke et al. 2010).

THEORETICAL FRAMEWORK - TOWARDS A SOCIAL-ECOLOGICAL SYSTEMS PERSPECTIVE

We focus on three different but interrelated systemic perspectives which treat the trade regime as (i) complex adaptive system (CAS) (Morin et al. 2017), (ii) polycentric governance system (PGS) (Ostrom 2010), or (iii) telecoupled spillover system (TSS) (Liu et al. 2018). From the CAS perspective, the trade regime coevolves with other complex social and natural systems and may adapt by non-linear legal innovation. From the PGS perspective, the trade regimes is formed by independent centres of decision-making which evolve in a spontaneous order and adapt similarly. From the TSS perspective, social-ecological systems are context-dependent, distant consumption decouples consumption from env. awareness, and accountability and efforts to govern for sustainability in one place will create ripple effects in other places. We apply these different theoretical perspectives on the interaction between biodiversity and participation in Preferential Trade Agreements.



METHOD - A TEXT-AS-DATA APPROACH



To assess the coverage of biodiversity and participation, we apply a text-as-data approach to the full-text corpus of 446 PTAs (1948-2016) from the Text of Trade Agreements project. More specifically, we construct two dictionaries on biodiversity and on participation with 425 and 288 keywords derived from the literature and complemented with keywords retrieved from bibliometric data from Scopus. The biodiversity dictionary is organized in biodiversity components, drivers of biodiversity loss, and biodiversity governance. It is further subdivided into the three established levels of biodiversity (ecosystems, species, and genes), the five drivers of biodiversity loss included in the IPBES (2019) report (land-use change, biological invasions, climate change, exploitation, pollution), and three issues reflecting biodiversity governance (biodiversity agreements, biodiversity policies, biodiversity specific participation). The participation dictionary corresponds to three levels of Arnstein’s ladder of Participation (1969), nonparticipation, tokenism, and citizen power, which are each subdivided into stakeholders, forms, and purpose. Whereas the participation dictionary is directional, the biodiversity dictionary is not. Word counts reflect biodiversity relevance rather than biodiversity protection. The analysis of keyword frequencies, dynamics and co-occurrences is conducted with the R package quanteda based on 4-grams allowing for one skip-gram. The machine-readable full-text corpus of 446 Preferential Trade Agreements signed between 1948 and 2016 is retrieved from the Text of Trade Agreements project.

Dictionary 1		Biodiversity										
		425										
3 Clusters		Biodiversity Components			Biodiversity Risks					Biodiversity Governance		
		163			151					109		
12 Categories		Ecosystem	Species	Genes	Land-use Change	Biological Invasions	Climate Change	Pollution	Exploitation	Treaties	Policies	Participation
425 Keywords		76	67	20	46	18	18	35	34	18	40	51
Examples		Biosphere Habitat Ecoregion Forest Soil	Flora Fauna Plants Animals Biota	Genetic Diversity Living Modified organism Genetically modified organism DNA	Habitat Change Agricultural expansion Land degradation Logging Foods	Species Migration Biotic invasions Alien species Endangered species Biotic exchange	Greenhouse gas Fossil fuels Climate adaptation Global warming Industrial emissions	Fertilizer Pesticides Herbicides Fungicides Nitrogen	Footprint Overfishing Hunting, Mining Virtual Land Soybean	CBD CITES Cartagena Protocol Nagoya Protocol Berne Convention	Aichi targets Ex situ conservation Biotechnology Wildlife management protected area	UNEP IUCN WWF Indigenous groups Biodiversity Monitoring
Keywords derived from UNEP 1992, UNEP 1996, Millennium Assessment 2005, IPBES 2019												



Dictionary 2

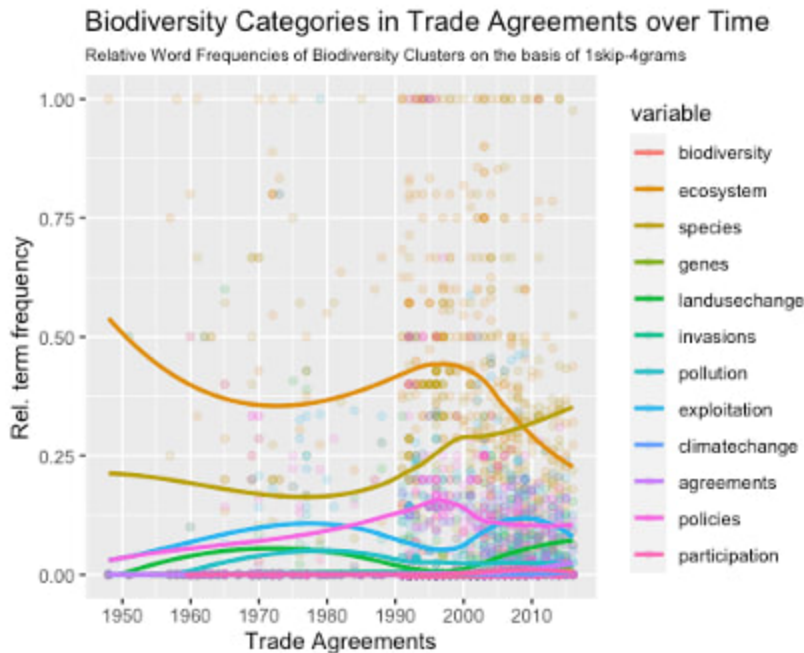
Participation

288

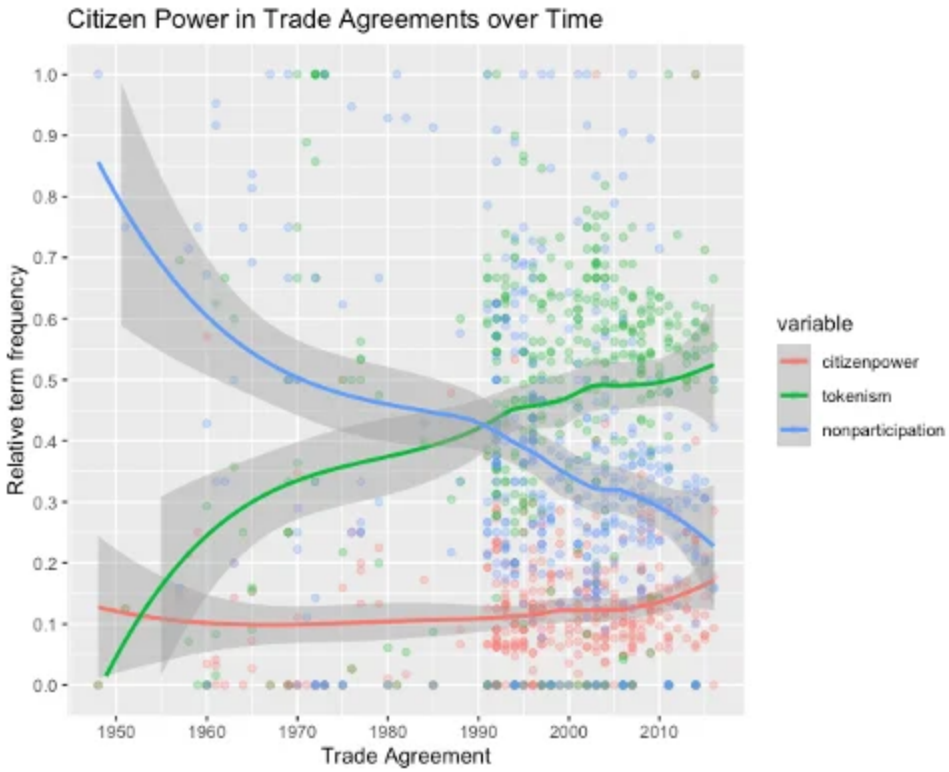
3 Levels	Citizen Power			Tokenism			Non-Participation		
	154			78			56		
9 Categories	Stakeholder	Forms	Purpose	Stakeholder	Forms	Purpose	Stakeholder	Forms	Purpose
288 Keywords	42	36	76	12	47	19	22	26	8
Examples	Civil Society, Municipalities, Indigenous communities, city, Citizen	Civic engagement, stakeholder participation, local autonomy, multi-stakeholder	Participation, Citizen involvement, power sharing, minority rights	Academia, Experts, Media, Scientists, parliament	Survey, Opinion poll, information campaign, public hearing	Citizen concern, Awareness, Acceptability, social acceptance	Shareholders, firms, decision-makers, public administration, policy makers	Public relations, top-down, communication, information dissemination	Credibility, Public Trust, Public Management, corporate governance

Keywords derived from [Arnstein \(1969\)](#), [Komendantova et al. \(2018\)](#), and [UNIDO \(2022\)](#) complemented by bibliometric keywords from SCOPUS

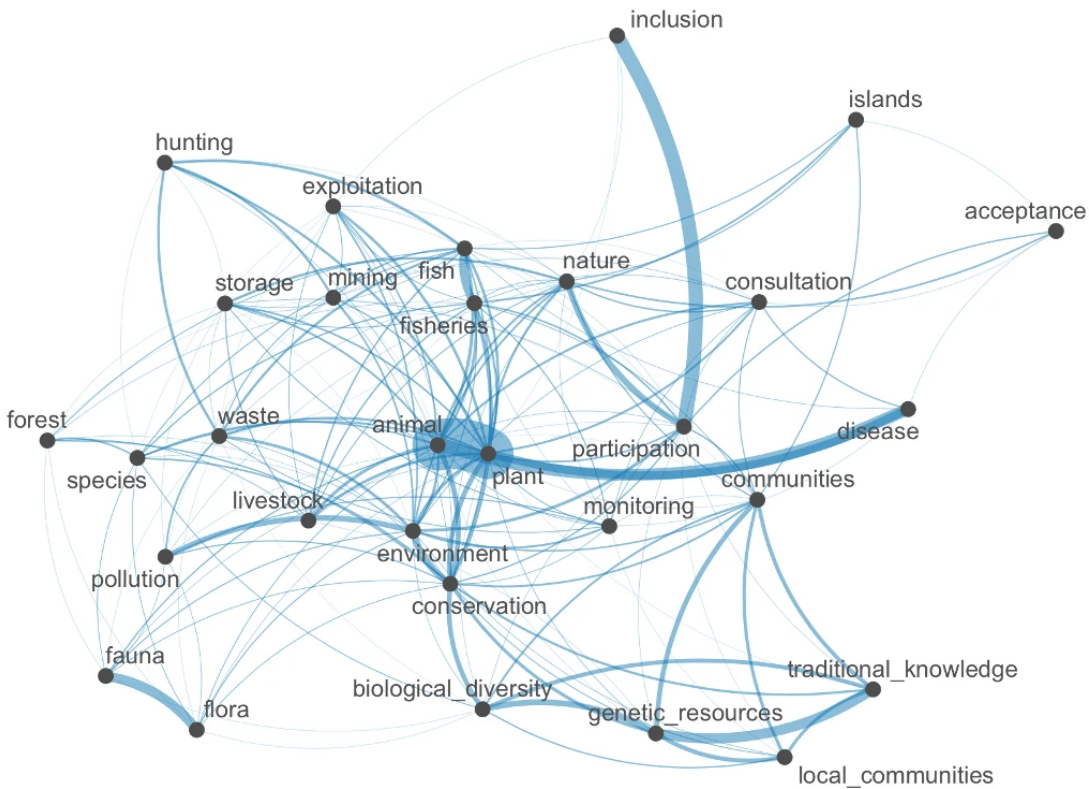
PRELIMINARY RESULTS



In absolute terms, PTAs have increasingly integrated biodiversity from 1950s to the 1970s and from the end of the 1990s again. In the first phase the focus is on ecosystems, however in the end-of the 1990s biodiversity keywords are becoming more diverse. Ecosystems (29%) were the most important category from 1948 until 2008, when they were replaced by species (28%). Among the drivers, exploitation (14 %) has been the focal point since 1948, however land-use change (7%) has risen rapidly since 1995. Biodiversity policies are mentioned increasingly since 2000 but have lost in relative importance since 1995. Genes, climate change, biological invasions, and agreements are all rarely mentioned, although agreements have been rising recently. PTAs have also become more participatory over time, but non-participation was replaced mainly by tokenism. Citizen power has only minimally increased since 1948. Traditional knowledge, local communities, and biological diversity cooccur as separate subcommunity.

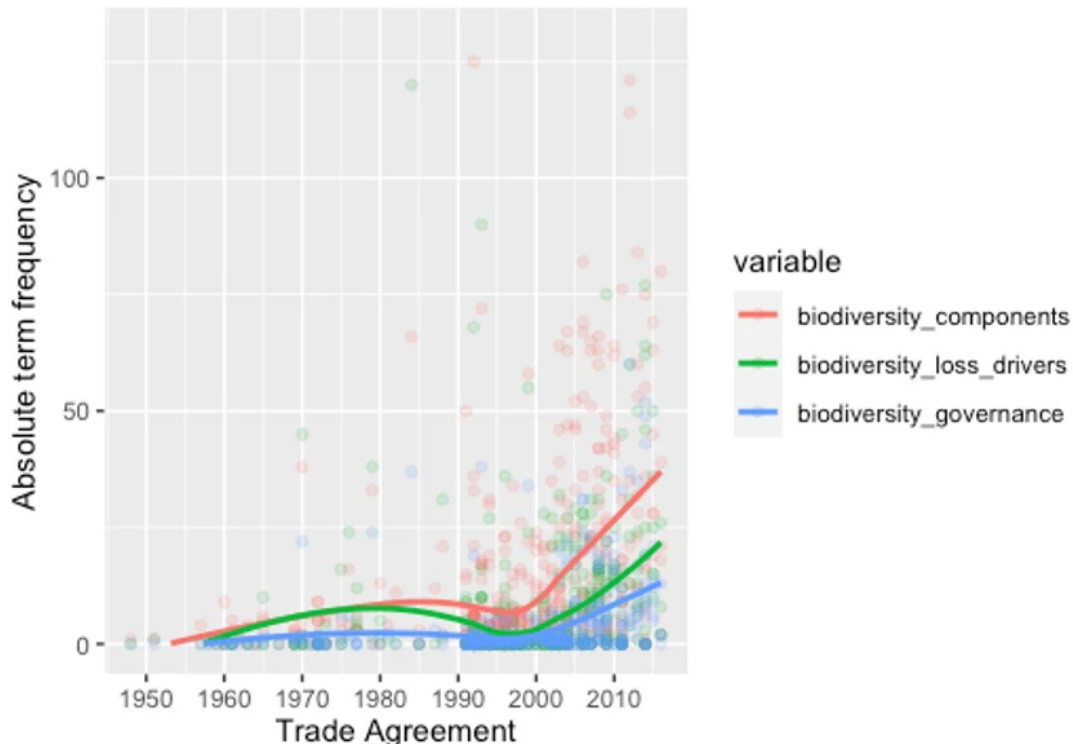


Top 30 Features Co-Occurrence Network



Biodiversity Clusters in Trade Agreements over Time

Word Frequencies of Biodiversity Clusters on the basis of 1skip-4grams



Three outliers (between 130 and 200) were removed from the graph

CONCLUSION & FURTHER STEPS

PTAs have adapted only to a limited extent to declining global biodiversity. Biodiversity keywords have slightly increased and shifted focus from ecosystems to species, and from exploitation to land-use change but we do not observe a phase shift: biodiversity governance seems still to be a separate rather than an integral part of PTAs. Participation has increased in terms of tokenism, whereas citizen power has remained low for over 60 years. Future work may analyse geographical patterns around biodiversity hotspots and include data on trade and biodiversity.
