

# **The Integration of Biodiversity in Preferential Trade Agreements. A Text as Data Approach to the Adaptability of Polycentric Trade Governance**

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## **Introduction.**

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). 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.

## **Methodology.**

We construct two dictionaries on biodiversity and on participation with 425 and 288 keywords derived from the literature and from bibliometric data from Scopus. The biodiversity dictionary is organized in biodiversity components, drivers of biodiversity loss, and biodiversity governance. The participation dictionary corresponds to three levels of Arnstein's ladder of Participation (1969), nonparticipation, tokenism, and citizen power. The analysis of keyword frequencies, dynamics and co-occurrences is conducted with the R package *quanteda* based on 4-grams.

## **Results.**

PTAs have increasingly integrated biodiversity keywords since 1997. 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. 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.

## **Conclusions.**

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 can analyse geographical patterns around biodiversity hotspots and include data on trade and biodiversity.

## **References**

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