

UNIVERSIDAD LOYOLA ANDALUCÍA



TESIS DOCTORAL

LA INFLUENCIA DE LA PRIVATIZACIÓN DE BIENES
COMUNES EN LA SOSTENIBILIDAD CULTURAL Y
ECOLÓGICA DE LAS SABANAS E ISLAS DEL CARIBE
COLOMBIANO

Doctoranda: Johana Herrera Arango

Directores Prof. Dr. Juan Antonio Senent de Frutos
Prof. Dr. Francisco Amador
Prof. Dr. Pablo Font Oporto

Mención de Doctorado Internacional

Sevilla, 2023

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DOCTORADO EN DESARROLLO INCLUSIVO Y

SOSTENIBLE

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A la gente del mar y de los sabanales del Caribe



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Resumen

Partiendo del paradigma de la sostenibilidad crítica y el estudio de los sistemas socioecológicos (SES), esta tesis busca comprender de qué manera las dinámicas de privatización de las tierras y los bienes comunes influyen en la sostenibilidad de los sistemas socioecológicos de la región insular y de sabanas del Caribe colombiano en cuatro subregiones habitadas por pueblos afrodescendientes que se han transformado en los últimos años. Teóricamente la tesis busca articular un marco analítico que integra transdisciplinariamente los estudios ecosistémicos con la perspectiva de la justicia socioambiental intercultural.

Por un lado, el enfoque de los SES permite establecer unidades de análisis de gran complejidad organizacional, tanto espaciales como temporales, y posibilita descripciones densas de las interacciones y los actores en la complejidad ecológica, económica y sociocultural en la que ocurren. Por otro lado, la justicia socioambiental intercultural exige un análisis desde el pluralismo social y cultural considerando las contribuciones y responsabilidades específicas de los diversos actores frente a los desafíos comunes de la sociedad, incluidos los desafíos ecológicos, a la vez que implica analizar la configuración histórica de un territorio, identificar el vínculo entre las estructuras ecológicas y políticas que subyacen a los conflictos y cambios relacionados con acceso y regulación de bienes comunes.

Para dar cuenta de ello, los tres artículos científicos que constituyen el cuerpo principal de esta tesis han seguido un diseño metodológico similar. Basándose en fuentes cartográficas y sensores remotos (fotografías aéreas e imágenes satelitales), se hizo la descripción socioespacial de las coberturas y su cambio multitemporal para tener evidencias biofísicas de cómo se transforman los ecosistemas en regiones donde las nociones y figuras privadas irrumpen en la configuración colectiva del uso y tenencia de la tierra y los bienes comunes. Asimismo, en todos los casos se empleó un enfoque etnográfico para la descripción de los sistemas socioecológicos a partir del conocimiento ecológico local de las comunidades con las que se adelantó el trabajo de campo y se discutió críticamente las implicaciones ecológicas y culturales de los modelos privados en sus formas de vida. Por último, en los

tres artículos se proponen categorías y variables para examinar la justicia socioambiental intercultural implícita, principalmente por el déficit de derechos que se pudo constatar, y la pertinencia que representa articular los criterios de justicia socioambiental en las dimensiones de la sostenibilidad.

En los tres artículos se muestra que los efectos del cambio climático en los ecosistemas tropicales no pueden interpretarse basándose únicamente en variables físicas. La grave escasez de agua y el deterioro de los ecosistemas son más agudos en lugares donde se dan discrepancias históricas, como el acceso desigual a la tierra o a otros bienes y derechos necesarios para la subsistencia de los pueblos que las habitan. Las transformaciones ecosistémicas y sus repercusiones en los recursos hídricos tienen mayor severidad en regiones donde hay conflictos de uso, falta de claridad en los derechos de tenencia y dificultades de gestión y gobernanza. Es por ello por lo que se ha examinado la política pública de sostenibilidad que orienta los planes de uso de los ecosistemas y que, en la mayoría de los casos, busca estar alineada con la Agenda 2030. Sin embargo, los modelos de planificación del uso de la tierra y los modelos referidos a las costas que hemos podido historizar, muestran que en las últimas cinco décadas se han favorecido las prácticas de apropiación individual y los modelos turístico, agroindustriales y urbanísticos frente a las formas colectivas de pesca, recolección, pastoreo y otros sistemas de pequeña escala.

Palabra claves: sostenibilidad, Caribe colombiano, afrodescendientes, sistemas socioecológicos, justicia socioambiental intercultural

Abstract

Based on the paradigm of critical sustainability and the study of social-ecological systems (SES), this thesis seeks to understand how the dynamics of land and commons privatization influence the sustainability of social-ecological systems in the insular and savannah region of the Colombian Caribbean in four sub-regions inhabited by Afro-descendant peoples that have been transformed in recent years. Theoretically, the thesis seeks to articulate an analytical framework that integrates transdisciplinary ecosystem studies with the perspective of intercultural socio-environmental justice.

On the one hand, the SES approach allows the establishment of units of analysis of great organizational complexity, both spatially and temporally, and enables dense descriptions of interactions and actors in the ecological, economic and socio-cultural complexity in which they occur. On the other hand, intercultural socio-environmental justice requires an analysis based on social and cultural pluralism, considering the specific contributions and responsibilities of the various actors in the face of the common challenges of society, including ecological challenges, while at the same time it implies analyzing the historical configuration of a territory, identifying the link between ecological and political structures that underlie conflicts and changes related to access and regulation of common goods.

To account for this, the three scientific articles that constitute the main body of this thesis have followed a similar methodological design. Based on cartographic and remote sensing sources (aerial photographs and satellite images), a socio-spatial description of land cover and its multitemporal change was made in order to have biophysical evidence of how ecosystems are transformed in regions where private notions and figures break into the collective configuration of land use and tenure and the commons. Likewise, in all cases, an ethnographic approach was used to describe the socioecological systems based on the local ecological knowledge of the communities with whom the fieldwork was carried out, and the ecological

and cultural implications of private models on their ways of life were critically discussed. Finally, the three articles propose categories and variables to examine implicit intercultural socio-environmental justice, mainly due to the deficit of rights that could be observed, and the relevance of articulating the criteria of socio-environmental justice in the dimensions of sustainability.

The three articles show that the effects of climate change on tropical ecosystems cannot be interpreted on the basis of physical variables alone. Severe water scarcity and ecosystem deterioration are more acute in places where there are historical discrepancies, such as unequal access to land or other goods and rights necessary for the subsistence of the people who inhabit them. Ecosystem transformations and their repercussions on water resources are more severe in regions where there are conflicts of use, lack of clarity in tenure rights, and difficulties in management and governance. This is why the public policy on sustainability that guides ecosystem use plans has been examined and, in most cases, seeks to be aligned with the 2030 Agenda. However, the land use planning models and the models referring to the coasts that we have been able to historicize show that in the last five decades, individual appropriation practices and tourism, agro-industrial and urban models have been favored over collective forms of fishing, gathering, grazing and other small-scale systems.

Keyword: sustainability, Colombian Caribbean, Afrodescendants, socioecological systems, intercultural socio-environmental justice.

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Capítulo 1

Introducción, objetivos y estructura

1.1. Introducción: contexto de la investigación y principales campos teóricos

Colombia es uno de los países que más se destaca en Latinoamérica por tener un marco legal sólido para la protección de los derechos de tenencia colectiva de los grupos étnicos. En el mismo sentido, también cuenta con una consistente trayectoria socio-legal en la protección de los bienes comunes, particularmente desde el constitucionalismo ambiental en materia de áreas protegidas y otro tipo de categorías regulatorias que han buscado excluir ciertos ecosistemas del mercado de tierras.

Pese a todo ello, los problemas estructurales del país han afectado de múltiples formas los bienes comunes y la relación de los pueblos tradicionales con estos ecosistemas y ámbitos territoriales. No se puede perder de vista que Colombia es un país afectado por un conflicto armado interno que ya supera los 60 años, y que hunde sus raíces en causas complejas como la tierra, la migración forzada y el acceso a la justicia (Velásquez & Ruiz, 2022). Entre los problemas estructurales de interés para esta investigación están: la marcada asimetría en la estructura de tenencia de la tierra, la acelerada transformación y degradación de los sistemas socioecológicos del Caribe colombiano y la dificultad para consolidar los derechos colectivos sobre bienes comunes en regiones caribeñas habitadas por pueblos afrodescendientes.

En la búsqueda de marcos explicativos sobre la pérdida de **bienes comunes** en áreas costeras y de planicies aluviales del Caribe, encontramos que la **privatización** es

una de las fuerzas que más pesa en la compleja explicación de la degradación y pérdida de áreas manejadas colectivamente (Berkes, 2015). La privatización de bienes comunes en los casos analizados en esta tesis ha influido en la degradación de sistemas naturales, en la exclusión social de pueblos afrodescendientes y campesinos, y en la transformación de sistemas socioecológicos. Esto ocurre, tanto en casos donde se ha efectuado la transferencia de la propiedad, como en aquellos donde coexisten tierras públicas y tierras tradicionalmente ocupadas por comunidades (Figura 1).

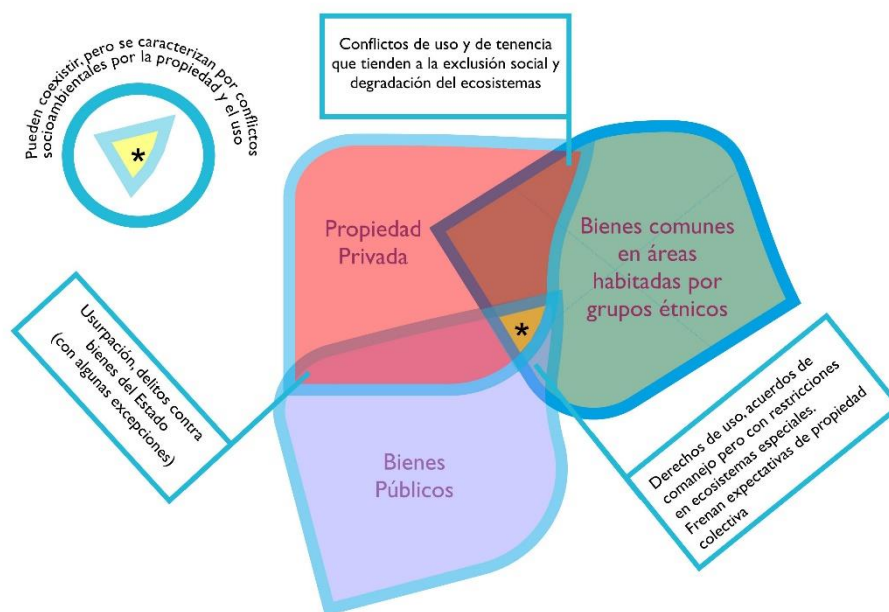


Figura 1 síntesis de las dimensiones de tenencia de tierras y bienes comunes en el Caribe colombiano

El estudio de la privatización, no como un hecho sino como un proceso, debe considerar la tensión entre la propiedad colectiva y la propiedad privada, así como la diferenciación entre propiedad y derechos de uso o derechos de tenencia sobre bienes comunes. Por un lado, la propiedad trae implícito un carácter de formalidad, pues existen normas establecidas y protegidas por los estados tanto para la propiedad pública como para la privada (Larson, 2013). Por otro lado, los derechos de uso, cuando son ejercidos por grupos étnicos o comunidades tradicionales también tienen un carácter formal, y un Estado como el colombiano tiene instrumentos para protegerles sin que exista propiedad colectiva plenamente constituida, por ejemplo usando el Convenio 169 de la OIT y otros marcos similares. Adicionalmente, a la luz

del pluralismo jurídico, el estudio de la privatización de los bienes comunes debe considerar el alcance del derecho propio y de las prácticas consuetudinarias de los pueblos que se articulan o chocan con sistemas normativos formales de los estados con doctrinas multiculturalistas (Senent-De Frutos & Herrera, 2022).

En la práctica, varias categorías legales suelen coexistir con mayor o menor tensión y ello configura qué tipos de derechos de tenencia se pueden ejercer. Lo que el Estado considera un bien de uso público puede ser comprendido y reivindicado por un pueblo étnico como un lugar de ocupación histórica que debe ser titulado bajo los procedimientos de protección del derecho colectivo a la tierra. No obstante, la retórica legal tiende a reducir este tipo de conflictos como disputas de derechos de tenencia que pueden ser resueltos confrontando aspectos sociohistóricos, catastrales y registrales, pero en la práctica esto suele complejizarse. En esta tesis se muestran casos que superan los 10 años de trámites legales laberínticos para que sus derechos de propiedad y sus derechos de uso les sean protegidos, razón de peso para que los estudios sobre la sostenibilidad observen los tipos de tenencia y los derechos de propiedad que se sobreponen y resultan determinantes en los sistemas de uso y gobernanza.

Para el estudio del tránsito de tierras y bienes comunes a tierras y recursos naturales bajo esquemas privados de manejo, nos hemos centrado en los **sistemas socioecológicos** o SES (por sus siglas en inglés). El enfoque de los SES permite establecer unidades de análisis de gran complejidad organizacional, tanto espaciales como temporales, y posibilita descripciones densas de las interacciones y los actores en la complejidad ecológica, económica y sociocultural en la que ocurren (Elshafei et al. 2015).

Finalmente, la teorización de esta tesis se sustenta también en la **justicia socioambiental intercultural** (Senent-De Frutos, 2020). En las últimas décadas ha surgido una creciente conciencia global de las desigualdades en el desarrollo humano de amplios sectores de la sociedad y de una crisis ecológica a escala planetaria. Ambos problemas ya no pueden ser percibidos ni abordados de manera desvinculada, pues las respuestas públicas a diferentes escalas no deben prescribir estrategias que dividan estas dos dimensiones que afectan negativamente las formas de vida. Por lo

tanto, la justicia socioambiental intercultural considera un reconocimiento fáctico y ético de la interdependencia entre la naturaleza y las comunidades humanas. Debido a esta interdependencia, la justicia social va hoy de la mano de la justicia en el plano ecosistémico, formando un constructo inseparable.

La justicia socioambiental implica analizar la configuración histórica de un territorio, identificar el vínculo entre las estructuras ecológicas y políticas de los conflictos ambientales y revisar cuidadosamente las variables económicas, políticas, socioculturales e históricas que subyacen a dichos conflictos (Temper, 2019). Variables como la equidad social, económica y racial para desentrañar cómo se gestiona un territorio (McGurty, 2000). Por lo tanto, en un ámbito que busca una distribución equitativa de las cargas y beneficios medioambientales en toda la sociedad, se requiere el reconocimiento individual y colectivo de las necesidades, capacidades e identidades de las comunidades afectadas para garantizar su participación efectiva en las decisiones que les afectan (Temper, 2019).

La justicia socioambiental está estrechamente relacionada con los conflictos ecológico-distributivos, es decir, con el acceso y la regulación de un conjunto de bienes comunes que se disputan diversos actores con relaciones de poder desiguales (Göbel et al., 2014). Partiendo de eso, la justicia intercultural adiciona una capa de mayor complejidad, pues requiere un contexto de pluralismo social y cultural. Implica el derecho que tienen las comunidades o pueblos a la autodeterminación cultural, a no ser discriminados frente a otros actores sociales y el derecho autónomo a ser actores de sus propios modelos y formas de vida. De esta manera, la articulación sistemática de la justicia socioambiental con la justicia intercultural permite reconocer y evaluar las contribuciones y responsabilidades específicas de cada grupo en función de los desafíos comunes de la sociedad en su conjunto, incluidos los desafíos ecológicos (Senent-De Frutos & 2022).

Para dar cuenta de ello, los tres artículos científicos que aquí se compilan han seguido un diseño metodológico similar. Por un lado, basándose en fuentes cartográficas y sensores remotos (fotografías aéreas e imágenes satelitales), se hizo la descripción socioespacial de las coberturas y su cambio multitemporal para tener evidencias biofísicas de cómo se transforman los ecosistemas en regiones donde las

nociones y figuras privadas irrumpen en la configuración colectiva del uso y tenencia de la tierra y los bienes comunes. Por otro lado, en todos los casos se empleó un enfoque etnográfico para la descripción de los sistemas socioecológicos a partir del conocimiento ecológico local de las comunidades con las que se adelantó el trabajo de campo y se discutió críticamente las implicaciones ecológicas y culturales de los modelos privados en sus formas de vida. Por último, en los tres artículos se proponen categorías y variables para examinar la justicia socioambiental intercultural implícita en los casos, principalmente por el déficit de derechos que se pudo constatar y la pertinencia que representa articular los criterios de justicia socioambiental en las dimensiones de la sostenibilidad.

En los tres artículos se muestra que los efectos del cambio climático en los ecosistemas tropicales no pueden interpretarse basándose únicamente en variables físicas. La grave escasez de agua y el deterioro de los ecosistemas son más agudos en lugares donde se dan discrepancias históricas, como el acceso desigual a la tierra o a otros bienes y derechos necesarios para la subsistencia de los pueblos que las habitan. Las transformaciones ecosistémicas y sus repercusiones en los recursos hídricos tienen mayor severidad en regiones donde hay conflictos de uso, falta de claridad en los derechos de tenencia y dificultades de gestión y gobernanza. Es por ello por lo que se ha examinado la política pública de sostenibilidad que orienta los planes de uso de los ecosistemas y que, en la mayoría de los casos, busca estar alineada con la Agenda 2030. Sin embargo, los modelos de planificación del uso de la tierra y los modelos referidos a las costas que hemos podido historizar, muestran que en las últimas cinco décadas se han favorecido las prácticas de apropiación individual y los modelos turístico, agroindustriales y urbanísticos frente a las formas colectivas de pesca, recolección, pastoreo y otros sistemas de pequeña escala. Con todo ello, el tercer artículo enfatiza en la historia ambiental de los sabanales del Caribe interior y busca tender puentes con un tema de la mayor trascendencia en la Colombia de hoy: la construcción de paz basada en un sistema restaurativo.

El Caribe colombiano

En el Caribe colombiano, región donde se localizan los casos de estudio, subsisten tierras comunales y otros recursos de uso común como las áreas de sabanas y de bajamar en la zona insular. Áreas sobre las que una serie de investigaciones geográficas, ambientales, históricas y económicas coinciden en señalar que se caracterizan por una riqueza en la funcionalidad de sus ecosistemas y por ser tierras ancestral de grupos étnicos, en su mayoría poblaciones afrodescendientes (Márquez, 2019; Camargo, 2022; Daniels & Múnera, 2011). Es consistente la literatura especializada en el Caribe mostrando que la transformación de los sabanales, litorales y otros ecosistemas inundables ha tenido como eje común la privatización del uso, la tenencia o la propiedad. Los cambios socioecológicos no se han regido exclusivamente por condiciones climáticas o decisiones endógenas de los pobladores, sino que ha tenido un peso significativo la individualización de la propiedad o de la tenencia, la sobreposición e imposición de otros modelos de uso y, en la mayoría de los casos, la degradación de los sistemas naturales particularmente los sistemas hidrológicos (Herrera, 2014; Camargo & Camacho, 2019; CNMH, 2017; Oslender, 2016; Tausig, 2018). En los casos analizados, el conflicto armado también ha sido una fuerza transformadora de la relación con los ecosistemas y las reivindicaciones sobre el derechos territorial, sobre todo en el Caribe interior. Delitos como el desplazamiento forzado, el confinamiento y los daños ambientales han configurado el paisaje y los sistemas sociales y ecológicos en el Caribe de hoy (Comisión de la Verdad, 2022).

Los cambios de uso de tierras y ecosistemas traen consigo nuevos imaginarios y otra racionalidad del manejo que tiende a imponer una valoración mercantilista de la naturaleza e invisibiliza las prácticas históricas sobre los ecosistemas y a quienes los habitan. Con el tiempo, esas nuevas lógicas de uso y ocupación terminan por arraigarse, por ejemplo, un pueblo de pescadores transita hacia el trabajo por jornales en una plantación agroindustrial e incorpora las lógicas del capitalismo agrario en sus imaginarios y modelos de organización social (Camargo, 2022B). En otros casos, la población local resiste a los nuevos modelos y persiste en la reivindicación de tierras

colectivas y formas de organización que les permitan autonomía frente al mercado y al Estado apuntalando una perspectiva intercultural (Senent-De Frutos 2020). O puede darse una combinación de posiciones, adaptarse funcionalmente al nuevo modelo sin desistir a las reclamaciones estructurales frente al Estado y la sociedad.

Todos los casos se pueden ver en el Caribe, una región que se ha caracterizado por una excesiva promoción de la ganadería y de cultivos de plantación en contraposición a la vocación del suelo y las formas de vida locales. El Instituto Geográfico Agustín Codazzi (IGAC), afirma que al menos el 28% del suelo en Colombia padece algún conflicto de uso y que los peores resultados se concentran en el Caribe (IGAC, 2018). Este instituto, como máxima autoridad en materia de vocación del suelo y cartografía, monitorea desde el 2014 los conflictos de uso a través de un “anti-ranking” que clasifica los departamentos y municipios del país de acuerdo con los conflictos de uso. Desde ese año el Caribe siempre se sitúa dentro del top 10 por problemas como suelos por la sobreutilización, el exceso de agricultura de gran escala en suelos mal drenados, la ganadería extensiva en ecosistemas frágiles y la desecación de planicies para cultivos de tardío rendimiento de escalas agroindustriales en regiones ya impactadas por el cambio climático. La región Caribe presenta la situación más preocupante con porcentajes de uso inadecuado de hasta el 70%

Asimismo, desde los años noventa, la planeación turística y portuaria, impulsada por modelos de desarrollo de escala global (comercio de gas licuado, carbón, inversión hotelera y urbanística en los litorales), ha configurado un paisaje costero tendiente a la privatización de los bienes comunes incluido el mar (Marques, 2019). Esa estrecha relación de los pueblos insulares con el mar enfrenta hoy múltiples amenazas. Por un lado, la degradación de los sistemas marinos ha llevado al colapso de las pesquerías (Salas et al., 2007), y el abandono de la actividad pesquera y las artes de pesca (DFG por sus siglas en inglés Derelict fishing gear) contribuye al gran problema de los desechos marinos (Macfadyen, Huntington y Cappell, 2009). Por otro lado, las formas de vida de los pueblos costeros han tenido que maniobrar con los cambios abruptos en el ecosistema y con un escenario de nuevos actores y usos del mar como el turismo, el auge inmobiliario en la costa (Berkes, 2015), la creación de

áreas protegidas, la construcción de puertos y otros usos del mar que afectan en la libre circulación y el acceso a la pesca, navegación y otros uso tradicionales.

Toda esta heterogeneidad del Caribe nos llevó a considerar diversos casos, realidades sociohistóricas múltiples que, pese a sus diferencias ecosistémicas, tienen en común cuatro condiciones estructurantes para la teorización y análisis de cada caso:

- i) La existencia de tierras que el Estado colombiano considera baldíos o bienes de uso público con distintos niveles de restricción, entre estos, la restricción por criterios de protección y conservación ecosistémica que limita el uso y manejo a los pueblos afrodescendientes.
- ii) Áreas habitadas por pueblos afrodescendientes y otras colectividades con un especial arraigo territorial.
- iii) Solicitudes de titulación o reconocimiento de derechos colectivos radicadas por las comunidades ante el Estado colombiano sin respuesta.
- iv) Modelos de privatización de la tenencia de la tierra por dinámicas de uso agroindustrial (en el Caribe interior) y turístico-urbanístico (en los litorales e islas).

En total la tesis tiene cuatro casos de estudio principales y un caso subsidiario que fue analizado para contrastar la metodología de análisis espacial en el Artículo 1. Los casos principales son:

- i) La región insular de Barú en Cartagena de Indias, Bolívar;
- ii) La región de los Montes de María, particularmente de la represa de Matuya en María la Baja, Bolívar;
- iii) La zona norte de Valledupar en áreas de sabanales y planicies aluviales (playones), Cesar;
- iv) La zona sur de Valledupar en áreas de sabanales planicies aluviales (playones), Cesar.

El caso de contraste metodológico que se usa en el Artículo 1 está en la subregión de la Depresión Momposina, Brazuelo del Papayal, Bolívar.

1.2. Objetivos de la tesis y justificación

Partiendo del paradigma de la sostenibilidad crítica esta tesis ha trazado tres objetivos centrales y siete objetivos específicos de investigación que buscan comprender de qué manera las dinámicas de privatización de las tierras y los bienes comunes influyen en la sostenibilidad de los sistemas socioecológicos de la región insular y de sabanas del Caribe colombiano.

Objetivo 1. Analizar las dinámicas de privatización de la tierra y los bienes comunes y sus impactos ecológicos y culturales en perspectiva de justicia socioambiental:

- Documentar los procesos históricos de poblamiento y regulación comunitaria y estatal de los bienes comunes.
- Describir las estructuras actuales de tenencia colectivas e individual en los casos seleccionados.

Objetivo 2. Determinar las nociones y las variables que influyen la sostenibilidad económica, social, ambiental e institucional (enfaticando dimensiones culturales y ecológica):

- Determinar variables ecológicas y socioculturales que permitan analizar la privatización de bienes comunes y la justicia socioambiental intercultural.
- Documentar las prácticas de privatización y sus efectos ecológicos y culturales en el manejo de los bienes comunes.

Objetivo 3. Establecer un marco de análisis desde la perspectiva de la justicia socioambiental que articule sostenibilidad cultural y ecológica en bienes comunes marino-costeros y de tierras inundables:

- Detallar las nociones de propiedad privada, bienes públicos y bienes comunes que operan en el contexto colombiano.
- Determinar variables ecológicas y socioculturales que permitan analizar la justicia socioambiental intercultural.
- Proponer un modelo de referencia de articulación de la justicia socioambiental intercultural a la conceptualización y puesta en práctica de modelos de sostenibilidad ecológica y cultural.

Estos objetivos se justifican teniendo en cuenta que la tenencia colectiva de la tierra contribuye al uso sostenible de los recursos (Ostrom, 1990), en la mayoría de los casos porque los actores locales adaptativamente construyen vínculos culturales, ecológicos y económicos con los espacios que habitan haciendo los sistemas colectivos por definición sistemas inclusivos (Rose, 2019).

Los estudios de desarrollo sostenible se benefician con un tratamiento más profundo de los problemas que conlleva la privatización y los cambios en la tenencia colectiva, sobre todo cuando los cambios en la estructura legal de la propiedad tienden a la degradación de los ecosistemas (Larson et. al. 2017) y a la exclusión de los actores locales. La privatización de la tierra y los bienes comunes en las costas y otros sistemas hidrológicos pueden llevar a la sobreexplotación.

Asimismo, la justicia socioambiental articulada al paradigma de la interculturalidad constituye un marco de referencia analítico en el estudio de la sostenibilidad que lleva a dar cuenta de niveles de realidad sociohistórica de sujetos colectivos con modos de vida arraigados en bienes comunes y con ello a una comprensión integral y crítica del desarrollo sostenible (Senent-De Frutos, 2020).

1.3. Estructura del compendio

Esta tesis sigue el modelo de tesis por compendio de tres artículos publicados en revistas indexadas en el Journal Citation Reports (JCR). En su conjunto sustentan los

resultados de la investigación doctoral durante 3 años y 6 meses. A continuación se especifica la relación y coherencia de las tres publicaciones con los objetivos planteados.

En el objetivo 1 se buscó analizar las dinámicas de privatización de la tierra y los bienes comunes y sus impactos ecológicos y culturales en perspectiva de justicia socioambiental. Los resultados alcanzados están en la primera publicación (**artículo I**) titulado “Murky waters: the impact of privatizing water use on environmental degradation and the exclusion of local communities in the Caribbean” publicado en International Journal of Water Resources Development de Routledge Journals, Taylor & Francis LTD indexada en el primer cuartil (Q1) del índice Journal Citation Reports (JCR-2021).

Este primer artículo, consecuente con los objetivos específicos de esta primera dimensión de análisis, se basa en documentar los procesos históricos de poblamiento y regulación comunitaria y estatal de los bienes comunes a la vez que describir las estructuras actuales de tenencia colectivas e individual en los casos seleccionados de privatización del agua. Para ello presenta detalladamente por qué los efectos del cambio climático en los ecosistemas tropicales no pueden interpretarse únicamente a partir de variables físicas. La grave escasez de agua y el deterioro de los ecosistemas se agudizan en lugares donde se producen desigualdades históricas, como el acceso desigual a la tierra y a otros bienes y derechos necesarios para la subsistencia de las poblaciones marginadas. Este trabajo explora las transformaciones ecológicas y sus repercusiones en los recursos hídricos a partir de un análisis espacial y un trabajo de campo realizados en el Caribe colombiano con pueblos afrodescendientes que han sido excluidas del uso del manejo del agua y ahora se enfrentan a problemas para mantener sus formas de vida.

Metodológicamente combina el análisis espacial a partir del estudio de la transformación de las coberturas y el enfoque etnográfico para la descripción de los sistemas de uso. Para una mayor originalidad se emplea el análisis espacial multitemporal como herramienta clave para comprender los cambios en la ocupación del suelo. Para interpretar la cobertura se utilizaron imágenes Landsat TM y Landsat ETM, que ofrecen un nivel intermedio de detalle de la superficie terrestre para revelar

los cambios en la cobertura del suelo. Las imágenes seleccionadas corresponden a los años 1998, 2002, 2004, 2007, 2009, 2013 y 2016. Los resultados del análisis espacial se profundizaron paralelamente con fuentes primarias y secundarias que dieron cuenta de cuándo se habían producido los cambios más significativos de coberturas y cómo afectan a su uso cotidiano del agua, los bosques, las zonas de sabana y otros ecosistemas. Las preguntas se referían a los cambios desde que se introdujeron los monocultivos de palma aceitera en cada región, lo que ocurrió en 2009 en el Brazuelo de Papayal y en 2002 en Montes de María.

El **objetivo 2** de la tesis se centró en determinar las nociones y las variables que influyen la sostenibilidad enfatizando dimensiones culturales y ecológicas. En esa línea, los objetivos específicos de esta dimensión de análisis pretendieron determinar variables ecológicas y socioculturales para analizar la privatización de bienes comunes y documentar las prácticas de privatización y sus efectos ecológicos y culturales en el manejo de los bienes comunes. Con ello en mente, se adelantó la investigación publicada en el **segundo artículo** titulado “Contributions of Intercultural Socioenvironmental Justice to the 2030 Agenda in the Colombian Caribbean” que fue publicado en la revista Land indexada en el segundo cuartil (Q2) del índice Journal Citation Reports (JCR-2021).

En este segundo artículo se evalúa críticamente la política pública de sostenibilidad implementada en el Caribe colombiano y se sugieren aportes desde una perspectiva de justicia socioambiental intercultural a la Agenda 2030. Apuntó a evaluar críticamente las políticas públicas de sostenibilidad en el Caribe, especialmente las relacionadas con la planificación y gestión de costas y mares; asimismo, se analizan los cambios en los ecosistemas de la isla de Barú a partir de un estudio multitemporal que permita verificar biofísicamente el estado de los ecosistemas y los motores de transformación. Adicionalmente, el artículo profundiza en los sistemas de uso de los pueblos afrodescendientes que habitan la isla y sus percepciones e interacciones con las políticas públicas que se implementan en la región, a la vez que sugiere un marco analítico de justicia socioambiental intercultural.

La estrategia metodológica del segundo artículo combinó el análisis espacial de la cobertura; el análisis de la cartografía catastral para conocer el estado y las estructuras de la tenencia y el trabajo de campo guiado por el enfoque etnográfico con 142 pescadores y otros integrantes de las comunidades y autoridades del Consejo Comunitario de Barú. La originalidad del artículo se sustenta en que propone un modelo y un conjunto de directrices para acercar la justicia socioambiental intercultural a la Agenda 2030 a partir de un sólido marco conceptual y de análisis a nivel biofísico, social y cultural que sugiere pautas para alcanzar la sostenibilidad desde una comprensión más horizontal que tenga en cuenta los aportes y contribuciones de los pueblos afrodescendientes a los objetivos de la Agenda 2030.

En el **objetivo 3** se propuso establecer un marco de análisis desde la perspectiva de la justicia socioambiental que articula sostenibilidad cultural y ecológica en bienes comunes marino-costeros y de tierras inundables. Para ello se delimitaron tres objetivos específicos de orden conceptual y metodológicos orientados a detallar las nociones de propiedad privada, bienes públicos y bienes comunes que operan en el contexto colombiano, además, se buscó determinar las variables ecológicas y socioculturales que permitan analizar la justicia socioambiental y con todo ello diseñar un modelo de referencia de articulación de la justicia socioambiental a la conceptualización y puesta en práctica de modelos de sostenibilidad ecológica y cultural.

Dada la complejidad del tercer objetivo se ha buscado dar respuesta en dos de los artículos publicados. En el artículo 2, ya reseñado, y en el **artículo 3** titulado “Environmental History and Commons for the Colombian Caribbean Challenges” publicado en la revista Sustainability indexada en el segundo cuartil (Q2) del índice Journal Citation Reports (JCR-2021). Este artículo profundiza en la historia ambiental de las sabanas y planicies inundables de la cuenca de río Cesar en Valledupar, documentando los hitos de la privatización de los bienes comunes y la degradación de los sistemas socioecológicos.

Metodológicamente, se analizan imágenes de satélite y fotografías aéreas para determinar los cambios en la cobertura del suelo que revelan el estado de los ecosistemas, y se utiliza un enfoque etnográfico para documentar la percepción y valoración de las comunidades locales afrodescendientes de la región. El artículo muestra cómo, en los últimos 60 años, los modelos de planificación del uso de la tierra han favorecido las prácticas de apropiación individual y los modelos agroindustriales frente a las formas colectivas de pastoreo y los sistemas agroalimentarios a pequeña escala. También documenta los principales impactos socioecológicos y los conflictos implícitos en los diferentes modelos de tenencia que deben ser tenidos en cuenta en las diferentes políticas públicas relacionadas con la sostenibilidad, la construcción de paz y el reconocimiento de los derechos territoriales en el Caribe colombiano. Su originalidad se sustenta en la propuesta de variables de análisis que hace para sugerir una mayor interacción entre la historia ambiental, la sostenibilidad y las políticas de transición que caracterizan el contexto sociopolítico de Colombia en los últimos años.

Capítulo 2

Publicaciones de la Tesis Doctoral

La tesis, titulada “La Influencia de la Privatización de Bienes Comunes en la Sostenibilidad Cultural y Ecológica de las Sabanas e Islas del Caribe Colombiano”, la conforman tres artículos científicos publicados en el transcurso del doctorado. Estos son:

Artículo I

Herrera Arango, J.; Senent-De Frutos, J & Helo, E. (2021) Murky waters: the impact of privatizing water use on environmental degradation and the exclusion of local communities in the Caribbean, *International Journal of Water Resources Development*, 38:1, 152-172, DOI: [10.1080/07900627.2021.1931052](https://doi.org/10.1080/07900627.2021.1931052)

Artículo II

Senent-De Frutos, J & Herrera Arango, J. (2022). Contributions of Intercultural Socioenvironmental Justice to the 2030 Agenda in the Colombian Caribbean. *Land* 2022, 11, 835. DOI: <https://doi.org/10.3390/land11060835>

Artículo III

Herrera Arango, J. (2023). Environmental History and Commons for the Colombian Caribbean Challenges. *Sustainability*, 15(10), 7798. <http://dx.doi.org/10.3390/su15107798>

2.1 Artículo I

Autores: Johana Herrera Arango, Juan Antonio Senent-De Frutos, Elías Helo Molina

Título: **Murky waters: the impact of privatizing water use on environmental degradation and the exclusion of local communities in the Caribbea**

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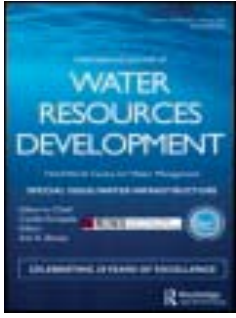
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Murky waters: the impact of privatizing water use on environmental degradation and the exclusion of local communities in the Caribbean

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ABSTRACT

The effects of climate change on tropical ecosystems cannot be interpreted based on physical variables alone. Severe water shortages and deterioration of ecosystems are most acute in places where historical inequalities occur, such as unequal access to land and other goods and rights necessary for the livelihood of marginalized populations. This paper explores environmental transformations and their repercussions on water resources based on spatial analysis and fieldwork carried out in the Colombian Caribbean. We have engaged with peasant and Afro-descendant populations who have been excluded from water use and now face problems in sustaining their way of life.

ARTICLE HISTORY

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Privatization; socio-hydrological dynamics; Colombian Caribbean; environmental change

Introduction

We have observed social and environmental changes occurring in two regions in the Colombian Caribbean which are areas of great hydrological importance: Montes de María (Mountains of María) and the Momposina Depression of Colombia, also referred to as Papayal Island or Las Pavas. The key issue is the de facto privatization of communal goods such as water and land in those regions (where/for whom). Such privatization is due to the state granting licences for agro-industrial companies to use the land, the problem being that said land lies in flood areas, which means the state is implicitly exercising public domain over assets that have ancestrally belonged to the communal domain.

This privatization could be regarded as a neo-colonial practice in the sense that, beneath the apparent legal equality of subjects and enterprises, it fails to respect the customary practices and natural goods that local communities have used for generations and is threatening their continued existence (why).

This legal inequality transgresses collective rights to communal property and leads to a series of ecological issues including the collapse of fishing systems and problems with access to and availability of water for river communities, who need that water for their

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livelihoods (what). This paper discusses several inequalities in normative systems in terms of political ecology and social–ecological systems. It also explores some other forms of exclusion that we have identified in these two regions.

To give an account of the situation, this study involved a detailed analysis of cartographic databases from the 1980s to 2020 (when). We also provide direct evidence and testimonies documenting the effects of privatization on communal goods. The cases selected for this analysis reveal that the consequences of armed conflict in rural parts of the country – associated with agro-industrial plantations – give rise to inequalities that are exacerbated by state and private hydrological initiatives and land control (how). To address this situation, the country needs a programme of ecological monitoring and biophysical research so as to establish a set of collective environmental rights. These rights would be the basis for a deep transformation which respects hydrological justice.

To begin this analysis, we made use of the open databases provided by the Observatory of Ethnic and Peasant Territories (OTEC, its Spanish acronym) of Javeriana University. We studied several cases in the Colombian Caribbean where water use privatization and social exclusion have been reported as an issue, with changes in aquifer recharge areas and the exclusion (fencing off) of communal areas that are vital for access to water. Over the years, the OTEC has built a significant repository documenting this rising trend. Using the repository, this paper focuses on two cases: Montes de María and the Momposina Depression, which illustrate how the Caribbean region has been transformed from an ecosystem rich in biodiversity to areas that have gradually been taken over by large-scale agricultural systems (Figure 1).

Both cases share a crucial characteristic that underlies much of the conflict concerning land and water in this country: oil palm crops being planted in state territories and areas traditionally home to local communities. Although both cases share this characteristic, their ecological footprints are quite distinct. Montes de María is a region with a low supply

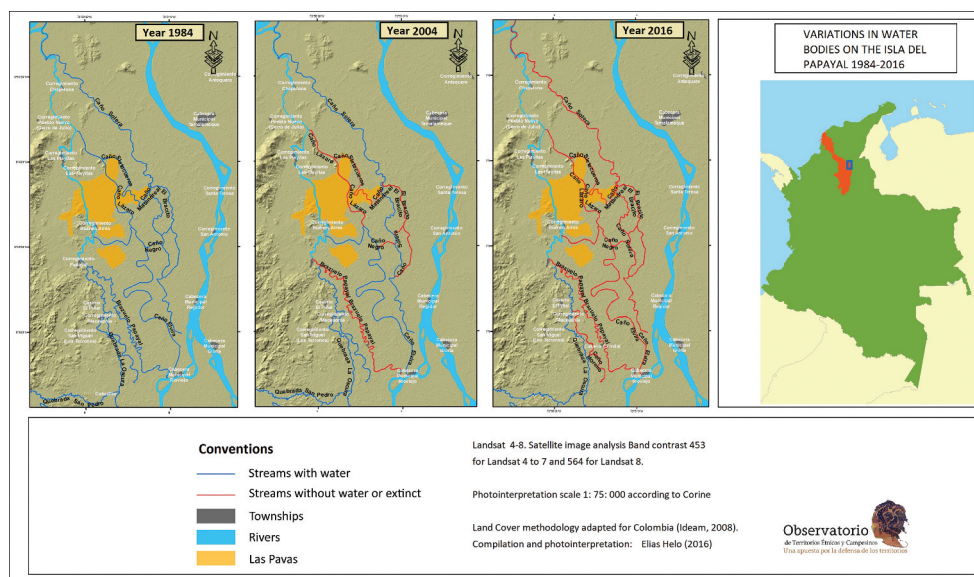


Figure 1. Variations in water bodies.

of water and a seasonal climate, while the Momposina Depression is an area with periodic floods and humid ecosystems. However, as will be analysed below, both regions have seen very similar negative impacts on local communities, such as social exclusion and harm to lifestyles that depend mainly on aquatic systems.

The Montes de María subregion is a mountainous area forming important streams and springs that supply water to neighbouring towns. According to maps from the Agustín Codazzi Geographic Institute (IGAC), the area houses the source of more than 860 drainage systems and is home to 47,125 ha of dry forest. In this same region, oil palm plantations grew from 3400 ha in 2006 (IGAC, 2009) to > 13,000 ha in 2009 (IAVH, 2019). Achieving this growth in agribusiness has involved monopolizing most of the region's major water sources, such as the Matuya and Playón reservoirs, thus limiting the local communities' access to water.

On the other hand, in the Momposina Depression subregion, in the heart of the Caribbean, work by the OTEC shows that more than 4600 ha of wetlands and 770 ha of surface water disappeared between 1990 and 2017, adding to the diversion and clogging of eight springs and the Papayal Brazuelo, the main tributary in the area (Papayal Island).

Background and key concepts

The Colombian Caribbean is an example of the dispossession of natural resources, a process that is of great interest in social and natural science research. So, what is the relationship between land appropriation and ecosystems that are essential for human subsistence? Water resources are acutely impacted by land use change and, subsequently, so is ecological stability and the lives of those who rely on these resources. Salamanca et al. (2019) provide a comprehensive review of the recent literature on this emerging topic. They describe multiple interconnected injustices, such as the inequalities produced by neo-liberal models that are well established in Latin America. These models are based on controlling nature and subduing local, often historically excluded, communities. As a result, tension between supposed territorial equality and de facto planning is rising.

Water is the fundamental element upon which the functioning of ecosystems and the subsistence of all life is based. In Colombia, factors such as geographical location, orogenic conditions and local climate combine to shape the local water landscape, including rivers, estuaries, swamps, lakes and lagoons (Marín Ramírez, 2003). These ecosystems involve complex relations between flora, fauna and microorganisms to maintain their ecological balance and function (Jaramillo et al., 2015).

These relationships are governed by water flows, with a deficit in some regions and a surplus in others (Marín Ramírez, 2003). Horizontal water flow refers to surface water available for human activities and ensures the stability of ecosystems. Vertical flow is water that filters into the ground and later emerges as springs (Gleick, 1993). The intricate relations between these water flows and their balance are still a subject of much debate. However, multiple studies have characterized various components of these systems and have shown how water balance is essential for the preservation of biodiversity and ecological function (IDEAM, 2012).

Colombia is hydrologically wealthy and some of the country's largest basins have a runoff that is six times greater than the world average. However, alterations in vegetation structure and sometimes in groundwater upset the water balance and make the supply of water for

human consumption highly vulnerable (García et al., 2012). Disruptions to vertical water flows compromise surface runoff, meaning the amount available for consumption is diminished.

From a political ecology perspective, water disputes belong to the realm of environmental conflicts, which are a source of various social and spatial inequalities and social injustices (Forsyth, 2003). State regulations governing access to water tend to privilege extractive industries, and these industries are often granted access and catchment permissions under a very flexible framework in terms of pollutant discharge. This contrasts with the difficulty faced by communities who need access to high-quality fresh water: They face restrictions imposed on them by water governance systems that are controlled by the private sector and the state. The outcome is that communities often suffer exclusion and dispossession (Ojeda, 2016).

One of the issues that political ecology deals with is analysing capitalist development policies and their impact on nature (Peet et al., 2011). We believe that this is the best way to approach the expansion of oil palm agro-industries and their ecological and cultural implications. As stated by Escobar (2008), cultural practices are closely linked to biophysical processes and ecological-distributive conflicts.

In the two cases discussed in this paper, we claim that there is an evident neo-liberal agenda behind the rural development practices that have stood at the core of Colombian rural policies since the early 1990s. The major trend has been a transition from land use for agricultural or preservation purposes to livestock exploitation and agro-industrial expansion. This has led to dramatic levels of land appropriation, with Gini coefficients > 0.8 (Daniels & Múnera, 2011), and has motivated a market focus on devaluing nature and disregarding ecosystems and the people who traditionally inhabit them. The dominant attitude consists in imposing a model of economic rationality which favours social exclusion and unsustainable use of natural resources, and which threatens local communities by preventing or hindering them from leading their own sustainable lifestyles (Senent, 2012).

These models drive changes in socio-ecological systems which can be approached from different angles. For instance, a social and ecological perspective might consider water as part of a set of historical and adaptive interactions that give rise to 'hydro-cultural spaces' (Boelens et al., 2016). By taking this approach, water becomes a social and natural element (Roca-Servat & Ocando, 2019) which ecologically conditions livelihoods and is part of the social fabric (Linton, 2011). In the end, seeing water as a binding element that allows multiple territorialities to take shape (Linton & Budds, 2014) helps one understand the various historical processes, contradictions and conflicts surrounding water resource management (Roca-Servat & Ocando, 2019), all of which we believe can be seen in the Montes de María and Momposina Depression subregions in the Department of Bolívar, Colombia.

In these two regions, extensive oil palm plantations and livestock farming have led to drastic interventions that have affected the landscape. For example, extensive irrigation systems have been constructed during agrarian reforms, and rural development plans have shifted water management from the public to the private sector, as is the case of the Irrigation District created in the 1960s in the Montes de María subregion. It is now clear that channelling, dredging, damming and generally carrying out any hydraulic transformations to satisfy the needs of certain sectors of society brings about significant damage to natural systems and can cause irreparable harm to the structure and function of entire basins (Millennium Ecosystem Assessment, 2005).

National and international demand for palm oil in food, biofuels, cosmetics and the chemical industry has led to a phenomenal growth in plantation areas. The first experimental crops were established in 1990 and were no larger than 100,000 ha, contrasting greatly with

the picture in 2020, when they came close to 560,000 ha (SISPA, 2019). Furthermore, this farming activity has taken place alongside acts of violence, land dispossession and corruption, leading Taussig (2018) to define it as 'the new sugar, meaning that just as what sugar, especially in the Caribbean, was to colonialism, so oil palm is the post-colonial equivalent in terms of economic, social and ecological impact' (SISPA, 2019, p. 4). Palm oil or African palm is a permanent late-harvest crop. Its profitability requires extensive plantations because, along with slow production times, the cost per hectare is generally high and returns on investment only come years after sowing. The main producers worldwide are Indonesia and Malaysia, with Colombia taking fourth place. This has meant transformations for entire communities who depend on water, whose ecosystems have now turned into *palm-green seas*.

The problem is further exacerbated if one considers the dissimilar structures that characterize the rural world in terms of land tenure, basic sanitation services and infrastructure, all added to having a set of human rights with no guarantee of protection. Ever since the year 2000 in the Momposina Depression (Espinosa-Manrique & Cuvi, 2016) and since 2007 in Montes de María (Ojeda et al., 2015), there has been a food crisis and outbreaks of diseases such as dengue and zika, these being just some of the effects of altering hydrological systems according to the Colombian health authority. Furthermore, these problems have triggered conflicts over unequal management of access to water.

According to Colombia's National Institute of Health (INS) (2016), the number of people suffering from waterborne diseases has increased over the last 20 years. Among the factors identified as possible causes of this problem, it is important to highlight 'changes in the patterns of water use, alterations to the ecosystem, the increase in international trade of animals, animal products and other foods' (p. 12). This trade is a significant factor, adding to the large transformations of ecosystems and patterns of water use in the areas concerned.

In the case of the Colombian Caribbean, diseases such as dengue, chikungunya and zika are some of the region's major public health problems. Around 90% of the territory has environmental conditions that facilitate the spread of these diseases due to habitats being fragmented, local temperature levels changing and monocultures proliferating, with an outbreak occurring every three or four years from 1984 to 2010 (Padilla et al., 2012). In addition, storing water to offset the limited availability of this resource also favours the reproduction of these vectors.

The two cases of Montes de María and Papayal Island show contrasts in terms of: (1) state intervention models, (2) types of coverage transformations, (3) water management and access mechanisms, (4) forms of privatization and (5) degradation of natural systems that affect native communities as a consequence of oil agribusiness. Whereas plantations began to be established between 2002 and 2006 in Montes de María, on Papayal Island this occurred between 2006 and 2007. By 2018, Montes de María had around 13,000 ha planted with oil palm, while Las Pavas had 8426 ha.

Additionally, for Taussig (2018), palm monoculture cannot be uncoupled from the violence and counterinsurgency narratives of paramilitary groups, which he claims support the dispossession and privatization of land and its ecological degradation. In the Colombian case, these long-lasting armed conflicts go back as far as 1945 (Palacios, 2003). Although their origin dates from the political confrontations between liberals and conservatives, this rapidly escalated into an armed confrontation based mainly on agrarian issues (Jaramillo, 2014). In 2016, a peace agreement was signed between the largest and oldest guerrilla group in the country known as FARC-EP and the Colombian state under the government of Juan Manuel Santos. In the context of politics and the will to build

peace, efforts have been made to study and understand the armed conflict; many see it as a scenario for the dispossession of lands and natural resources, which has made the war more visible and has influenced the distribution and use of natural resources.

The murky waters that currently characterize the socio-hydrological systems discussed in this paper are making the social and ecological ways of life of Caribbean populations increasingly unsustainable. As detailed below, water degradation occurs as a result of changes in the intensity of human interactions with natural systems in ecologically fragile areas. These interactions were historically local or regional, but have now become so acute that they have global effects on climate, biological diversity, soils and waters (Etter, 2015).

The historical and cumulative effects that changes in pre-existing ecological processes have on ecosystem patterns have been demonstrated by spatial analysis, documentary review and fieldwork (Barnosky et al., 2012; Ellis, 2011). Similarly, it is important to monitor how national-level politics affect regional water management, such as basin management plans and planning instruments that tend to privatize communal assets. In this regard, a socio-hydrological model by Elshafei et al. (2016) shows how factors such as the human development index, political system and level of vulnerability of local communities should have a direct bearing on water-related decisions.

Methodology

Focus groups and participative workshops

In the two regions under study, fieldwork was undertaken between 2017 and 2019 with local communities, representatives and leaders of social organizations, community associations, fishermen, hunters and groups of rural women. Spaces were set up to discuss and learn about the implications of changes in the landscape and the use of common goods, especially water, as well as other relevant spaces and resources of communal use such as farmland and tropical dry forest (TDF) in each area. A set of specific questions fostered a horizontal dialogue between researchers and local communities regarding what major changes the population's lifestyles had undergone, when they occurred and how they affected their daily use of water, forests, savanna areas and other ecosystems. The questions referred to changes since palm oil monocultures were introduced in each region, which happened in 2009 in Las Pavas and 2002 in Montes de María. The focal group technique was used to gather qualitative data and as a research approach bridging local knowledge and the technical biophysical part of the analysis (Morgan, 1996). By considering the historical accounts of local communities, our spatial analysis was deepened, which helped to gauge environmental transformations and their implications. When selecting key participants for the fieldwork, the research focussed on them living in the territory and belonging to social organizations, their role in the community, the gender balance and their knowledge of water use problems and issues relating to common goods.

Multi-temporal analysis

Multi-temporal spatial analysis is a key tool for understanding changes in land cover. There are several ways to analyse, classify and compare land cover and use (Chuvieco, 1996). For Colombia, the Hydrology, Meteorology and Environmental Studies Institute (IDEAM) and the Agustín Codazzi Geographical Institute (IGAC) have promoted the Coordination of Information

on the Environment (CORINE) methodology to standardize the various kinds of spatial data and translate territorial planning tools into a common language (IDEAM et al., 2008).

The Corine Land Cover Colombia programme proposes five major steps to create land-cover maps that are adapted to portray changes in natural cover and land use (Table 1).

Results

Below is an overview of the main findings drawn from the spatial analysis and fieldwork carried out with local communities, who told us a great deal about changes in ecosystems, the various causes and the effects that such changes have had in their daily relationship with water.

Ecosystem transformations in Las Pavas

The land-cover analysis shows how coverage has varied in the area. Since 1998, when extensive livestock farming was already established, there has been a sharp reduction in continental wetlands, swampy areas and water bodies (Table 2).

These wetlands lost about 4617 ha of their original surface area from 1998 to 2016. As for water bodies, although they vary from wet to dry years, 770 ha have been lost, especially since 2009 when the largest oil palm plantation was established. The vast

Table 1. Steps for creating land-cover maps in the two subregions studied.

Activity	Characteristics
Acquisition and preparation of information	Landsat TM and Landsat ETM images were used to interpret coverage, offering an intermediate level of detail of the Earth's surface to reveal changes in land cover. The main requirements for the images were not being too cloudy and having been taken around the same time of year (dry season). The images selected were from 1998, 2002, 2004, 2007, 2009, 2013 and 2016. First, the images were orthorectified to avoid distortions on the ground. Images with combined bands were then generated to highlight the different coverages to be evaluated. The bands that were combined were: (1) near infrared, red and green (for forest identification); (2) near infrared, shortwave infrared and red (for cloudiness and bodies of water); and (3) natural colour (red, green and blue)
Analysis and interpretation of land cover	The Corine Land Cover methodology takes into account various levels of detail that depend on image quality and the ability to verify information. For this analysis, we were able to establish levels 1 and 2 in all covers and level 3 in some covers using information from other sources. The visual interpretation was made using the ArcGIS 10.3.1 program based on previously processed images delimiting each landscape unit. No type of supervised or unsupervised classification was used. The rules described in the 'Corine Land Cover Methodology adapted for Colombia 1:100,000' (IDEAM et al., 2008) were followed, with the minimum cartographic unit being elements ≥ 25 ha, except for urban areas and bodies of water, where elements ≥ 5 ha and linear elements > 50 m thick were taken into account
Field verification	During field trips to the study area in the period 2017–19, various control points were used to ensure that the information obtained and analysed in the program matched the covers observed in the field
Quality control	With the photographs taken and each of the points included in the ArcGIS geographical database, each identified element was controlled, helping to verify that the information delimited in the program matched the field data
Generation of thematic maps	Finally, all classified and analysed information was recorded in three documents. First, a graphical output to help read changes in coverage in the study areas; second, tables showing each of the identified landscape units, their correspondence with the level of analysis and their size (ha); and third, a document recording the analysis of changes in coverage which showed how land use had varied spatially and temporally

Table 2. Loss of vegetation cover (ha).

Land-cover change	1998–2002	2002–04	2004–07	2007–09	2009–13	2013–16	Total
Continental waters	-441.57	65.45	358.38	1323.08	-1600.36	-475.43	-770.45
Heterogeneous agricultural areas	1015.64	820.20	-3136.91	-2511.81	4.99	-1873.94	-5681.83
Continental wet areas	-1368	-1834.80	349.40	-578.60	-1052.96	-132.64	-4617.60
Forest	-1587.77	-525.20	-300.92	-638.38	-761.30	-1141.09	-4954.66
Transitional crops	735.07	96.19	402.17	679.07	374.55	64.75	2351.80
Pasture	1646.63	450.33	2911.31	1358.99	-3177.81	-1370.60	1818.85
Areas with herbaceous or shrubby vegetation	0	927.83	-583.43	367.65	-304.36	838.49	1246.18
Oil palm					6517.25	86.72	6603.97
Burned zones						4003.73	4003.73

Note: highlighted areas indicate the negative values of loss of vegetation cover.

majority of transformed wetland became areas of pasture or permanent crops, demonstrating the huge impact of extensive livestock and agro-industry.

The loss of these flood spaces triggers changes in the way the ecosystem works, altering natural water flows and the occurrence of species of fish, vegetation and other fauna. Swamps are very sensitive ecosystems, so these alterations compromise their stability. Similarly, the climate of the region plays an important role in modifying or transforming ecosystems. These ecosystems dry up more intensely in high-temperature conditions, which will become more frequent as climate change progresses.

One of the most drastic changes on Papayal Island is the transformation of the springs and streams. Today, these water sources have undergone greater changes due to pressure from large-scale activities. The water system on this island is unique because it allows water to flow between the swamps and invites fish and birds, which are essential sustenance for fishermen and peasants.

The main streams and springs have undergone transformations that cut off the flow of surface water (Figure 1). Multispectral analysis shows the disappearance of several bodies of water associated with the drainage network of the swamps. Dams and changes in soil geomorphology and land use mean these important bodies of water no longer fulfil structural functions for their ecosystems.

Table 2 details the loss of vegetation cover, showing a 5681 ha reduction in heterogeneous agricultural areas, which is comparable with an increase of 6604 ha of oil palm. The depletion of 4954 ha of forest means that one of the most important ecosystems in the region has been lost and another is currently at risk of disappearing. The few remaining areas of forest are separated by roads that have been built as infrastructure for oil palm crops.

Ecosystem transformations in Montes de María

Montes de María is the hydraulic heart of the mountain range known as Serranía de San Jacinto. More than 100 catchments flow from the westernmost municipalities and feed the irrigation district. The main streams and creeks tend to be seasonal due to the hydrological characteristics of TDF.

The growth of palm crops since their establishment in 2002 has reached > 10,000 ha in the lower irrigation district of María la Baja. In contrast, in the mountainous area, TDF

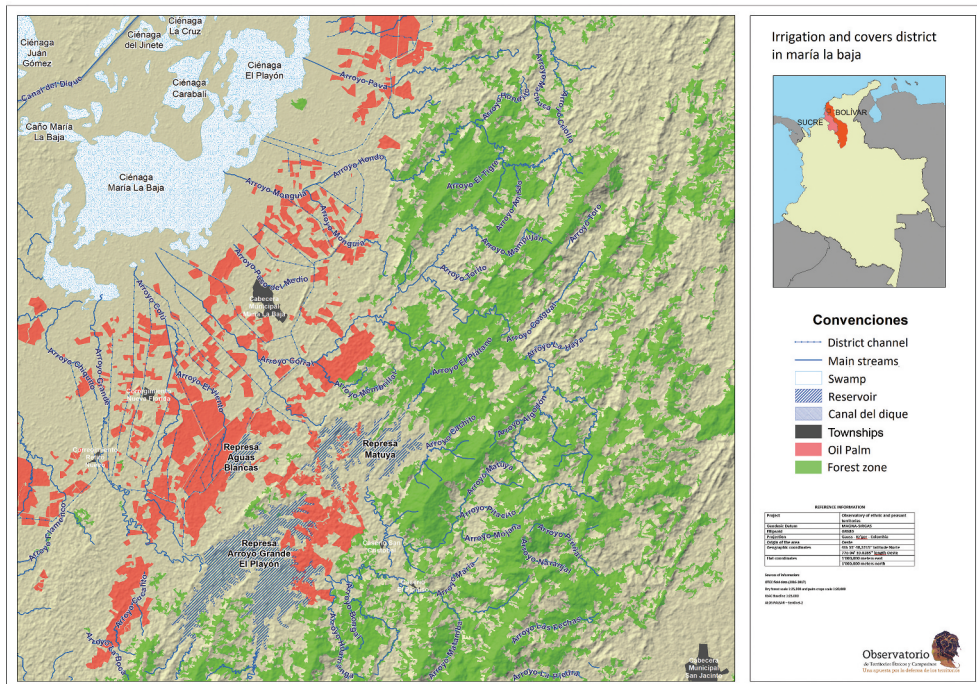


Figure 2. Oil palm and forest cover.

cover persists and helps to maintain surface water bodies and hydraulic recharge areas. It is estimated that in 2018 there were 25,000 ha of natural cover in the municipalities of San Jacinto and María la Baja, mainly comprising dense forest or riparian forest (Figure 2).

The María la Baja irrigation district covers about 19,600 ha spread across 1872 farms (Mow et al., 2013). The areas that were once fields of rice, corn, cassava or yam are now a matrix of palm and pasture with its own exclusive irrigation system. The heterogeneous landscape of transitory crops has disappeared on the flat terrain, while some alternative forms of production other than the agro-industrial model persist in mountainous and hilly areas.

The occurrence of TDF in a context of hydraulic stress such as this has led many species within it to develop particular morphological, physiological and ethological adaptations (Dirzo et al., 2011). With seasonal rains and long droughts added to poor soil conditions, these dry ecosystems offer much lower productivity in terms of forests and biodiversity than their wet counterparts (Pizano & Garcia, 2014). Among the most common characteristics in these forests are a great diversity of deciduous plant species, modifications in reproductive cycles, and changes in diets and mechanisms to reduce water loss in insects, mammals and reptiles. Due to all these stress conditions, TDF presents high levels of endemism and specialization, mainly between pollinators and dispersers (Blackie et al., 2014; Pizano & Garcia, 2014). Transformations in canopy cover break the delicate water cycles of these ecosystems, greatly affecting vertical and horizontal flows of water as a result (Dirzo et al., 2011).

Additionally, in the María la Baja irrigation district, these ecological effects pose risks for peasants and particularly Afro-descendant communities who, since 2005, have asked the state to recognize their property under a collective handling approach. Collective forms of

social production add further tension to the conflict between private use of water sources and the expectations of local communities, who hope to employ legal frameworks that will support ethnic differences and favour land ownership based on ancestral occupation. Although fights over land have been frequent in the region, a strong discourse has emerged in the last decade based on ethnic differences and has made environmental claims a priority, particularly in vindicating the right to water (Herrera, 2016).

Discussion

Socio-ecological and ecological-distributive perspectives

A variety of theoretical approaches can be used to describe the multifunctionality of water as a resource, common good, system or right, as a meeting place, or as a factor in historical disputes over opposing visions of use and development. Studies have shown that, as with climate change, the issue of water on macro-scale should be considered according to socio-economic and political parameters, as well as biophysical criteria. By taking this approach, different cases can be examined and compared using socio-hydrological models applicable to agricultural basins (Elshafei et al., 2014). Furthermore, the need expressed by Walker et al. (2015) has been confirmed by other case studies in tropical regions, namely that it is urgent to adopt a dynamic interactive policy and water management approach.

It is also crucial to find a place at the table for local actors to join the water management debate. Systems defining water rights and governance structures must factor in local views and ecological assessments, since the two are almost always in conflict. One theme that the cases we analysed have in common is that water degradation goes hand in hand with violations of rights, starting with the right to land. Both our cases involve precarious, unequal tenure systems and unresolved court cases on whether the land should be owned by the community or by private companies.

The privatization of water is a reflection of inequitable access to land. Armed groups and their violent actions have caused the land of local populations to be dispossessed, abandoned and fenced off in favour of agro-industrial businesses and livestock traders (CNMH, 2014). The transformation of the landscape in Las Pavas and Montes de María has brought about mobility restrictions, blockages, fencing and exclusions for local inhabitants. In fact, the emergence of these new hydro-geographical regions has been verified by spatial analysis using satellite images (Bakker, 2010). For example, locals are no longer allowed to fish, especially at night, or farm in floodable areas that have been privatized for oil palm crops.

These new regions, where armed conflicts have long been present, are characterized by the exclusion of the local population and water degradation (García, 2019). Paramilitary violence was aggravated in the 1990s in regions where peasants had succeeded in redistributing land policies through agrarian reforms,¹ and would later be linked to practices of dispossession and forced displacement. All this was done to satisfy economic and environmental interests driven mainly by the expansion of oil palm crops, which require flat areas, special soils and a favourable climate (CNMH, 2016).

Using Oslender's (2008) thesis, these 'geographies of terror' are constituted and normalized with strong support and complicity shown by multiple layers of government,

national elites and transnational corporations. Neither Papayal nor Montes de María can decouple their environmental battle from armed conflict.

The state has played a part in shaping Montes de María and Las Pavas by enforcing regulations that support private businesses and reducing the amount of water suitable for consumption by local people. The government has provided agrarian credits for palm farming companies and has invested in infrastructure to make agribusiness more profitable and better connected to export ports (Gómez, 2013). Furthermore, although the state has engaged in dialogue with local communities, it has failed to foster a consultative communication that truly considers the will of the local population and the negative effects they suffer from environmental upsets. In the words of Harvey (1996), a discursive strategy of 'repressive tolerance' has been deployed whereby differences are managed through institutional systems that fail to restrict the perpetuation of exclusion policies. This is precisely the scenario that calls for water justice to step in and address the profound contradictions we see as the rights of private companies clash with those of human beings and the environment.

Our findings are consistent with the literature, which holds that the greatest vulnerability of natural systems is associated with changes in land cover and use due to intensified agriculture and urban growth (DeFries et al., 2004). In the cases at hand, the main cause is intensified agro-industrial palm-growing activity to produce biodiesel and other derivatives.

According to local accounts, the environmental effects range from gradual to abrupt. Changes in ecological regimes show how the system is being affected. For example, we are seeing a decline in fishing, increased deforestation in areas under hydrological regulation, dumping of pesticides and habitat fragmentation (Haddad et al., 2015). Landscape changes have also been significant since the palm industries became consolidated, with murky waters being a source of infection and a niche for epidemics. Yet, they remain the only water sources available to local inhabitants.

In both our cases, it is essential to understand how significant the changes in the hydrology of the region can be in terms of water availability, quality, use and access. Changes in flood pulses are a consequence of alterations in hydraulic connectivity, which refers to the matter, energy and organisms transported within or between elements of the hydrological cycle (Pringle, 2001). According to Poff and Ward (1989), in addition to the temporal dimension in which hydrological processes occur, there are three key spatial dimensions to hydrological connectivity: (1) longitudinal (headwaters to estuaries), (2) lateral (rivers to flood plains) and (3) vertical (rivers to groundwater). Therefore, interaction between hydrologically interconnected water bodies is the basis of their ecological integrity (Pringle, 2003). However, human disturbances such as those that occurred within the María la Baja irrigation district and the channelling of streams in Las Pavas are factors that alter the dynamics of hydrological connectivity and ecological processes all the way from species, populations and communities to entire ecosystems (Junk & Wantzen, 2006; Liermann et al., 2012).

In Montes de María and the Momposina Depression, spatial analysis has revealed surprisingly large and persistent changes in ecological regimes (Dakos et al., 2012; Rocha et al., 2015), and although the approach to understanding ecosystem transformations based on changes in ecological regimes still sparks debate among academics

(Mollmann et al., 2015), it represents an opportunity in local contexts to understand the dynamics of ecological change driven by anthropic transformations.

Oil palm and its effects on water

The cases of Montes de María and Papayal Island are two sides of the same coin, showing the water dispute from two perspectives: the landscape and the ecosystem. On the one hand, in Montes de María, TDF is the characteristic ecosystem, with xerophytic features and a high aridity index, leading to low water availability (Pizano & Garcia, 2014). The aridity index reveals areas with water deficit calculated according to the surface water balance (IDEAM, 2012). Therefore, the irrigation district was proposed as a solution to climatic variability and to provide stability for peasants in the area (Ojeda et al., 2015). On the other hand, Papayal Island is an isolated area of Colombia housing wetland ecosystems that are of vital importance for hydraulic recharge and fishing (Jaramillo et al., 2015; Taussig, 2018). The traditional livelihoods of its peasant communities depend directly on forests and swamps, as fishing and hunting are the main sources of food.

The common points shared by these two cases are the agro-industrial and livestock models that have permeated these territories, transforming the structure and function of these ecosystems and resulting in asymmetrical access, use and availability of water.

Furthermore, extreme weather events such as floods and droughts have become increasingly frequent and entail dramatic consequences for humans. Globally, altered natural cover is the main driver of changes in the water cycle (Sterling et al., 2013), and both our cases have seen alterations in their natural cover over the last decade, which has affected water availability.

The clearest signs of environmental degradation are seen when horizontal water flows vary. On Papayal Island, transformations in natural ecosystems and hydraulic modifications have become apparent in the loss of water bodies and wetlands covering 5387 ha (Table 2). Alterations in water cycles are greater in humid regions containing reservoirs due to a reduction in evapotranspiration. Similarly, clearing forest areas also reduces evapotranspiration and water availability (Sterling et al., 2013). The expansion of pastures and agro-industrial crops is the direct cause of this change, and the cover analysis shows that the trend has increased to 8426 ha.

It is a fact that simplifying the structure of the landscape reduces biodiversity and leads to increased water use and degradation in its quality (Plieninger & Bieling, 2012). Habitat loss is the first cause of extinction of freshwater species (Millennium Ecosystem Assessment, 2005) and the dwindling availability of species for fishing in the area is proof of this. Furthermore, depleted biodiversity compromises the ability of the ecosystem to buffer abrupt changes, decreasing its resilience (Walker et al., 2004).

Ecosystem degradation has consequently had serious implications for livelihoods, especially in terms of availability and use of resources. Activities such as fishing, hunting and navigation have been altered by changes in swamps, decreased water availability and forest depletion. The Papayal Island ecosystem is the buffer zone for one of the largest rivers in Colombia and its communities have co-evolved around water, a process that Oslender (2016) conceptualized in the notion of 'aquatic space'. As navigation and fishing becomes impossible in the main swamps, communities are pushed to move to other bodies of water and change their methods of subsistence. Furthermore, water

contamination caused by mining in the upper basin leads to communities suffering adverse health effects.

In contrast with this region, Montes de María is a different scenario. Changes in this area are linked to access following the construction of an irrigation system to ensure supply for large and medium-sized farmers. More than 25,000 ha of TDF provide hydrological regulation and lessen the effects of water stress which is common in this area. This vegetation cover in the high zones allows the irrigation district to survive. Meanwhile, the flat zone has undergone great productive transformations. At first sight, these changes should not greatly affect water availability, but restricted access and land hoarding in the irrigation district has led to increased conflicts over this resource (Ojeda et al., 2015).

In the flat zone, the matrix of palm and pasture demands huge amounts of water, especially in dry periods when seasonal runoff disappears. A hectare of oil palm requires 20,000 m³ of water per year on average (Quiroga & Vallejo, 2016). Since the irrigation district is mainly used for palm cultivation, the water available for other activities is limited. Moreover, climatic extremes have led to lower reservoir levels, which further reduces the amount of water intended for activities other than agro-industrial farming. Although the forests in the upper part keep some tributaries going throughout the year, TDF is the most threatened ecosystem in Colombia and only 8% of its original cover persists (Pizano & García, 2014).

Large amounts of sediment gather on the banks of reservoirs, so these locations are favoured for subsistence agriculture because crops are guaranteed to grow successfully there. But these areas have also been gradually privatized, with restricted access and use. Therefore, the pressure exerted on small farming communities in Montes de María due to a decrease in planting space and restricted use of flood areas for their crops drives them up towards the highlands and causes changes in the forests.

Data from these two contrasting regions of Colombia show that hydraulic justice means more than simply gaining access to this resource (Boelens et al., 2011). The degradation of associated ecosystems can have devastating consequences, such as those seen on Papayal Island. The transformation and degradation of ecosystems has led to the disappearance of a significant area of wetlands and is threatening the livelihoods of peasant communities, a phenomenon similar to that experienced on the banks of the reservoirs of the Montes de María irrigation district.

However, in Montes de María, the consequences of hoarding water for palm cultivation may be further exacerbated. If, as set out above, 1 ha of palm consumes 20,000 m³ of water a year and the region has about 13,000 ha under production, this means that, on average, 260 million m³ are required annually. Meanwhile, reservoir levels at the end of 2019 fell below 100 million m³ (Table 3). Montes de María therefore suffers a double problem:

Table 3. Characterization of the main reservoirs of the María la Baja irrigation district.

Water bodies	Average area (ha)	Flood zone area (ha)	Average availability ^a	Availability in 2019 ^a
Matuya reservoir	523	1114	108 million m ³	49.7 million m ³
Playón reservoir	946	840	111 million m ³	25.1 million m ³
Aguas Blancas reservoir (La Suprema)	130	23	Unregistered	Unregistered

Note: ^aBathymetry study published on 13 November 2019 in the Bolívar governorship with the support of USAID.

drought and uneven access to and use of water. This not only limits water use, but also affects water recharge areas that represent the livelihoods of hundreds of traditional farming families.

Effects on livelihoods

As mentioned above, the privatization and dispossession of water resources affecting peasants on Papayal Island and Afro-Colombian communities in Montes de María have jeopardized the survival of many economic and cultural practices that depend on water, as well as giving rise to a significant change in the region's 'aquatic space' (Oslender, 2016).

The concept of livelihood refers to the means that allow an individual or community to meet their basic needs. It is generally associated with the possibility of making short-, medium- and long-term life plans (Ashley & Carney, 1999; Chambers & Conway, 1992) and, in most cases, with having specific assets or capital (Scoones, 2015). In this sense, a reduction in collective environmental capital owing to the transformation in vegetation cover and water bodies in both regions has produced adverse effects and damages at an economic, cultural and social level, since many traditional trades such as fishing, agriculture and hunting have typically been a major part of the community's collective memory, food security and local development models.

The Montes de María region, populated by descendants of the Maroons, indigenes and peasant communities, has been characterized as an area with a strong agricultural focus due to prosperity in the region (Ojeda et al., 2015). Yet, the productive and hydraulic capacity which enabled it to thrive is precisely what has turned Montes de María into an unfortunate place of unequal access to land and common goods and one of the areas where the crudest manifestations of Colombian armed conflict have developed (Fundación Cultura Democrática (FUCUDE) et al., 2020).

The peasant mobilization that took place there during the 1970s and 1980s pressured landowners to sell their land to INCORA, the Colombian Institute of Agrarian Reform in charge of land redistribution. However, this did not significantly modify the agrarian structure, and the asymmetry in land tenure became evident in small pockets of peasant and ethnic communities surrounded by large expanses of private property such as latifundia. The beginning of the period of mass forced displacement and abandonment of land between 1997 and 2007 coincided with the first oil palm crops being planted for biofuel production, particularly in the Municipality of María La Baja in 2002 (United Nations Development Programme (UNDP), 2010).

Meanwhile, Papayal Island is an example of how the Colombian state promoted a shift towards livestock and agro-industrial exploitation models, especially in the Caribbean, in order to drive rural development – protected by legal and administrative procedures and financed by public and private funds (García, 2019). This process has legitimized violence against the peasants of the region. With the arrival of the first investors in 1983, the transformation of water bodies in the area began, leading to blocked springs and dried-up swamps (García, 2019). This considerably waned the fishing resource on which much of the diet of the local communities was based. Agricultural production was also threatened by a livestock model which lasted around 20 years but subsided with the arrival of the African palm in 2009 (Taussig, 2018). It is also important to link the history of the environmental damage produced by this type of production model to the presence of

illegal armed groups that arrived in 1998, which has led to significant dispossession and forced displacement of peasants in the area who opposed the actions of ranchers and palm growers (Mow et al., 2013).

A national debate

The data analysed illustrate some specific cases of poor water management in which water is being claimed as a right in the Montes de María region, but this is also happening on a broader scale. It should be noted that important social movements are taking place across Colombia demanding that water be considered a human right. With the enactment of the 1991 Constitution, Colombia made considerable progress in recognizing multiple and diverse rights, transforming the country's legal system (De la Rosa & Contreras, 2018). Thanks to this constitutional development, the state acknowledged its obligation to protect the environment, including water resources (García, 2017).

The connection between the right to water and the essential right to life is an argument that has been used repeatedly in case law to require the Colombian state, aqueduct service providers and individuals to guarantee access to and availability of this resource, particularly if their actions endanger the health and dignified life of a social group (see Ruling T-888, Constitutional Court, Sixth Review Room, 2008). Nevertheless, although multiple rulings have been handed down by the Constitutional Court, the situation still appears to be unresolved because, according to figures from the National Administrative Department of Statistics, around 30% of the rural population and 13.6% of the overall population lack suitable access to water resources.

The interest shown by civil society in enshrining the right to water as fundamental gave rise to an initiative involving 60 social organizations. With this purpose in mind, they promoted a referendum in 2009 involving demands to guarantee a free vital minimum amount of water, special protection for ecosystems that are essential for the hydraulic cycle, and state and community public management of the aqueduct and sewerage services. However, the initiative was never brought to fruition as the proposal succumbed to a lack of political will. This referendum in the interests of water – as a process and as a historical moment of public consensus at a country level – arose between 2006 and 2009, in the middle of a political context characterized by the privatization of water (as evidenced in Law 142 of 1994). In 2003, the government in power had proposed legal instruments to privatize water by granting concessions of up to 50 years to private companies. These and other affairs were what encouraged civil society organizations, led by the non-governmental organization (NGO) Ecofondo and the communal networks of aqueducts, to take a leading role in collective actions that promoted the water referendum of 2009 (Gómez, 2014).

Conclusions

Achieving hydrological justice in the Colombian Caribbean will require a transdisciplinary perspective involving ecological, cultural and political approaches. The privatization of water has been found to cause degradation of natural systems and social exclusion. These effects are heightened by rural development models in the Caribbean, which are characterized by excessively promoting livestock and plantation crops as opposed to supporting the

agricultural characteristics of the soil, ecological structure and the ways of life of local inhabitants, which involve short-cycle crops, fisheries and other ecosystem use practices.

In view of the empirical cases analysed, it can be inferred that privatization and exclusion often go hand in hand, a conclusion that is also consistent with the literature addressing these issues. Privatization is a legal mechanism that entails the loss of communal goods for traditional local communities and, as a result, deprives them of historical rights and constitutes a form of social exclusion. Privatization implies inequality in the way these communities are treated by the public administration (in this case, the Colombian state) in terms of who benefits from the goods. This inequality promotes a water use and exploitation model that, in addition to social exclusion, entails contamination and loss of biodiversity (Senent, 2020).

Moreover, swamps and other freshwater ecosystems have also changed in their ecological regimes due to major anthropogenic interventions (Vilardy & González, 2011). According to Rocha et al. (2015), theoretical and empirical approaches to such changes are required so as to better assess how they occur, which ecosystems are most affected and which social groups suffer the greatest impact as a result.

Such transformations of ecosystems, which are evinced by changes in natural vegetation cover, impinge on the availability of water for local communities. This also entails changes in hydraulics that are difficult to reverse. In turn, alterations can trigger disasters and impair the resilience of ecosystems, which is further aggravated by the extremes of climate change and can also compromise the resilience of flood ecosystems (Vilardy, 2015). Both cases discussed in this paper reflect the adverse effects that over-exploitation and inappropriate use of ecosystems can cause.

On a different but related note, in Colombia it is impossible to dissociate environmental conflict from armed conflict. This poses a challenge for the transitional institutions that emerged from the peace agreement between the Colombian state and the former FARC-EP guerrillas. Dispossession and privatization of water resources can be considered an underlying factor in the armed conflict, and this implies that actions are needed to guarantee reparation to the victims. Recent action by the Special Justice for Peace to acknowledge nature as a victim of the domestic armed conflict is just one of the stepping-stones towards sustainable peace. This recognition must extend to rural communities who have been stripped of their relationship with water and deprived of the practices that define their identity – for example, ceasing to be a *riberaño* (meaning riparian or riverside dweller), a fisherman or a *playonero* (a local concept to refer to people who use floodplains to grow rice, aubergines, plantains, and other varieties according to seasonal flood cycles).

The cases we have analysed are a good illustration of how the Colombian state has directly or indirectly favoured and legitimized visions and development models that polarize water management. On the one hand, agribusiness is allowed to use, manage and interrupt hydrological sources whilst, on the other hand, the communities that managed traditional irrigation systems are left out from both decision-making scenarios and direct water use. Therefore, there is an urgent need to reassess the local ecological knowledge that historically enabled the sustainable use of swamps and rivers prior to abrupt changes in patterns of occupation and development.

In addition to ecological decline, both our cases show that the privatization of water through formal or informal irrigation infrastructure has led to changes in collective tenure and has generated a new legal ownership of ecosystems that should belong exclusively to the

public domain or to the community. As this trend towards exclusion continues, native communities may face problems such as cultural extinction due to their reliance on the land (García, 2019).

In view of all the above, it is essential to continue investigating and discussing the privatization of common goods such as water within transitional justice scenarios, and to construct governance practices that take hydraulic justice seriously. It is imperative to unravel the management and planning policies that have promoted and legitimized the fencing off, exclusion and commodification of ecosystems (Brockington & Duffy, 2011). Meanwhile, in Colombia the debate and search for recognition of the right to water continues. There has also been a certain interdisciplinary flourish in the development of predictive models and socio-ecological analyses which focus specifically on basins and hydrological systems. All these efforts have the potential to help restore rivers and swamps, bringing them back to optimal levels of use. In parallel with technological and theoretical advances, now is the time to promote an ethically based and critical debate on the distribution of water. The aim should be to overcome the unequal realities that are condemning local Caribbean communities to cope with life amid the murky waters sullied by agribusinesses.

Note

1. In 1961, Colombia paved the way to agricultural reform with Law 135. The period of greatest impetus occurred during the liberal government of Carlos Lleras Restrepo, which, amidst strong tensions between political parties and landowners, managed to drive an administrative process to grant smallholdings to poor peasants (from the state and from private unproductive lands). An unprecedented peasant movement that politically organized and led the agricultural reform was also set in motion in the country. For a detailed explanation, see Thomson (2011).

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2.2 Artículo II

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Article

Contributions of Intercultural Socioenvironmental Justice to the 2030 Agenda in the Colombian Caribbean

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Abstract: The 2030 Agenda has influenced the design of public policies in Colombia and other countries in the region, but there are many gaps in the way a global policy can be interpreted and adapted to the territories. Thus, this article aims to critically evaluate the public policy of sustainability implemented in the Colombian Caribbean and to suggest contributions from an intercultural socioenvironmental justice perspective. For this purpose, the public policy of sustainability that orients the plans for the use of insular ecosystems in Cartagena de Indias has been examined and confronted with local evidence that shows significant changes in the forms of life and ecological degradation in multi-temporally analysed coverages. Methodologically, this research is based on three aspects: the theoretical discussion of the notions of sustainability and justice in public policies, spatial databases to analyse the transformation of landscapes and ethnographic work with Afro-descendant peoples to recognise their socioecological systems. We found that the public policy of territorial planning aligned with the 2030 Agenda nominally includes a rights approach, but management practices or governance structures do not consider the very high asymmetry in land tenure, the growing private and non-participatory regulation of coasts and the sea or the exclusion of Afro-descendant peoples who claim tenure and autonomy rights. Then, we propose integrated dimensions of sustainability that overcome the socioecological negativity observed and articulate criteria of intercultural justice in public, social and environmental policies.

Keywords: sustainability; socioenvironmental justice; interculturality; 2030 Agenda; Colombian Caribbean; common goods; Afro-descendants



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1. Introduction

The Sustainable Development Goals (SDGs) are an ambitious set of 17 goals and 169 targets that were defined and developed through an unprecedented conversation between UN member states and local authorities, civil society, the private sector and other stakeholders. Several researchers have analysed the implementation criteria and contextualisation at the regional and local scales [1–3]. In the Caribbean, for example, as a result of analyses of social inequality, socioenvironmental conflict and institutional weakness, it is imperative to adequately localise the SDGs by recognising existing barriers in local and regional governments and the deficit in social participation in development policies [4,5]. One of the most neglected issues in sustainability policies is the relationship between the rights of Caribbean coastal and fishing communities and the protection of marine life (SDG 14). A dualistic analysis seems to prevail that places ocean conservation on one side and the rights of fishing populations that face the rigorous challenges of climate variability on the other side. Studies such as Haughton [6] and Clay & Olson [7] have already noted the decline of fisheries and the impoverishment of communities that are highly dependent on the sea.

It is important to recognise that the meanings that have been assigned to sustainability are diverse, so it is necessary to identify the concepts and practices that underlie policies that adopt notions of sustainable development in their design and implementation [1,8]. A case that allows for a critical examination of the scope of sustainability is the Colombian Caribbean, a region in which various policies overlap. On the one hand, the state has reinforced protected areas in marine–coastal ecosystems, and on the other hand, on the same coasts, real estate and hotel growth has led to a relaxation of the land market and the issuance of environmental licences that have enabled large parts of the coastlines to be transformed into areas of urban expansion for tourism use. Both conservation and hotel growth policies have generated a framework of conflict with local communities that aspire to have their rights to land and sea recognised and, thus, to facilitate their equitable participation in the decisions that transform the region and compromise their present and future way of life.

The case of Barú shows that the struggle for sustainability—that is, the effort to make a community’s way of life viable and enduring in an integral sense—is not the same as sustained or sustainable development in the terms in which public policy offers it to local communities. Tourism, conservation and real estate growth on the coasts, as will be shown, are aligned with the interpretation that the Colombian policy model applies to sustainable development. Therefore, differentiating sustainable development from sustainability is crucial [9], because the data show that the model adopted on the Caribbean coasts is unsustainable from a human and ecological point of view. The search for sustainability implies sociohistorical reflexivity regarding what is viable and what is not. Additionally, sustainability is not merely instrumental [10], since the subjects have built a model of occupation and use of nature that is based on the feasibility or reproducibility of their way of life, knowledge of the biophysical environment, commitment to future generations and affirmation of their way of life in the midst of many adversities.

In this context, the objectives of this research are: first, to critically evaluate the public policy of sustainability in the Caribbean, especially those related to the planning and management of coasts and seas; second, to analyse the changes in the island’s ecosystems based on a multitemporal study that enables a biophysical verification of the state of the ecosystems and drivers of transformation; third, to delve into the systems of use of Afro-descendant people who inhabit the island and their perceptions and interactions with the public policies that are implemented in the region; fourth, to articulate an analytical framework of intercultural socioenvironmental justice that we consider necessary after analysis of the public policies and empirical evidence from the case study; and fifth, to offer analytical and practical guidelines for public policy to more adequately assemble the ecological, social and cultural sustainability, with a serious consideration of the socioecological systems and rights of communities that are affected by the design of public and private development strategies that tend to be imposed. Thus, this research presents an in-depth analysis of a conceptual framework to analyse how certain public policies of the Colombian state apply to these territories and their implications at the biophysical, social and cultural levels in regions such as the Caribbean with ecological fragility and settlements of ancestral peoples along the coasts. Achieving sustainability requires a more horizontal understanding that takes into account the socio-diverse communities that can contribute to the goals of the 2030 Agenda.

Beyond a common dispute in the sphere of environmental governance, the Caribbean shows that these problems involve profound social differences and various actors’ valuations of the nature of common goods and how to incorporate them into economic development and conservation models. The processes of conservation and real estate development in the hotel sector are advancing in parallel with public policies that enable their consolidation. However, the agenda for the recognition of collective tenure rights is not advancing, even though Colombia ratified the ILO Convention 169 on the rights of indigenous and tribal peoples in 1991. Regardless of its legal commitments, the state has implemented a regressive approach in interpreting and recognising communities of

the islands and Caribbean coasts that do not have legal security for their lands or areas of preferential use. This approach has generated intercultural conflict, because policies developed under the protection of discourses that pretend to combine sustainability and development do not respect the historical rights of these communities, leading to asymmetrical intercultural conflict between the state and traditional communities. Thus, the situation of legal pluralism that is expressed in Caribbean coastal communities' own rights and in the legal capacity of the state is not equitable.

There are two distinct cultural strategies. On the one hand, the state, together with the private sector, dissociates conservation and economic growth from the collective rights of the communities that have ancestrally inhabited the coasts. On the other hand, the strategy of the communities does not dissociate the conservation of nature from the practice of their rights in their way of life, which has coexisted with the marine-coastal ecosystems and, despite certain limitations, allowed them to harmonise their practices with ecological sustainability to a great degree. Responses to the challenge of environmental conservation, together with the promotion of dignified ways of life, lead to diverse cultural strategies that articulate different social identities, which must be examined for both correctness and sustainability before nature, society and equity with other communities are affected by the strategies.

2. Theoretical Framework

2.1. Environmental Crisis and Conservation in Coastal–Marine-Protected Areas

While biodiversity conservation is a necessity to ensure the structure and functionality of ecosystems [11], it must always be linked to the needs of local stakeholders and their historical or circumstantial relationship with areas affected by protected area declarations [12]. In the follow-up to SDG 14, the seas and marine resources are recognised as a key indicator insofar as the oceans cover three-quarters of the Earth's surface, support 5% of global GDP, directly and indirectly generate nearly 200 million jobs and, therefore, have the potential to contribute to food security [13].

Climate change, overfishing, marine pollution and a growing list of other anthropogenic factors threaten the oceans. Many marine environments are approaching or have reached their critical tipping points, and rising ocean temperatures and sea levels are projected to push ecosystems to their points of no return. This trend has been clear since the first global integrated assessment of the marine environment, and it is even more pronounced in the data presented in the most recent UN assessment [14,15]. Among the environmental problems of greatest concern for the use of the sea are aggregations of *Sargassum* algae (*Sargassum natans* and *fluitans* species) [16].

From the perspective of ocean use, a Lancet report details the variations and increases in the sea surface temperature, which pose a threat to seafood productivity, in the territorial waters of 95 countries [17]. In fact, the catch of marine fish has decreased since 1988, while the production of farmed fish has increased. This contrasts with the per capita fish consumption, which has increased steadily since 1960; in fact, the report notes that approximately 3.3 billion people, especially those living in coastal countries, depend on seafood. Regarding coastal countries, such as those of the Greater Caribbean, the Lancet report states that, of the 146 million people living in coastal areas, 27% are living in minimal development conditions.

2.2. Intercultural Socioenvironmental Justice and Territorial Rights

We consider it necessary to introduce and articulate a third dimension, intercultural justice, in addition to the dimensions of social and environmental justice, in a visible and operative way. These three dimensions are operationalised in the analysis of public policy, the transformation of ecosystems and the social impact of communities, along with their contributions to the SDG targets, since their ways of life and sustainable practices are based on nearly three centuries of historical experience on the island.

Thus, intercultural justice requires a context of social and cultural pluralism. This implies the right of communities or peoples who have a different way of life because of a historical practice of cultural self-determination not to be discriminated against in comparison to other social actors who may in fact be favoured by public development policies. Additionally, they have the right to be actors in their own model of human development. This implies not only consultations on public decisions that affect their territory and way of life but also the capacity to make autonomous decisions about these issues.

At the same time, the systematic articulation of socioenvironmental justice with intercultural justice makes it possible to recognise and evaluate the specific contributions and responsibilities of each group and its way of life or development in terms of the common challenges of society and humanity as a whole, as well as the ecological challenges of the planet. Therefore, the intended corrections of the demands of different groups or social actors must be evaluated systematically and considered in an integrated and inseparable manner for the sake of internal equity and equity within the group itself and correctness in relation to nature and ecological sustainability. Additionally, it must not prevent other sustainable ways of life of groups affected by their own demands or the particular intended model of social development [10].

In recent decades, a growing global awareness of inequities in human development for broad sectors of global society and an ecological crisis at the planetary level has emerged. The two problems can no longer be perceived or addressed in an unconnected manner, since public responses at different scales should not prescribe strategies dividing these two dimensions that negatively affect social existence. Therefore, we must consider a socioenvironmental crisis that, in various ways, weakens and threatens natural life and human ways of life, especially among social groups that suffer the greatest inequalities. This requires not only a factual but also an ethical recognition of the interdependence between nature and human communities. The articulation of just and sustainable relations within each society also requires the recognition of a sphere of duties towards nature and other living beings. However, precisely because of this interdependence, damage to nature also affects communities, especially the poorest and most vulnerable, and their sustainability [18]. Therefore, social justice today goes hand-in-hand with environmental justice, forming an inseparable construct.

In this context, we briefly point out some milestones where demands for justice have articulated and integrated social and environmental justice due to the inseparable correlation with human existence.

Environmental justice implies analysing the historical configuration of a territory, identifying the link between the ecological and political structures of environmental conflicts and carefully reviewing the economic, political, sociocultural and historical variables that underlie environmental conflicts [19]. This process incorporates variables such as social, economic and racial equity into not only the natural base but also the ways in which the territory is created and administered [20]. In a field that seeks an equitable distribution of environmental burdens and benefits across society, therefore, individual and collective recognition of the needs, capacities and identities of the affected communities is required to ensure their effective participation in the decisions that affect them [19]. This is a precondition for a process of redistributing access to natural resources and pollution burdens.

Environmental justice is closely related to ecological distributive conflicts, since this type of conflict involves access to and regulation of a set of common goods that are disputed by various actors with unequal power relations [20,21]. Such conflict can be explained by, among other factors, the mercantilist valuation of nature that leads to regimes of the invisibility of ecosystems and those who inhabit them as imaginaries and ways of life are imposed that reduce these ecosystems and communities through an economic and exploitative rationality [22].

However, the relationships and levels of justice are not only articulated internally within each community in terms of the necessary equity among its respective members and in its dealings with nature but also must be recognised before the affected ones, before the

plurality of communities and, when necessary, in terms of different ways of life. Thus, the justice that articulates each society is also at stake in “external” relations [23]. A context of social and cultural pluralism exists both internally, in states such as Colombia, and internationally. This pluralism is not usually accompanied by relations of effective mutual recognition but is crossed by forms of power that articulate the hegemony of some groups over others and that distort and prevent equity between communities and their particular identities and ways of life.

According to Rodríguez [24], Colombia has incorporated into public policy cross-cutting pacts that address sustainability by proposing producing by conserving and conserving by producing. These pacts are associated with the goals of responsible production and consumption, climate action (SDG 13), the life of terrestrial ecosystems (SDG 15) and affordable and non-polluting energy (SDG 7).

Thus, the development of public policies aligned with the 2030 Agenda, at both the national and international levels, requires the involvement of all those affected. All stakeholders should be included in the validation of development and sustainability policies, especially in regard to the management and governance of common goods, which are an essential part of the territorial rights of Afro-Colombian peoples.

The specialised literature uses the term common-pool resources to refer to a set of ecosystems that are used by groups of actors who build adaptive relationships governed by formal and informal institutions, i.e., formal as in rules and norms, such as laws, and informal as in explicit or tacit behavioural agreements [25]. The commons are characterised by the difficulty of excluding anyone from them and by the reduction in the availability of resource units as more people or groups use them [26,27]. This implies that many actors, not always under the same economic conditions or with the same possibility of exercising power, access and use or restrict the use of resources in different ways.

The theoretical debate on the effective management of common-pool resources and their sustainability covers several spectra. On the one hand, state institutionality and the promotion of centralised rules are increasing, and on the other hand, the commons are being privatised [28]. In contrast to the dichotomy of public and private, the idea of protecting collective management systems through local regulatory arrangements has emerged as a strategy for resource conservation [26,29]. It is essential to investigate the privatisation of environmental goods and services, which, in the literature, is associated with enclosures, exclusion and commodification of ecosystems, as a nodal concept in this research [30,31]. The privatisation of land for the implementation of projects that benefit groups translates into inequality [32].

In addition, the tension between collective property and private property has been the subject of interdisciplinary analyses that differentiate between property and rights to resources. On the one hand, ownership implies formality, since rules are established and protected by states [33], and although it encompasses a set of rights that qualify tenure (open access and communal property), it can be classified as public or private [34]. Natural resources are associated with rights of access, extraction, management, exclusion, and alienation [35], which are determining factors in nested systems of use and governance. The approach based on the relationship between culture and law, such as legal pluralism, which emphasises native peoples’ own laws and customary practices that articulate or clash with formal normative systems of states with multiculturalist doctrines, is no less important [22].

One of the challenges of public policy on common goods in the context of the discourses and practices of sustainability in recent years—Ostrom detailed this challenge well into the 2000s—is the inexorable task of undertaking systematic institutional evaluations given the transformations of the problems; the positions of the actors; the patterns of interaction and the adaptive rules when confronting problems of degradation of natural systems, overexploitation, corruption and marginalisation. In addition, several authors have insisted on a transdisciplinary approach to the study of the commons and its contribution to sustainability [36,37].

3. Materials and Methods

3.1. The Colombian Caribbean as a Case Study: Barú as a Collective Space since Colonial Times

In the Colombian Caribbean, the region where the empirical cases of this research are located, there are communal lands and other common-pool resources, such as savannah and low-tide areas in the insular zone. Geographical, environmental, legal and economic studies have pointed out that these areas are characterised by richness in the functionality of their ecosystems and by being the ancestral lands of ethnic groups, mostly Afro-descendant populations [38]. However, these studies have considered the privatisation of spaces for community use and the degradation of resources that provide sustenance to native populations, particularly access to water, to be among the main problems [39,40]. In summary, the irruption of private use of collective territories is an important axis of discussion in the study of the sustainability of common-pool resources and development models.

It is well-known that the tourism industry is important in the Caribbean [41]. Much of the degradation of mangroves and other problems detailed below is the result of excessive use of coastlines for the hotel and real estate industries, which have represented and commodified the Caribbean as uninhabited leisure beaches [42]. One of these emblematic places is the island of Barú, located south of Cartagena. It is a region that has historically experienced tension between native populations and other private and state actors. Almost all disputes are related to the use, distribution, control of and access to environmental goods and services in the continental area and in the extensive marine space that constitutes the territoriality of the *baruleros*. This space is a maritorium, in the term of Ivelic & Segura [43], meaning a habitable sea without land as a limit or an obstacle.

To plan urban and rural land use in Colombia, regional governments have created land use plans and development plans. These instruments have served as the basis for the incorporation of the SDGs into local governance and are, to a great extent, the basis for the report that the state is preparing to follow up on the adoption of the 2030 Agenda in its domestic policy. A review of the Land Use Plan of Cartagena de Indias, one of the most important cities in the country and the Greater Caribbean, shows that its political, economic, and the administrative planning model is disconnected from the socioecological reality of the islands and coastal areas, because, among other reasons, it does not recognise that these are spaces inhabited by native communities. This plan was formulated 21 years ago, and recent studies have estimated that it is an insufficient instrument for 72.7% (32 out of 44) of the evaluated items [44].

Barú was not an island until 1649, when it was separated from the mainland by the construction of the Dique Canal. It is surrounded by the Bay of Cartagena and the Bay of Barbacoas and is inhabited by five Afro-descendant communities organised through legal instruments that have existed in Colombia since the proclamation of Law 70 of 1993, also known as the Black Communities Law. The immediate context is the Corales del Rosario National Natural Park, which, today, has 120,000 hectares of mangrove forests on the coastline and marine area under this figure of protection and is mainly in the immediate vicinity of the community of Barú¹. Since 2009, the inhabitants of this region have led important organisational movements in efforts to inscribe their ways of life, their territories and their political stakes in the framework of identity politics [45].

Anthropologist Carlos Duran broadly analysed the importance of the organisational life of the *baruleros* and the early achievement of the seven *caballerías* of land that today represent, above all, a symbolic foundation of a struggle that has not ceased². Duran (2007) affirmed that the community was organised around social, economic and cultural dynamics that differ from those propagated by the mestizo nation of capitalist development. The community continues to have serious difficulties in being recognised by the state for various reasons, including the rebellious character of the *palenqueros* and *arrochelados* [46].

In 1851, the year in which slavery was abolished in Colombia, the Afro-descendant settlers of Barú bought seven *caballerías* that were part of this territory; the local community retains the memory of the immense work that it undertook to pay the 1200 pesos that were the price of these lands. Wilmer Gómez, a leader and cultural manager of the community,

affirmed, “These lands were bought by 5 neighbours of Barú in representation of the whole community; they bought them on 19 June 1850, and finished paying on 27 May 1851”. The collective character of these lands fell on the acquired *caballerías*, where these five *baruleros* yielded, renounced and transferred in favour of all the inhabitants of the town the right to use and enjoy them. The public deed itself states that “the mentioned lands in no time can become private property, nor patrimony of any person or family”.

In this way, access to land was guaranteed for the entire community located in Figure 1 in an attempt to avoid what would inevitably happen years later: the individual appropriation of land. Today, Barú has a population of approximately 3000, and communal lands are scarce. The people live on an estuary protected by mangroves amidst coasts that have been privatised for the use of hotels and the luxury houses of people from outside the community. Their main common good is the Caribbean Sea, since fishing and sailing are historical practices of this community.

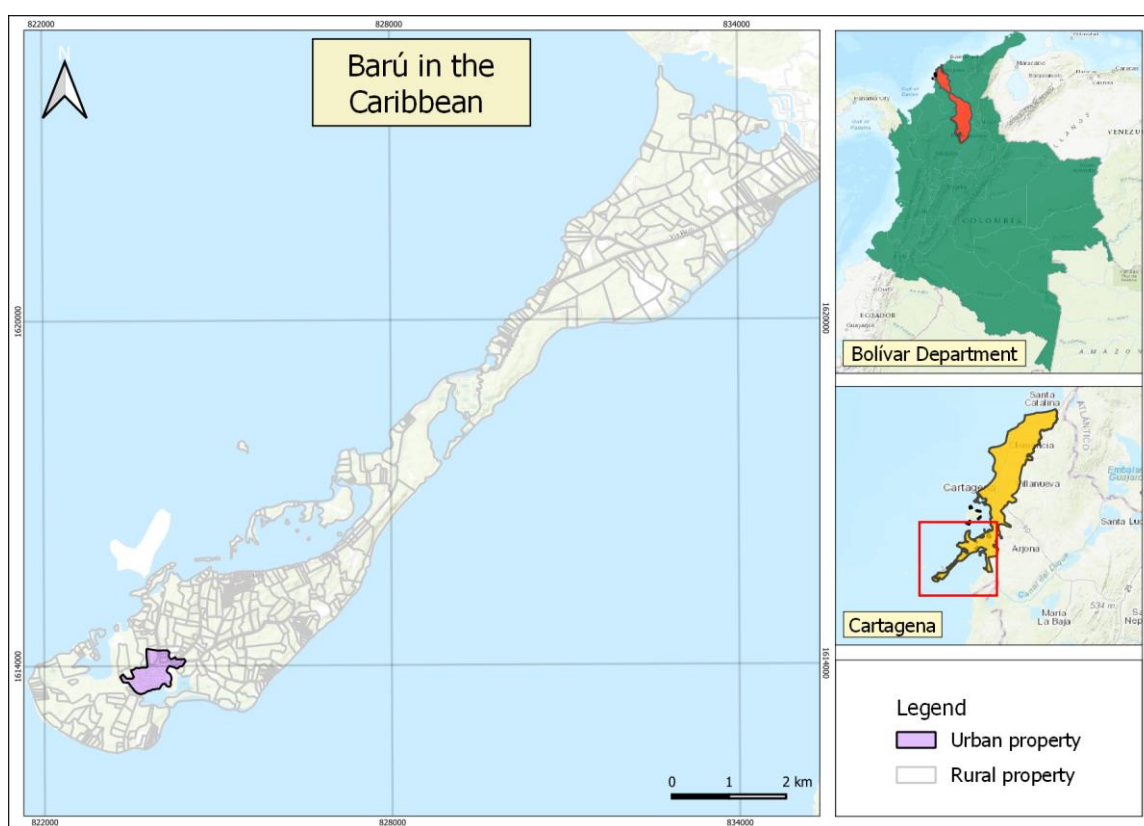


Figure 1. Location of Barú in the Caribbean.

Faced with the imminent loss of land and marine areas, in 2017, the community of Barú asked the Colombian state to award it approximately 2400 hectares as collective lands and requested that the state recognise the coasts and the sea as areas of preferential use. Community leaders inventoried the main fishing areas and estimated for at least 19,000 miles the areas of maritime use for navigation routes, links with neighbouring peoples and, in general, the sustenance of their ways of life. After many legal and social tensions, the Colombian state has still not responded substantively to the community’s request, which is inexplicable given that this community has been present in the territory for more than 300 years and has a property deed dating back to 1851. The state claims that this deed is no longer valid and that, today, the entire island is owned by people who are mostly from outside the community [47].

3.2. Methodology

The methodological strategy combined spatial analysis of coverage; analysis of cadastral mapping for tenure status and structures; fieldwork guided by focus groups, semi-structured interviews and questionnaires [48] and a documentary review of Caribbean environmental public policy aligned with the 2030 Agenda. All interviewees were fully informed about the scope and main objective of the research, as well as the subsequent use and dissemination of the collected information. Prior to the interviews and focus groups, voluntary and informed consent was requested, and the anonymity and privacy of the interviewees were guaranteed. In the community of Barú, there are currently approximately 250 fishermen, all men; fieldwork was carried out with 142 fishermen and other members of the community who are authorities of the community council. A total of 4 focus groups and 22 interviews were conducted between July and August 2021, differentiating fishermen associations and specialties by type of fishing practice and fishing gear (divers, live-bait fishing, medium and large species fishing—Serranidae family—and mollusc gatherers).

In this methodological design, various techniques were used to identify and contrast qualitative, spatial and documentary information. Thus, different levels and scales of analysis were used to identify which approaches to sustainability are followed by environmental public policies in the Colombian Caribbean and what the associated practices and effects are (see Table A4 in Appendix A). For this purpose, the results of fieldwork with fishermen's organisations and leaders of the ethnic authorities of Barú allowed us to contrast the ways in which the city's management plans, coastal area management plans and ocean regulation plans have been operationalised. Additionally, policy frameworks have been formulated since 2011 and reformulated under the guidelines of Agenda 2030 in 2015 and 2021. Likewise, an ecosystemic analysis was based on a review of the state of land cover on the island that emerged from the spatial analysis. The results are presented according to the prioritisation of dimensions of justice for the analysis.

In the spatial analysis, this region emerged as a diverse coastal landscape with ecosystems of high conservation value, such as mangroves and tropical dry forest. These ecosystems are increasingly vulnerable due to tenure and use conflicts that were documented in the research from satellite images of 1987, 2004 and 2017 available for processing and analysis through ArcGIS software and contrasted with other research from the region [47,49,50].

4. Results

The results of this research are structured in three levels of analysis according to the objectives. First, the ethnographic work provided an in-depth reading of the social and ecological conflicts that have worsened with the new public policy models that favour conservation, real estate and hotel growth on the island but do not advance with equal speed in recognising the territorial rights of the Afro-descendant population. The next level of structuring of the results details the quantitative biophysical evidence of land cover transformation, mainly the transition from natural coverage to intervened areas that show the degradation of essential natural systems for the livelihoods of local communities and the ecological stability of the island. Consequently, we show the findings of the critical review of public policy on sustainability at the national and regional levels, the goals of the Colombian state in terms of SDGs and the policy frameworks that were designed with a rights-based approach on the surface but disintegrate social, environmental and cultural criteria in practice

4.1. Socioecological Conflict from the Actors' Point of View

Many of the conflicts that have made Barú a centre of disputes over land, coasts and natural resources have to do with the imbalance in the state's regulation of the rights of use of native populations. Individual tenure and collective tenure rights are in serious confrontation. Márquez [38], Bolaños et al. [47] and the Observatorio de Territorios Étnicos [51] typified the main conflicts in Barú and proposed differentiating those originating from land sales from those originating from private and state investment projects, such as the

creation of the Corales del Rosario National Natural Park. In addition, the influence of private actors must be considered given the tourism boom and the construction of luxury houses since the late 1970s.

Today, the island of Barú is a landscape in which the dispossession and enclosure of the public is palpable, as stated by its inhabitants and as shown by the aerial photographs on Figure 2. The inhabitants have lost the best beaches and access to the sea, which has uprooted a community of fishermen and damaged the socioecological systems of fishing and agriculture. Both agriculture and fishing production declined in the 1980s, when land sales increased, national park restrictions and prohibitions were strictly enforced and the inhabitants of Barú found new jobs in tourism and hotel construction. The testimonies summarised in Table 1 show the tensions that are real obstacles to a sustainability agenda that exists only in public policy documents and the discursive framework of the state.

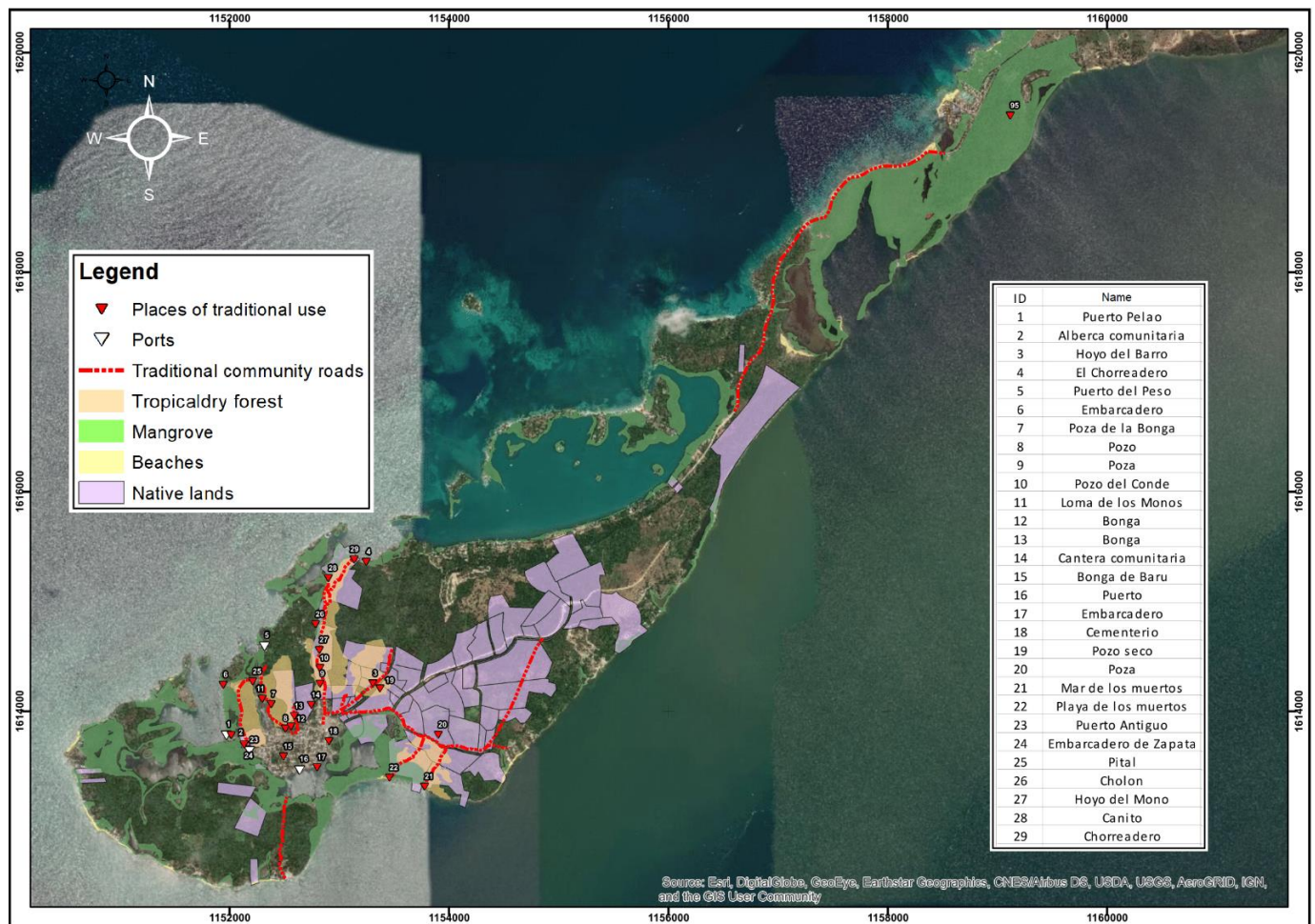


Figure 2. Community use areas on Barú Island. Sources: Spatial analysis of Google Earth images (2021) processed in ArcGIS.

Table 1. Synthesis of focus groups with fishermen.

Dimensions of Justice	Ecological	Social	Intercultural
Changes perceived by the local community related to territorial conflicts	<p>In Barú, everyone was a fisherman. Until the 1990s, the average fisherman caught up to 10 kilos, and 20 kilos in the most productive months. Species such as jack mackerel and snapper were available with little catch effort. As there were no tourist boats or jet skis, there was little noise in the sea, and the fish were not chased away. Yes, there were luxury houses on the coasts, but they had not closed the mangrove swamp, nor had they prohibited the people from approaching the ports to catch live bait. What affected fishing the most is that the luxury houses and hotels made artificial beaches and removed sea grasses, causing serious damage. Additionally, agriculture has decreased by 80%, according to the focus group: <i>“Barú Island became one of the main suppliers of agricultural products to Cartagena; we regularly sent boats and sailboats with tomatoes, loquats and bananas”</i>.</p>	<p>The arrival of new inhabitants to the island generated many changes in the forms of local organisation. Most shocking was that the native population was considered cheap labour, and their historical presence and way of life were not valued. The new owners of the island closed the beach areas that had always been spaces for community use. Most properties with access to the sea to which wealthy families from the interior of the country arrived meant the loss of the coast, the beach, and the mangroves because these owners did not allow the presence of the natives except for those who were hired for service work. The community does not understand why the state allowed beaches, coasts, and mangroves to be appropriated by private individuals and hotels.</p>	<p>Local communities enjoy constitutional recognition and differential rights. The community authorities know this and enforce it, but in very asymmetrical contexts of power. A leader commented in the focus group, <i>“As authorities of the territory, we are called to prior consultation. It is a right and an obligation of the state to carry it out for any project on the island that affects us. The problem is that the consultation has become a procedure for the community to approve the project; we are not considered, and the project cannot be modified even when we have warned that it could be harmful to the community. That is why many people say that prior consultation is a mere formality”</i>. This ignoring of the subjectivity of the fishermen and, in general, of the entire native community has led to the loss of identity references as a community. According to the focus group, <i>“Already many young people want to be employees of the hotels and are not interested in the history and life project of the community”</i>.</p>

Sources: Data obtained during fieldwork, 2021.

In contrast to the narratives and perceptions of fishermen and community members, the state has prioritised other dimensions of the SDG targets on the basis of a technocratic and instrumental knowledge system that involves little dialogue with local and ecological realities such as those of Barú. The follow-up report of the Colombian state presented in 2021 is proof [13]. In this report, the SDGs with the greatest progress are 6 (clean water and sanitation), 8 (decent work and economic growth) and 14 (undersea life). However, fieldwork and the interpretation of satellite images show that in the region analysed, there is no access to aqueducts or sewage systems, and employment of the population is reduced to sporadic hiring in the hotel sector, so SDGs 6 and 8 are still far from the targets. Regarding SDG 14, as explained in Section 4.3. the Colombian government reported some targets as being 100% in compliance by focusing its analysis only on the creation of protected areas.

4.2. Ecosystem Status

Regarding ecological sustainability, the data are convincing. Table 2 shows that coastal land cover has decreased in terms of shrublands and floodable forests, while the urban fabric and recreational facilities have grown. Highly floodable forests showed a recovery in 2017 due to community reforestation processes and the actions of environmental authorities. In the marine area, artisanal fishing spots went from 98 to only 10 fishing areas where this

activity can be practised. That is, between 1987 and 2021, the community lost access to approximately 90% of its marine territory.

Table 2. Hedging analysis.

Land Cover	1987 (Ha)	2004 (Ha)	2017 (Ha)
Dense shrubland	1,081,833	851,562	419,169
Dense highly floodable forest	1,002,868	765,026	850,652
Recreational facilities	0	26,069	31,482
Discontinuous urban fabric	0	14,823	60,530

Sources: D satellite images of 1987, 2004 and 2017 available for processing and analysis through ArcGIS software.

The environmental analysis used satellite images from 1987, 2004 and 2017 to create multitemporal documentation of land-cover changes evidencing the loss of natural covers such as dense shrubs (tropical dry forest) and dense highly floodable forests (mangroves) and an increase in artificial covers such as recreational facilities and discontinuous urban fabric. Table 1 shows the evolution of private establishments closely related to the invasion of traditional community lands. This pattern of privatisation in coastal areas has direct impacts on the community's livelihood systems, as the Barú people are essentially a fishing community that currently has restricted access to maritime areas.

According to the fieldwork, what best explains the loss of access to fishing resources is a combination of environmental regulations, the tourism boom and the consolidation of hotels and luxury houses that have privatised the coasts and navigation lines.

Figure 2 shows that most of the areas available to the community are in the interior of the island. Regarding the traditional roads that show access to the sea, three are in dispute with private owners from outside the community. The map shows that, except for the extreme southeast (points 21 and 22 on the map), there are no places for community use on the edges of the sea.

4.3. Competing Strategies and Governance

National public policies and local governance instruments in the Caribbean incorporate a rights-based approach at the rhetorical level, i.e., they are formulated with inclusive language, but in practice, there is no intercultural dialogue. For example, the Land Management Plan (POT for the Spanish acronym)³ takes a general perspective that the territory is an attractive platform on which to structure an economic development model but neglects other dimensions of sustainability. In this framework, any development is subordinated to the guarantee and viability of national and regional objectives. The general objective for Cartagena is stated as follows: "to ensure its vocation as a tourist center of the Caribbean, a competitive international port and an industrial city that promotes the reactivation of the rural area and favours the development of commerce and support services for the productive sectors" [52].

The planning and land use instruments mention "strengthening and integration of cultural identity" and "integration of the environmental dimension", but the loss of the identity of Afro-Caribbean communities is becoming increasingly serious and could be irreversible within a few years, as shown by anthropological studies in this region [38,40,46] It seems senseless to subordinate the cultural identity of the native communities to their previous integration, to the governmental system and to the actions and macroprojects of the POT. How can native communities be valued in this way? Is the POT or the institutional planning of rural space a possible scenario of articulation to process disputes over common goods? The displacement of activities due to changes in land use has forced the inhabitants to modify or disregard their ancestral practices.

The collapse of agriculture and fishing in favour of tourism or jobs in large companies has radically changed ways of life in Afro-descendant communities. The general objectives of the POT are a proposal for the development of rural and suburban land to facilitate territorial integration and articulation between different economic sectors of the district,

with the rural component inserted into and subordinate to the general component of the plan. Such territorial integration points to a standardisation of models and regulations that is contrary to the rights-based approaches that these public policies rhetorically claim to follow. Empirical evidence shows that the articulation of different territorialities and ways of life is not sought; rather, the approach is to subordinate the territoriality of the natives to a general planning vision.

The guarantee of development of the life plans and use models that the communities seek to defend remains uncertain, limiting the implementation of their own or local forms of planning with greater levels of autonomy in the management of ecosystems. The constitutional rights of Afro-descendant communities appear to be insufficient; they are in open conflict with the objectives and planning systems that are said to be inclusive and aligned with the 2030 Agenda. These communities have access to the management plans only as guests who are invited to discuss territorial distributions and systems of use, as stated in the focus groups in Table 1. There is no figure or space where there is a dialogue on the initial objectives to be resolved by the planning. This fissure is especially problematic in relation to Afro-descendant communities with widely recognised rights. There is no recognition that governance is a function of the self-determination process.

The 2030 Agenda in the Colombian Caribbean Sea

Colombia has a robust strategy for the implementation of the SDGs⁴. It has a system of strategies, monitoring, reporting and accountability that is based on dialogue with stakeholders in the different territories of the nation. In formal terms, the strategy is well-conceived in terms of operability and access to information. However, it could be improved if a model of intercultural environmental justice were adopted in socioecological spaces that require it, for example, in community territories of the Caribbean, spaces of common use or public goods inhabited by native communities that, in most cases, have not received formal recognition of their presence.

Colombia presented a follow-up report on compliance with the SDGs up to 2021. The overall percentage of SDG progress in Colombia was 72.58%, according to the official report recently published by the government [13], with 54.83% progress towards the 2030 target. The goals with the greatest lag in terms of meeting the annual targets were SDG 2 (zero hunger), 10 (reducing inequalities) and 13 (climate action). Surprisingly, SDG 14 was the only one for which 100% progress towards the annual target and the 2030 target had been achieved. This is due to the strong conservationist approach to constructing the indicators of this commitment. The indicators measured the percentage of marine water monitoring stations with an acceptable to optimal Marine Water Quality Index (MWQI) category and hectares of marine protected areas. Although these are highly relevant indicators, there was no measurement of the processes of social appropriation of the seas, the sustenance of marine life for artisanal fisheries and the socioecological crisis facing the marine environment. Therefore, these parameters are incomplete, because they do not monitor the local populations that live on the sea and whose livelihoods are based on marine resources.

The Caribbean is a shared sea, since, due to its environmental and social affinities, it has been recognised as a unit by the United Nations Environment Program and, since 1992, has been called the Greater Caribbean or Caribbean Basin. As an ecosystem, it is an extensive region of the Western Atlantic that has a complex geological history. It encompasses the entire Gulf of Mexico and the northern coast of Brazil [53].

Public policies within the framework of sustainability must situate the Caribbean as a unit and consider integral actions among the countries of this great basin [54]. Many factors of ecological fragility are facing this ocean owing to the influence of hydrometeorological phenomena that degrade agricultural production soils. For example, the impact of water temperature change on coral reefs has led to a phenomenon known as bleaching, which leads to the loss of the structure and functionality of corals. In addition, water pollution problems have resulted from industrial discharges, increases in the amount of solid waste

and the enclosure and privatisation of beaches and coastlines, which affect the structure and functionality of ecosystems, especially due to tourism.

The impacts of the degradation of natural systems are perceived in the livelihoods of the Caribbean population, and the collapse of fishing systems that have generated serious food security problems since the 1980s is of concern. Dependence on food imports ranged from 40% to 70% in Caribbean countries as of 2021, according to FAO data [55]. Therefore, it is not surprising that hunger is increasing in coastal areas and that SDG 2 has the greatest lag in Colombia.

5. Discussion

To move towards a sustainability that integrates the dimensions of justice, it is convenient to start at the beginning: understanding the territorial reality of the communities and establishing consensual objectives and plans. The shortcomings of Cartagena's territorial and environmental planning instruments should therefore be addressed and resolved in any proposal to be approved in participatory scenarios guided by intercultural socio-environmental justice. For this reason, the following is a discussion of imbalances in the sustainability model that Colombian public policy has designed and applied in this part of the Caribbean, taking the case into account to suggest and support improvements in the model.

5.1. A Disappearing Way of Life

Artisanal fishing is the basis of the *baruleros'* traditional knowledge of the sea and navigation. However, fishing is in crisis in much of the Caribbean. Variations in water temperature, agrochemical pollution, urbanisation without environmental planning, the removal of marine ecosystems and, finally, tourism are some of the causes that have been pointed out by experts on the subject, who identify fish as one of the most threatened taxonomic groups in the area [56].

In Barú, conflicts over common goods or natural resources are caused by access to legitimate tenure rights in the face of actions that may threaten them, as stated by the FAO: "Private and collective tenure are limited by the rights of others and by measures adopted by States for purposes of general interest. Such measures should be determined by law only for the purpose of promoting the common welfare, in particular the protection of the environment" [57].

Not even the creation of the protected area has allowed sea grasses and corals to recover. In fact, highly conflictive situations have arisen between natives and park authorities due to the unequal application of environmental legislation. As Gudynas stated [58], environmental conflict involves the availability of and access to natural resources and is framed within confrontations that occur in the public space between organised collective actors with different environmental perceptions, values or perspectives. Such conflict undoubtedly involves states and their environmental policies.

All these conflicts have the same effect, and the privatisation of public lands, whether reserved wastelands and/or places of traditional use by the *baruleros*, is an authentic spatial injustice. According to spatial and cadastral data, the main land sales in areas of special environmental protection have occurred in places that have access to the sea, generating mangrove clearing and filling of marshes and other bodies of water.

All of this has serious implications for the conservation of ecosystem services, as the filling of beaches and cutting of mangroves have direct effects on the general state of the ecosystems that contribute to the maintenance of fisheries, the containment of coastal erosion and the conservation of biodiversity in permanent or temporary habitats for important species.

One of the major problems of the tourism boom on the island is the change in rural land use on the lands that are the traditional territory of Barú. The public policies through which these decisions are adopted allow the development of diverse economic activities in the territories. In 1993, 140 hectares of the island were declared a tourist-free zone. In 2005,

the national government issued guidelines for the country's largest tourism project in the Playa Blanca sector, which has generated many conflicts between the state, businesspeople and natives over ownership of the land and use of the beaches, which are essential to one of the traditional livelihoods of many families in the native communities.

As of 2021, more than 45 public–private investment projects had been identified on the island; of these, the inhabitants considered that 30 were generating greater pressure on the limited spaces available for the natives. Even with the achievements in prior consultation as a protection mechanism, the businesspeople–state–communities relationship continues to be very unequal, as do the environmental impacts and contradictions, with respect to the possibility of safeguarding territorial rights and local governance of natural resources.

The rise of tourism has proletarianised the islanders' way of life, which was formerly autonomous. This implies dependence for the inhabitants on the companies that have control over the economic activity and, therefore, implies an asymmetrical social relationship. Thus, we can recognise greater justice in a greater capacity for self-determination in the economic sphere not only in a political and cultural sense but also in real equality for these members of society in relation to other actors.

Fieldwork with the fishermen of Barú has enabled us to accompany the reflective exercises led by the community authorities (community council) from a collaborative approach based on academic knowledge. Although the capacity of scientific work in political transformations is limited, the results of this type of research contribute instruments and other points of view to the advocacy strategies of the communities with the state, the private sector and their own members.

5.2. Half-Hearted Justice

The Barú community was closed to outsiders for decades after the collective title was granted in 1851. The strategy was to conserve the territory: to remain and not give outsiders an opportunity to take it, even if this implied some drastic measures. Barú community leader Wilmer Gómez recalled, "At that time there were only *baruleros* in the territory because they would not let you marry outsiders. It was like a condition to maintain the territory" (interview, 2021). This helped to strengthen community life, as reflected in agrofood practices where planting was done without wires and with natural boundaries such as painted trees. In Barú, it is said that, at least until 1940, people owned the harvest but not the land; the land belonged to everyone [46].

Together and on a daily basis, the inhabitants were defining the community use of places within and outside the town. The coconut bonanza began at the end of the 1860s and lasted for more than 80 years. It not only energised the economic life of the inhabitants but also became a strategy for the occupation and settlement of neighbouring lands, such as Islas del Rosario and the San Bernardo Archipelago, where *barulero* farmers arrived to plant and care for the crops and then settled permanently [46].

The coconut crisis in 1950 reinforced fishing and the arrival of large tourism investors to buy the lands of peasants who were desperate because of large losses on their farms and the lack of state support. This situation generated the main conflicts that still exist today in the region. These conflicts are based on socioenvironmental inequality in accessing the best ecologically endowed areas: access to fresh water, access to beaches, better-drained areas and the presence of mangroves and other forest cover.

At present, the native communities of Barú and the neighbouring islands that have participated in prior consultation scenarios believe that reformulating the public policy of sustainable development is indispensable, since it does not fit in the same equation as promoting private investment and conservation areas and excluding local communities. That is not what the 2030 Agenda is about or what the SDGs are aiming for. The commodification of ecosystems that reinforces inequality does not contribute to sustainability.

In this reformulation or reimagining of public policies for sustainable development, based on Ostrom's postulates [26], access to information is crucial. For example, local communities must have comprehensive data to understand the implications of state and

native community lands for multinational hotel companies. If access to information is partial and unbalanced as a result of ill-considered prior consultations between the state, private actors and the community, as Ostrom stated, actors must make choices based on incomplete knowledge of all possible alternatives and their likely outcomes.

All this occurs in a contradictory universe, since the Colombian government promotes private investment as a way for the country's economy to recover in the post-conflict scenario but neglects the socioenvironmental conflict resulting from the privatisation of common goods [59]. In the design of policies that are aligned with the 2030 Agenda, false social inclusion is evident since the autonomy of Afro-descendant communities is recognised. However, the participation and information of these communities are limited in the scenarios of large tourism investments in their ancestral lands. This design creates a whole arsenal for new social and ecological conflicts.

Thus, a problematising look at sustainability policy in the terms that intercultural socioenvironmental justice demands can contribute to the repertoires of Afro-descendant social movements, which generally address land claims and biodiversity conservation in an articulated manner. Currently, the main social movement in Colombia is the Proceso de Comunidades Negras (PCN for the Spanish acronym), which has managed to reposition the policy of collective land titling in the framework of the Peace Accord [60] and generated scientifically informed positions on climate vulnerability and the contribution of peoples to biodiversity conservation⁵. The community of Barú has participated in political processes promoted by the PCN, but the movement's interest in the situation of coastal peoples and their claims for rights to the use of the sea remains scarce. Thus, this research can find areas of debate that contribute to the necessary transformations of environmental governance in the Caribbean.

5.3. Guidelines for Bringing Intercultural Socioenvironmental Justice Closer to Agenda 2030

From a critical perspective, in the implementation of the 2030 Agenda, the negations that can arise through public governance when other actors, points of view and integrated dimensions of sustainability are marginalised must be identified. In addition, this denial must be overcome through the integration of actors, perspectives and dimensions that are treated in a disjointed manner. To this end, certain guidelines are proposed to integrate critical factors (an improvement of contextual knowledge and implemented policies) and potential factors for a new action to overcome negations.

- (1) An expansion of the theoretical framework is necessary for the understanding of a critical analysis of SDG policies.
- (2) The social and cultural conflicts between the asymmetric actors (state, private sector, local community) existing in the territories of SDG implementation that cannot be uncovered through conventional analyses and that are reduced to public actions to achieve the SDG targets should be considered.
- (3) The implementation of policies aligned with the SDGs cannot disarticulate the systemic and co-dependent nature of the relationship between different goals and their targets.
- (4) The differentiated contributions of local communities with their own ways of life to the SDGs with respect to the contributions of states should be recognised. Therefore, it is a matter not only of allowing communities to participate but also of maintaining the capacity for the self-determination of culturally differentiated local actors in the orientation of local public policies.

In the specific case of Barú, the Colombian state is currently waiting to resolve the request for a collective title presented by the community. If the state grants this collective title, this would help provide a formal basis of recognition that would strengthen the roots, land tenure security and use of common goods from governance and integral sustainability schemes (tenure rights, recognition of the autonomy of the Afro-descendant community, dialogue between territoriality models, and the conservation of the social-ecological system).

As has been argued, Afro-Caribbean peoples do not have a vision of the territory that rejects conservation or economic growth [46]. On the contrary, they are aware of the degradation of the natural system and the decline of fishing. The arrival of the hotel and tourism sector has not only brought problems but also boosted the local economy. However, the models that have been implemented embody only partial sustainability. The community actors see the effective recognition of their rights stagnating, the ecosystem degrading and the state and other actors leaving them without the capacity to develop their own model of socioecological sustainability.

The guidelines for intercultural justice then result from the contrast between and critical examination of the two strategies: that of the state and private actors on the one hand and that of local communities on the other hand. There is intercultural justice when the way of life of the community that is affected by the public policies in question is not impeded. In a situation of power asymmetry, traditional community governance cannot be assured given the impossibility of imposing it by public coercion; thus, the recognition and cooperation of the state are required for its continuity. Although the state formally recognises the communities, at the same time, the full exercise of their rights is impeded because the state, with its conservation policies, limits the native population’s access to fishing and navigation zones and favours and legitimises the introduction of new actors from the private sector, which also impedes the collective way of life.

The systematic articulation of the three dimensions illustrated in Figure 3 represents a proposal to examine and guide marine–coastal public policies aligned with the 2030 Agenda in Colombia. The case of Barú shows that at all three levels, there are obstacles that prevent the integrated achievement of sustainability.

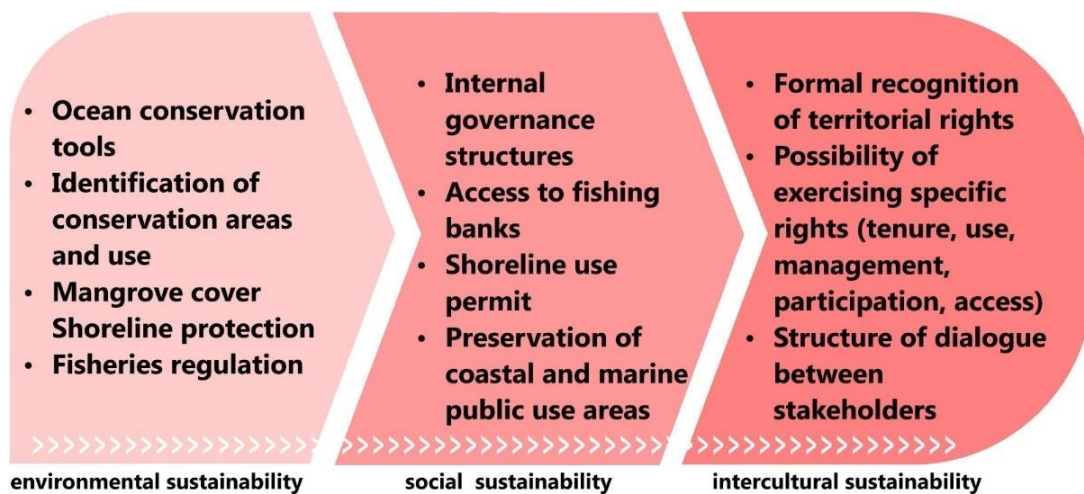


Figure 3. Variables for examining the degree of intercultural socioenvironmental justice.

Governance arrangements are supposed to be mechanisms for addressing socioenvironmental crises and problems such as ecological-distributive issues [61], the degradation of natural systems, environmental justice or overexploitation. However, the intercultural character is often omitted from these environmental governance arrangements [10]. The Colombian Caribbean shows that problems of inequity in land distribution, a lack of participation in environmental policies, unequal distribution of rights to natural resources, human rights violations, food insecurity and exclusion of communities, among other factors, hinder the implementation of truly sustainable strategies. Exercises of power are determinant in environmental governance because the allocation, control and coordination of resources are influenced by the actors favoured in decision-making [62]. The rights of authority in decision-making associated with private property, in terms of power, favour those who formally own the land [63].

According to Arrieta [49], even if the community of Barú manages to persuade the Colombian state to issue the communal property title of the island, a large part of the spaces that were formerly areas of collective use have already been privatised. Privatisation has transformed the territory biophysically and has promoted other imaginaries among local inhabitants about the beaches, as well as notions of what is public and what is restricted. This new rationality that comes with private investment and that has used deforestation for the construction of hotels and recreational houses is changing the notion of the collective and fracturing community cohesion.

The study of common goods and multilevel governance tends to be based on a restrictive political theory in the understanding of inequalities and asymmetrical systems of rules and norms. The Caribbean cases, from which progress on the SDG targets is reported, do not include an adequate characterisation of the conflicts generated by the policy itself that allow little room for manoeuvring for native populations who are witnessing the materialisation of restrictive policies that degrade their livelihoods and ways of life.

Such degradation involves marine areas, or the *maritorium* (marine territory). Oceanic spaces are socioecological systems, so they cannot be monitored exclusively on the basis of data from meteorological stations or protected areas, as is currently reported in the degree of progress towards SDG 14. These places considered inhabited seas have deteriorated owing to factors such as over-occupation of the coasts, which increases the risk of flooding for local fishing populations.

The strategies analysed (state and private actors and community) define a space that is endowed with meaning and content as a way of articulating a social presence differentiated and differentiable by the mode of political articulation (state vs. communal) and economic articulation (which divides the territory between conservable and exploitable vs. integration of economic activities on a continuum of human use and enjoyment and conservation throughout the territory). This is a model of rationality that De Certeau [64] defined as scientific sense: the knowledge of the environment that expresses dissociation between a contemplative knowledge applicable to the protected reserve area and a model of strategic rationality that is projected in the exploitable zone vs. a reproductive rationality [65] in which reproduction of community life is linked to the sustainability of the natural world.

6. Conclusions

First, we believe that current governance in the area under consideration does not integrate the environmental and social dimensions and respect for the cultural identity of local communities. Although the designs of public governance carried out thus far have mentioned the need to articulate these three dimensions in economic, industrial and social development policies, these dimensions of development, the fruits of a modernising strategy, prevail over ecological preservation, increased levels of equality and freedom for local communities and self-determination of their way of life.

Second, and in view of the above, the dimensions of ecological, social and intercultural sustainability and justice, which, in some ways, are rhetorically present in public policies, cannot be considered separately, since they are interdependent. The systematic nature of the dimensions that integrate intercultural socioenvironmental justice demands that the three levels, owing to their mutual co-dependency, be integrated into the public policies of the 2030 Agenda and applied in governance policies. Socially balanced development that respects nature and the plurality of humanity must be a consequence of the integration of the levels of justice and sustainability and is not compatible with a development strategy that takes precedence over these levels or disarticulates them.

Third, a comparative examination of the degree of justice and sustainability between the two strategies considered here, the modernising public–private social development strategy with a predominance of instrumental rationality and the community development strategy that assumes a reproductive rationality [65], shows not only the differences noted above but also the greater capacity of the latter strategy to combine human development, equity and sustainability in an integrative manner. In this sense, this strategy is relevant

and pertinent in promoting the objectives of the 2030 Agenda, particularly goals 2, 10 and 14. One of the best elements of Barú, as in other islands of the Greater Caribbean, is that the character of the collective is not mere rhetoric, nor is it reduced to a proclamation of the customary rights of Law 70 of 1993. In fact, Barú, both in the period of slavery and in the early days of abolitionist measures, was a unique example of community organisation and collective access to land and sea. Thus, this island is a case of enormous importance to show the impacts of modernising policies in the Caribbean and the current treatment of Afro-descendant populations by public policies for sustainable development.

Fourth, the Colombian government, within the framework of the 2030 Agenda, recognises that the increased pressures on ecosystems—which have diminished their functionality and supply of ecosystem services—also expose limitations in the generation of knowledge and research on oceanic issues [13]. This raises the challenge, according to the government, of articulating different disciplines to generate knowledge that supports decision-making and achieves greater socioenvironmental justice. However, the intercultural dimension of justice is not operative, since the government has not considered that, to generate better interventions from the public sector, this same generation of knowledge must include local communities: the people who know the sea and who have carried changes in their environments and their ways of life in their memory and in their local ecological knowledge. This intercultural barrier of not validating the knowledge of fishermen and not considering them valid subjects in a scientific conversation about the SDG targets is one of the great obstacles to sustainability.

Fifth, in this sense, we reaffirm the complex and integrated consideration of a public policy perspective that necessarily integrates intercultural socioenvironmental justice to treat traditional communities with equity and to recognise and position them as necessary actors in the struggle for sustainable human development, which integrates diversity and human wealth. Thus, research such as this study can have a practical impact on the community. Part of the reflective exercises led by the community authorities (community council) is to collaborate with fishermen in demonstrating how their way of life is reconfigured, and the community authorities are accompanied and complemented by academics with new approaches and instruments that become strategies for advocacy within and outside the collective.

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Appendix A

Table A1. Instrument designed for recording and guiding semi-structured dialogues with stakeholders about the sustainability dimensions.

Spaces Regulated in Land Use Planning Policies (POT)	Type of Stakeholder Involved	Main Changes Perceived in The Natural System (Ecological Sustainability)	Major Perceived Changes in Livelihoods and Ways of Life (Cultural Sustainability)	Forms of Participation of Native Communities in Governance Decisions
Beaches				
Shorelines for navigation				
Weighing shallows				
Mangroves				
Floodplains for community agriculture				
Tropical dry forest areas				

Table A2. Instrument designed to facilitate focus groups with community members.

Level 1: What explains the ecological and social changes on Barú Island?		
Factors	Consensus	Disagreements
Stakeholders involved		
Periods or milestones		
State participation		
Community participation		
Participation of people from outside the community		
Guarantees of prior consultations (Con. 168 of the ILO)		
Other		
Level 2: Effects on cultural and ecological sustainability (depending on the corresponding group, emphasis is placed on certain biophysical or identity-related areas).		
Main impacts		
Food security		
Free movement		
Cultural practices		
Transmission of knowledge		
Other		

Table A3. Instrument to guide dialogues and focus groups about the valuation and local perception of the ecological and cultural effects on the management of the commons caused by the privatisation of coasts and other areas that have been administered by the community.

Common Goods Regulated in Sustainability Policies	Sentences or Statements That Coincide with the Local Perception
1. The beach	<p>1.1 The change in the regulation of the beach with the arrival of private projects has negatively affected the community.</p> <p>1.2 The community has been able to adapt to the changes brought about by the restriction of use of former community beaches.</p> <p>1.3 The loss of community beaches (which are now privately controlled) irreversibly damages the livelihoods of the people of Barú.</p> <p>1.4 The establishment of private beaches does not negatively affect local communities.</p> <p>1.5 The establishment of private beaches brings benefits to local communities.</p>
2. The coastline	<p>State understood as the Maritime Directorate (DIMAR) and National Natural Parks</p> <p>2.1 The regulation exercised by the state authorities to order the navigation lines negatively affects fishermen and navigators of the community.</p> <p>2.2 The community has been able to adapt to the changes and restrictions imposed by the state's coastal and navigational regulations.</p> <p>2.3 The loss of areas for navigation and fishing along the coastline causes irreversible damage to fishing activities and free circulation in the Barú Sea.</p> <p>2.4 The establishment of regulations for navigation and fishing in the littoral does not negatively affect local communities.</p> <p>2.5 The establishment of restrictions on coastal navigation and fishing brings benefits to local communities.</p>
3. Mangroves	<p>3.1 Regulation of mangroves by actors outside the community (outsiders, private) negatively affects fishermen and boaters in the community.</p> <p>3.2 The community has been able to adapt to the changes and restrictions on the use of mangroves brought about by external actors.</p> <p>3.3 The loss of mangrove use for fishing and recreation generates irreversible damage to local communities.</p> <p>3.4 The establishment of mangrove access barriers does not negatively affect local communities.</p> <p>3.5 The establishment of mangrove access barriers brings benefits to local communities.</p>

Table A4. Levels and scales of analysis to identify sustainability approaches in environmental public policies in the Colombian Caribbean.

Scales	Levels of Analysis	Materials	Methods
National (Colombia)	Degree of incorporation of environmental, social and intercultural dimensions into the formulation of goals and projection of policies aligned with the 2030 Agenda	- Public policy documents - Follow-up reports - Government plans and land-use plans formulated as of 2015 (as a milestone in the formulation of the SDGs)	Documentary review and contrast of sources based on categories of analysis
Regional (Cartagena Island region)			
Local (Barú Island)	Environmental, social and cultural sustainability policies actually implemented Effects of 2030 Agenda public policies on local livelihoods	- Satellite images for analysis of land-cover status - Socioenvironmental diagnoses formulated by state environmental authorities and management plans formulated by the communities	Land cover analysis through the multitemporal contrast of satellite images available for the analysed island (using ArcGIS software)
Microscales (spaces for collective use)	- Common property use practices - Implications of community livelihoods	Systematisation of interviews and focus groups with fishermen and other inhabitants of the island	Focus groups (4), semi-structured interviews (22) with a scope of 142 people contacted

Notes

- ¹ It was declared a national natural park in 1977, and the area has been expanded in subsequent decades. The entire coastal area of the community of Barú is within the national park, so the competent authorities in the management of the area regulate the uses of the ecosystem in this community.
- ² *Caballerías* is a unit of measurement that has existed in the Caribbean since the colonial period. Its equivalence to the current metric system is not clear. In modern agrarian procedures, the state entities in charge study each case individually to determine the equivalence in hectares.
- ³ The Land Management Plan (POT for the Spanish acronym) is a technical instrument with a legal scope that each municipality of the country prepares to plan and organise its territory. Its objective is to integrate physical, socioeconomic and environmental planning, which must be conducted in consultation with civil society. It has existed since the issuance of Law 388 of 1997.
- ⁴ See document Consejo Nacional de Política Económica y Social (CONPES 3918 of 2018). <https://colaboracion.dnp.gov.co/CDT/Conpes/Econ%C3%B3micos/3918.pdf> (accessed on 2 April 2022).
- ⁵ It is increasingly visible that expert panels and decision-makers in environmental policies are recognising the contributions of indigenous peoples to biodiversity conservations. For example, the Glasgow Climate Summit considered increasing the direct funding to native peoples and local communities and recognised the importance of closing the gap in access to secure tenure rights in environmentally important areas such as Barú.

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2.3 Artículo III

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Article

Environmental History and Commons for the Colombian Caribbean Challenges

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Abstract: Environmental history, as a field of analysis and transdisciplinary study, aims to explore the interactions between society and ecosystems from a deep understanding of how relationships between human groups and natural systems change over defined periods of time. This article seeks to delve into the environmental history of the savannahs of the Cesar department in Colombia, documenting the milestones in the privatization of the commons and the degradation of social–ecological systems. Methodologically, satellite images and aerial photographs are analyzed to determine the changes in land cover that reveal the state of the ecosystems, and an ethnographic approach is used to document the perception and valuation of local Afro-descendant communities in the region. The article shows how, over the last 60 years, land-use planning models have favored individual appropriation practices and agroindustrial models over collective forms of pastoralism and small-scale agrifood systems. It also documents the main socio-ecological impacts and the conflicts implicit in different tenure models that should be taken into account in the various public policies related to sustainability, peace building, and the recognition of territorial rights in the Colombian Caribbean.

Keywords: environmental history; sustainability; commons; Afro-descendants; Caribbean



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1. Introduction

Throughout most of the 20th century and particularly during the consolidation phases of agricultural development models, the heterogeneity of ecosystems was seen as a problem for increasing production due to the difficulties in standardizing agroindustrial processes [1]. However, at the end of that same century, nature gained significance, and biodiversity conservation policies were included in Colombia's land-use planning models [2,3]. However, by that time, the process of the transformation of terrestrial and marine ecosystems was already drastic [2,3], and the consequences for aquifer recharge areas and savannahs in the Colombian Caribbean were particularly adverse due to the degree of habitat transformation, deforestation and the loss of ecosystem services [2,3]. In Latin America, the transformation of natural ecosystems to agricultural cover at different scales is taking place in the context of climate change [2], with substantially adverse consequences for local communities and ethnic peoples.

The landscape in the inland regions of the Colombian Caribbean, also known as the dry Caribbean, changed from plains and tropical forests to agricultural scenes of cattle ranching, rice fields, cotton crops, oil palm plantations and other rural economic activities. With these changes, sometimes interrupted by armed conflict or favored by that same violence [4], rural societies were also transformed and adapted their ecosystem practices under conditions marked by the inequality of the agricultural modernization model, which has denied the value of the knowledge and practices of Afro-descendants and other local communities [5–7].

Based on an environmental history approach and the socio-ecological perspective of sustainability, this article examines the transformations in the social and natural systems

of the savannah and floodplain areas of one of the main basins in the Caribbean, the Cesar River, with particular focus on the strip of the Valledupar region populated by Afro-descendants from six communities at the northern and southern ends of this rural area: Guachoche, Guacochito, Badillo, Los Venados, El Perro and Guaymaral. This is a watershed of great ecological importance due to its location in an intermediate valley between the Sierra Nevada de Santa Marta and the Serranía del Perijá (Figure 1). I will highlight the milestones in the privatization of common goods and the effects on the ecosystems and use practices of the communities, confronting the institutional models of territorial planning, especially in savannah and floodplain ecosystems, which are very characteristic of the Caribbean.

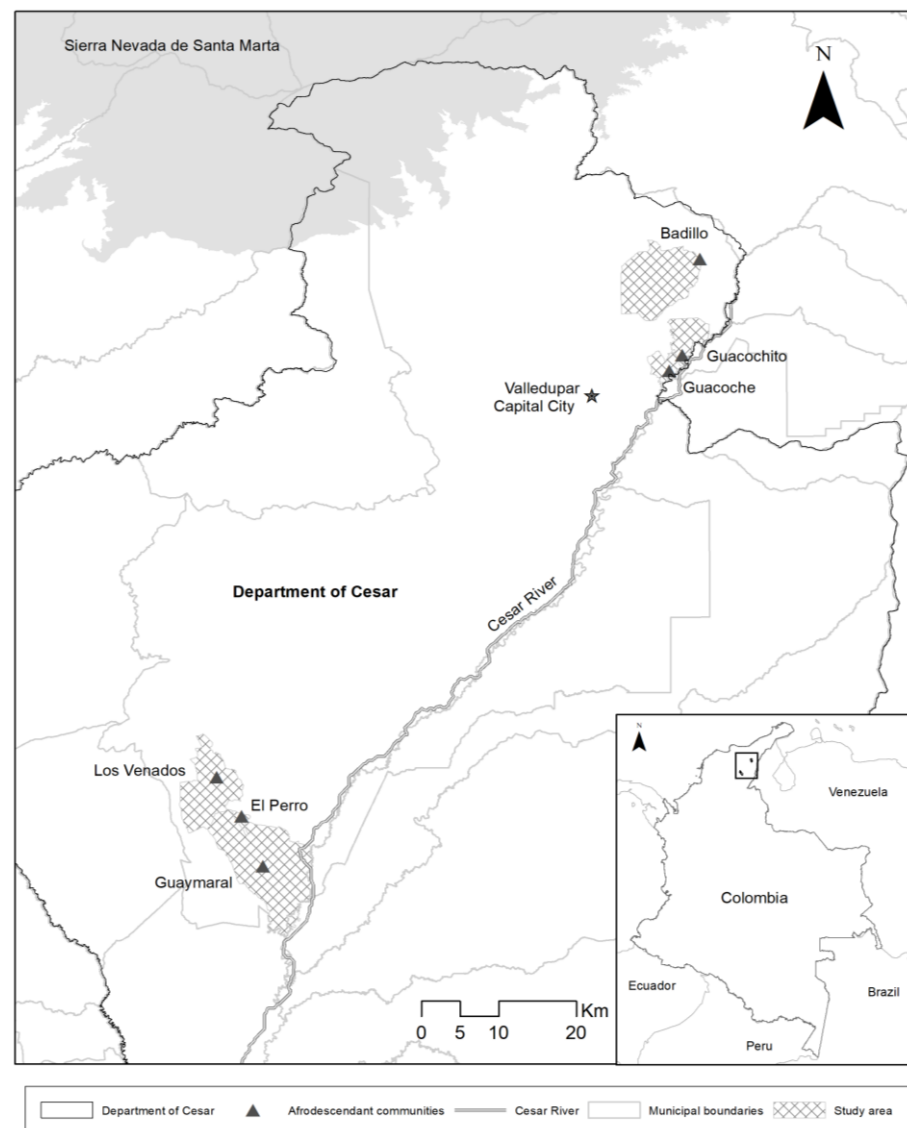


Figure 1. Study Area in the Colombian Caribbean. Own elaboration in QGIS. Open data: Political-administrative boundaries and polygons of community councils in map server of the Observatorio de Territorios Étnicos, Colombia (<https://mig.etnoterritorios.org/index.php/view/map/?repository=tf&project=JEP2021>, accessed on 12 January 2023).

To this end, the significance of this process of change in the tenure and use of this territory is analyzed in a cross-cutting manner from the perspective of social–ecological systems (SES) [6], firstly, in terms of the state failing to protect the tenure rights of local communities and, secondly, considering the state’s permission of a new status quo that

violates the communities' previous rights and legally protects new occupants, despite contradicting the public goods regime established by the state itself for these territories. Thirdly, these historical changes in the forms of tenure and use are perceived by the local inhabitants as unjust since they are violent occupations or have been legitimized by property titles of controversial origin [4,8].

Historicizing the ecological and socio-cultural transitions of the study region is the basis for identifying sustainability challenges. In turn, the environmental history of the geographic valleys allows us to contribute other public policy approaches to the new time that is dawning in Colombia: peace building, which is a new wave of agrarian reform and a more sensitive approach to the reparation of historical injustices against Afro-descendant populations and other collectives. In this context, the questions guiding this article include the following: (i) How have the social–ecological systems of the Valledupar savannahs in the Colombian Caribbean been transformed in the period from 1980 to 2022? (ii) What are the ecological and cultural implications of the change from common property tenure systems to private regimes? (iii) Finally, what are the main sustainability challenges relevant to the new political and social moment in Colombia which, under a new government, seeks to shape a model of territorial planning, ecological transition, peace building and a restorative justice approach?

2. Theoretical Framework

2.1. Brief Historical References on Uncultivated *Baldío* Lands

Environmental history is the field of knowledge that inquires into the multiple ways in which human societies and nature have co-evolved, affecting and conditioning each other [9]. Despite growing literature from an ecosystemic approach and history focused on environmental conflict, little has been produced on the environmental history of Colombia in comparison to other approaches to national historiography [10,11]. Even so, there is a rising interest in analyzing land cover changes, transitions in use systems and other types of cultural and ecological spatiotemporal processes from a historical perspective [12], to the point that a Latin Americanist methodological approach to environmental history has been consolidated, including cartographic analysis, documentary sources, ethnographic approach and other descriptive instruments [13].

This situated approach to environmental history brings great theoretical and methodological challenges, especially because of the availability of sources that enable a long-term understanding of changes in coupled natural and social systems, rather than of each level separately. A recurrent challenge in the use of cartographic sources is the availability of satellite images or aerial photographs for periods of interest that can be discussed with documentary sources and confronted in the ethnographic field. For this research, for example, quality cartographic data are available since 2000 and cadastral sources since 1970.

A part of the explanation behind the environmental history of the commons in Colombia lies in its extensive regulation [14]. The areas under analysis in Valledupar have been considered for years as public lands or reserved wastelands known as *baldíos* where certain systems of use by local communities are allowed. Explicitly, the legislation states that:

“Islands, alluvial plains and dried-up riverbeds, lakes and swamps of national property may only be awarded to peasants and people engaged in fishing of scarce resources [...] in equal conditions, preference must be given to those who are peasants or people engaged in fishing occupants. In the communal savannahs and alluvial plains that are periodically flooded as a result of overflowing rivers, lagoons or swamps, no land acquisition programs shall be carried out. [...] These areas constitute a territorial reserve of the State and are imprescriptible. They may not be subject to enclosures that tend to prevent the use of such lands by local residents.” (Law 160 of 1994, Article 69)

This law of 1994 includes considerations on land under state control that have been developed since the Fiscal Codes of 1873 and 1912 [15], which inherited doctrines of colonial origin that considered a significant part of lands ancestrally occupied by pre-Hispanic peoples to be wastelands. Thus, the origin of the *baldío* as a colonial category

is associated with the notion of *terra nullius*, adopted in the act of the Federation of the United Provinces of New Granada (1811) [15]. This act places under state control these supposed “uninhabited lands” or “deserted” lands, which would henceforth be classed as *baldíos* and, therefore, have no recognized linkage of tenure or use with a particular human community. Subsequently, the Constitution of New Granada of 1858 established for the first time that these so-called uninhabited lands and the resources of the subsoil were declared state property [15]. This legislative provision is expanded in Decree 2663 of 1994, which defines what should be understood by “*playones*” (alluvial plains), communal savannahs and other lands owned by the nation. These norms state that “communal *playones* are areas composed of *baldío* lands covered with natural pastures, which have traditionally been occupied with cattle herded in common by locals”.

That is to say that there is more than 400 years of conceptualization regarding what is considered public land, whether or not it is *baldío*, who should administer it, how it is regulated, what rights can be claimed over it, etc. However, two relevant historical events have interrupted the relatively homogeneous narrative on the state control of land. On the one hand, environmental and biodiversity considerations in ecologically significant areas have made the regulation of public-use goods stricter, especially since the 1970s, when the National Code of Natural Resources came into force in Colombia [16]. On the other hand, the consolidation of the rights of indigenous and Afro-descendant peoples introduced another legal order on land and common goods that are considered an integral part of their subjectivity. Thus, since the 1990s, Afro-descendants, in particular, have the possibility of requesting collective titling over ancestrally occupied lands, with some restrictions, including the fact that lands considered reserved *baldíos* cannot be titled. Over time, this consideration has become more flexible to the point that even insular areas have been recognized as collectively owned by Afro-descendants [17]. However, in Valledupar, the restriction continues, and the savannahs and *playones* are the state’s main claim to not recognizing collective titling rights for those who have historically lived there.

This regulatory account suggests that communal savannahs and *playones* are characterized by two conditions: biophysical and ecological characteristics and a historical, social and legal configuration based on their communal use. This means that the existence of these spaces depends not only on the conservation of their biological, edaphological and climatic conditions and elements but also on the common social use that the human groups who depend on them have established as a form of social organization and as a way of relating to the natural environment they inhabit. Thus, savannahs and communal *playones* exist to the extent that there are communities who have promoted their conservation and have contributed to their ecological configuration by means of common use practices [18,19].

Therefore, the current structure of these ecosystems is possible thanks to the human collectives who have carried out traditional occupation and use, preventing their degradation. Savannahs and *playones* cease to be communal when there are processes of private appropriation and enclosure, as is the case with the traditional lands that the communities of Valledupar are claiming today [18].

2.2. Common Property Transitions, Collective Tenure Systems and Private Regimes

Beyond the legal rhetoric regarding *baldío* goods or public lands, the spaces populated by Afro-descendants in the Colombian Caribbean usually respond to community use practices and management arrangements typical of the commons [20], and they tend to coexist with different family, individual and community tenure systems [17]. Beyond the forested areas of the Pacific, Afro-Colombian peoples have historically built complex tenure structures adapted to changing ecological and socio-political realities [21]. The theoretical debate on the effective management of the commons and their sustainability is spreading across several areas, including, on one hand, the increase in state institutionality and the promotion of centralized rules and, on the other hand, the privatization of the commons [20,22]. In contrast to the dichotomy of the public and private, collective management systems

created by local regulatory arrangements are an efficient strategy and make significant contributions to conservation [20,23].

Community tenure regimes are a distinguishable set of national laws and regulations issued by states that govern all situations in which the right to own or manage natural resources is held at the community level [24]. In the case of Colombia, there are several normative and political instruments on the matter, but for Afro-descendants it is enshrined in Law 70 of 1993, which enables the collective titling procedure and ensures the imprescriptible and inalienable nature of communal lands. This collective titling has also been a strategy to conserve biodiversity [24].

Although Colombia has a long tradition of granting collective land rights, it has focused especially on the forested areas of the Amazon and the biogeographic Chocó region (In Colombia, approximately 38 million hectares of indigenous reserves and collective lands of black/Afro-descendant communities have been titled. According to state figures, in the case of indigenous and Afro-descendant peoples, there are still from 3 to 4 million hectares that remain to be titled). In the specific case of Afro-descendants, access to collective tenure rights is crucial in other types of ecosystems that are also inhabited by them, such as the Caribbean basins, coastal areas and other inland geographic valleys where privatization schemes have been consolidated in terms of both ownership and use of land and water [25]. Where adequate governance systems are not in place, the unintended effects of privatization can have detrimental consequences [26]; it can lead to the exclusion and commodification of ecosystems and deepening inequalities [27].

In the Colombian Caribbean, the region where the empirical cases in this research are located, there are communal lands such as savannahs and floodplains that are characterized by the richness of their ecosystems and by being the ancestral land of ethnic groups, mostly Afro-descendant populations. As for socio-ecosystems, which are especially dependent on flood cycles, introducing private logics leads to the degradation of resources and the loss of local ecological knowledge of fishing communities, peasants and gatherers [28].

Although there is a prohibition on individual ownership of state lands, except via assignment programs or agrarian reform processes, there are currently private titles to public lands. This is a legal contradiction but a reality that the state tries to counteract using processes of reparation and the restitution of patrimonial assets [4]. In community tenure systems, the eruption of the notion of property generates changes in forms of regulation since property implicitly entails an element of formality with rules established and protected by states [29]. As such, collective property is opposed to individual property insofar as only by this formal figure can land and ecosystems be guaranteed for future generations since collective property receives maximum protection in Colombian legal regulations.

The formalization of land tenure is one strategy to reduce poverty [30], strengthening local governance systems and confronting the territorial control that large industries can exert by owning large tracts of land [31]. Other factors that differentially affect vulnerable communities, such as climate change, environmental risks and food and physical insecurity, are directly or indirectly related to tenure issues [30].

2.3. The Colombian Caribbean as a Case Study: The Communal Savannahs of Valledupar

The Caribbean coast, including its plains, savannahs and swamps, is a historical settlement of the Afro-Colombian population. Their presence is better known in the urban areas of Cartagena, Santa Marta and in the rural towns of northern Bolívar and Magdalena, whereas Valledupar is not part of the Afro-Caribbean imaginary. The Caribbean population that self-recognized as Afro-descendant in the 2018 census is 1,000,590. Specifically in the Cesar department, there are 142,436 Afro-descendants. The rural area of Valledupar accounts for at least 69.10%. Here, one piece of data that remains controversial is the amount of communal savannah, since the Land Use Plan states that the savannahs occupy 42,281.2 hectares, the equivalent to 9.85% of the total area of the municipality, and are located in the alluvial valley of the Cesar River and in part of the foothills of the Sierra Nevada de Santa Marta. This delimitation, however, does not take into account the more

than 10,000 hectares of savannah that exist in the other townships. Based on remote sensing sources, the existence of the structure and functionality of savannahs and *playones* is recognized in at least 28% of the rural area [18].

The AfrovalLENATA population, as these peoples are referred to in the region, has been historically linked to the savannah; its presence has several origins. On one hand, it is associated with *palenques* or settlements of black maroons, and on the other, it is associated with smuggling slaves that entered through illegal ports in the Guajira in northern Colombia. According to historian Hugues Sánchez [32], Valledupar, formerly known as Santos Reyes del Valle de Upar and founded in 1550, was characterized as a very poor frontier zone that steered its economy towards cattle raising. The presence of slaves during the 16th century stems from those who lived as maroons in the Cesar River valley and the foothills of the Sierra Nevada de Santa Marta. There is historiographic documentation from this region of the country on the slave markets in Valledupar and Valencia de Jesús. In Valledupar, there are only notarial documents that bear witness to these transactions since 1789, and, in Valencia de Jesús, the documents only exist from 1727 [32].

In local history, there is a strong appropriation of memories told by parents and grandparents evoking the existence of black populations in the region, scattered around all the basins, especially the Cesar and Badillo rivers. Several of these stories recreate a diasporic experience across endless savannahs between Cesar and the Guajira and between Colombia and Venezuela.

Further insight into the area's settlement history shines the spotlight on the 19th century. Sánchez states that the haciendas and *balldío* lands of the 18th century gave way to small sites inhabited by poor peasants leading to an expansion of the agricultural frontier towards border zones (the foothills of the Sierra Nevada de Santa Marta and the Serranía del Perijá) [33].

In the communal savannahs of Valledupar, boundaries emerged with the arrival of barbed wire in the first half of the 20th century. These landscapes were part of the wild territories mentioned by Serje [33] as a series of zones that were marginalized centuries ago from the colonial order for several reasons, including the resistance of maroon and indigenous groups and the apparent scarcity of exploitable resources.

In Valledupar, unlike other regions where there were *balldíos* at the beginning of the 20th century, there were no strong confrontations between settlers and landowners, nor were there major occupations in the agrarian struggles of the 1930s. As its rural inhabitants recall, "the lands were free" and the waters were free, and they flowed down from the Sierra Nevada and enabled productive activities and the sustainability of the ecosystems associated with the savannahs and *playones* [6]. The Garupales, Badillo, Sagarriga, Gutapurí and Cesar rivers are some of these important watersheds that have been depleted since 1950, to the extent that various business and state actors have fenced off the plains and privatized the shallows and other alluvial spaces for cattle ranching, rice fields and oil palm monocultures to the detriment of the *balldíos*.

With the arrival of new actors in the savannahs during the last century came the cultivation of commercial rice in 1950 and agricultural modernization with cotton crops, followed by oil palm in the 1980s in the villages of Badillo and Alto de la Vuelta. Native rice varieties were gradually disappearing, as were the *playones* where they were planted. This meant damage to the agrifood systems and a phenomenon of gradual land and water grabbing that would happen years later in other regions of the Caribbean [8]. As described by Borrás, Kay and Wilkinson [34], land grabbing can also be derived from local fencing as an effect of global capitalism dynamics [35,36]. Before these interventions, Afro-descendants were mostly shepherds, fishing communities and gatherers. All of these were sustainable activities that did not generate major disturbances in natural cover [33]; on the contrary, they represented an adequate management of ecosystems that naturally oscillated from water stress to periods of flooding. Geographers and anthropologists have documented that these are practices of coexistence within natural systems [28].

Currently, Afro-descendant communities are organized based on the figure that legally qualifies them as authorities in the territories: community councils. There are more than ten councils in the municipality, but this research focuses on those along the Cesar River (Figure 1) due to how important their lands are in the national discussion on reserved *baldíos* and the necessary review of the restrictions on collective titling, which have meant that today, 12 years after presenting titling requests to the state, not a single title has been granted to the communities of Valledupar [18].

Given that this region was the scene of the armed conflict, the state has implemented some reparation measures for the victims. The communities covered in this study have requested the right to territory, autonomy and the right to lead their own development model as a measure of reparation. The acts of violence that caused confinement and forced displacement date back to 1996 with the arrival of paramilitary groups [4]. For all these reasons, the current transitional justice policy, particularly the Special Jurisdiction for Peace (abbreviated as JEP in Spanish), has included this region among the cases under analysis.

3. Materials and Methods

The methodology combines cartographic sources, especially those derived from remote sensing, and field data collection guided by a socio-ecological approach and ethnographic tools such as interviews (49), focus groups (3) and tours conducted at two points in time (October–November 2019 and September–October 2022) (The field phase was interrupted by the pandemic period that prevented mobility between cities and urban centers due to lockdown. For this reason, there were two phases of fieldwork with members of the community councils defined by the ethnic authorities of the territory) [37].

I carried out the collection of primary sources in close coordination with the authorities of the community councils. Given that the research subjects belong to ethnic communities, the methodological design was discussed and adapted to the conditions of the collectives involved. Thus, to define the representativeness of the participants in the research, in dialogue with the leaders of each community, people were identified who were knowledgeable about the different socio-environmental dynamics and ways of life of the local communities due to their experiences as shepherds, fishermen, agriculturists, monoculture workers and teachers in local schools; their leadership; and their time spent in the territory. The selection of participants was intended to ensure qualitative representation, in terms of what geographer Meghan Cope considers relevant, to find out why and how certain activities and events occur in environmental problems based on ethnographic instruments adapted to the local realities [38] (Table A1). Additionally, it was taken into account that the area of the community councils is very heterogeneous; for example, Guaymaral exceeds 11,000 hectares, while El Perro does not reach 300 hectares. These sizes greatly contrast with the size of their individual populations. For this reason, there are variations in the number of people interviewed in each community (Appendix A).

The fieldwork was guided by two different instruments: focus groups and semi-structured interviews. Given the intention of the research to delve into the changes and transitions from public goods/communal lands to various privatization schemes, these focus groups were guided by the cartographic inputs and results of the multi-temporal analysis to discuss with local communities the causes and implications of the changes detected in the remote sensing (Table A2). Taking into account that some of the people interviewed are victims of the armed conflict, three interviews on the current reparation process and the respondents' participation in the peace tribunal appearing on environmental crimes were conducted by telephone at the request of the community authorities to ensure confidentiality [39]. Finally, triangulation was applied to the multiple research methods used to collect the data and the contrast between the spatial data, usually in alphanumeric language, and the descriptive and reflexive data obtained with ethnographic instruments [40]. Triangulation was also applied to the results' divergence from previous research and their dialogue with governmental information on land formation, land use and regulation of public-use goods.

As for the cartographic analysis, it focused on the areas involved in the collective titling requests that the communities have submitted to the state. The polygons drawn by these areas on the map are available in the database kept by the Observatory of Ethnic Territories of the Javeriana University. The years 2000 and 2022 were established for the analysis due to the availability of images for the northern and southern zones. An image from the Landsat 7 satellite (LE0700805320000204) was used for the year 2000 and from the Landsat 9 satellite (LC0900805320220115) for the year 2020 [41]. After obtaining the main inputs, the Google Earth Engine platform was used to run the analysis [42].

First, the satellite images were corrected [43]. The corrected images were then cropped down to the community council layer. The land cover analysis was classified into pasture, shrubland, water bodies and urban fabric. For the supervised classification, the random forest learning classifier was used, which was fed with 195 polygons for the year 2000 and 284 for the year 2022. These polygons were delimited and classified by means of photointerpretation in Google Earth. The random forest classifier was configured to categorize based on 5 decision trees [44]. Subsequently, area-cover landscape metrics were obtained to make an interpretation of how land cover and landscape structures have changed in community councils over the 20 years of the increased impact of privatization [45].

Finally, to gain a deeper and better understanding of the realities of the landscape, a buffer with a 2 km radius was set from the urban centers of Guacochito, Badillo, Guacoché, Los Venados and Guaymaral, and the previously obtained classification layers were cropped from these buffers to calculate the area by land cover of the territory of the community councils closest to the population centers [45]. This buffer made it possible to focus the analysis on the places that Afro-descendants still use collectively since the areas of savannahs and *playones* farthest from the population centers are the most affected by the change in use and changes in tenure regimes.

4. Results

The findings have been structured according to the analysis levels in the research objectives: the transformation of the socio-ecological systems in the study area, the ecological and cultural implications of the change from common property tenure systems to private regimes and the identified challenges relevant to Colombia's new political and social time of transition and peace building.

4.1. The Burden of Privatization on the Commons

For the Afro-descendant population of Valledupar, the arrival of barbed wire in the savannahs represents a factual and highly symbolic element in narrating the privatization of the commons. As the data presented in this section show, both in the south and north of the municipality, this practice of fencing communal lands became consolidated in the 1960s but began in the 1920s. Cattle ranching landowners from nearby regions promoted the expansion of grazing areas on lands that the communities considered to be of ancestral use by local people. Rice and oil palm entrepreneurs also resorted to barbed wire. Table 1 details the magnitude of privatization consolidated in the period of 1960–2022.

In all the communities analyzed, privatization has affected more than 80% of their former use, management and circulation spaces. Wire fencing has changed daily life in the savannahs and floodplains, affecting forms of grazing, fishing seasons, hunting activities and the meeting places between neighboring populations. In remote rural villages, barbed wire often represents models of imposed territorial organization and forms of appropriation derived from a superior social order [46]. The communal ecosystems in Valledupar currently feature a barbed wire border that the local inhabitants rarely dare to transgress.

Much of the private property erected on these savannahs is recent in origin, and there is no clear documentation as to how the legal principles that prevent the titling of reserved *baldíos* were breached [4]. The entities involved in the allocation of *baldíos* and their protection have deregulated the procedures to such an extent that the wire fence of

the supposed private property reaches the edge of the rivers. Today, all these factors that configure the scenarios of the dispossession of natural resources are being reviewed in the context of transitional justice; thus, the case of Valledupar and others in the Caribbean allow us to understand that the socio-ecological damage could probably be repaired with the existing legal frameworks of transitional justice.

Table 1. Hectares of commons affected by privatization.

Community Council	Corregimiento *	Afro-Descendant Population	Area (ha)	Area Affected by Privatization
Carlota Redondo de Álvarez	El Perro	610	296.687	197
Los Cardonales	Guacoche	3800	1144.096	765.4
Archilla, Cardón and Tuna	Guacochito	1200	2055.052	1202.5
Manuel Salvador Suárez Almenares	Los Venados	3200	5778.201	4459.5
José Prudencio Padilla	Badillo	2100	7513.888	6326.4
Marcelino Ochoa Álvarez—“Catelo”	Guaymaral	1950	11,638.507	8452.3

Information gathered from cadastral sources and municipal zoning plans. This information was compared to field information and satellite images as indicated in the methodology and Appendix B. * Political-administrative unit at the municipal level. The population data is based on the census prepared in 2022 by the Caribbean Community Councils Network.

In the case of Valledupar, agrarian and environmental historiography recognizes periods marked by changes in production models, the incidence of the conflict and the modernization of the countryside via monoculture production. Although hydrocarbon exploration and exportation are also important in the region, they occurs in neighboring municipalities. Table 2 summarizes the most decisive historical periods for the case study and compares them with the socio-political dynamics that influence the commons.

Table 2. Historical milestones in agrarian models and management policies and collective rights.

Milestones	1970–1980	1990–2000	2000–2010	2010–2020
Livestock	Reduction in livestock production due to the presence of guerrillas.	Increase in extensive cattle ranching on public lands.		Reconversion of livestock areas to mixed shrubland areas.
Palm oil	Arrival of oil palm monocultures in the area north of Valledupar.	The oil palm production chain is linked to oil palm extraction plants in nearby regions within the framework of favorable public policies that encourage this crop.		The area planted with oil palm is stabilizing.
Rice	Fencing of floodable ecosystems for rice cultivation.		Decrease in rice plantations due to projects to drain flood lands and use them for oil palm.	
Organization of community councils	The Afro-descendant communities were not organized politically as an ethnic group, but they were organized in Community Action Boards to manage services such as water, roads and education.	New political constitution that recognizes the rights of Afro-descendants. - Law of black communities that regulates collective property rights over ancestral lands.	First forced displacements and confinement due to violence by paramilitary groups.	The communities request the state to recognize collective ownership of savannahs and beaches taken away by the armed conflict and agro-industrial development models.

Table 2. Cont.

Milestones	19701980	19902000	20002010	20102020
Periods of violence	Presence of guerrillas in nearby areas (FARC and Ejército de Liberación Nacional ELN).	Consolidation of illegal self-defense groups.	Justice and Peace Law for the demobilization of paramilitary groups.	Peace Process and Agreement with FARC guerrillas.
Victim reparation policies			Policies for the protection of lands affected by forced displacement.	<ul style="list-style-type: none"> - Land reparation and restitution law - Historical memory Law - Transitional justice law

Sources: Field work (Appendix A) and references cited: periods of violence and victim reparation policies [4]; livestock and palm oil [47]; rice [19]; organization of community councils [18].

4.2. Implications for Socio-Ecological Systems

Privatization has not caused the degradation of natural systems in all the areas analyzed. In fact, as will be shown below, the multi-temporal analysis shows an increase in some vegetation cover, especially in low shrublands typical of the savannah. One of the reasons for this recovery, especially in the southern region, is the change from extensive cattle ranching to silvopastoral schemes promoted by the Caribbean cattle guilds [48]. In the Cesar basin, there are some experimental plots but no published data to contrast them. In any case, this transition, even on a small scale, is showing positive results for vegetation cover. Another reason is a better distribution of the rainy season during 2021 and 2022, which has had a positive impact on the recovery of vegetation cover, according to data from the Colombian meteorological authority (the state open data system on monthly precipitations in the Colombian territory. <http://www.ideam.gov.co/web/tiempo-y-clima/precipitacion-mensual-por-ano> (accessed on 13 January 2023).

However, the set of data analyzed in the cadastral sources and the eld data shows that, in the environmental history of these savannah areas, Afro-descendant communities have been gradually losing access to the commons. On average, the seven studied community councils access to the commons has declined from 100% to 7%. The implications of this on the socioecological systems are detailed in Figure 2.

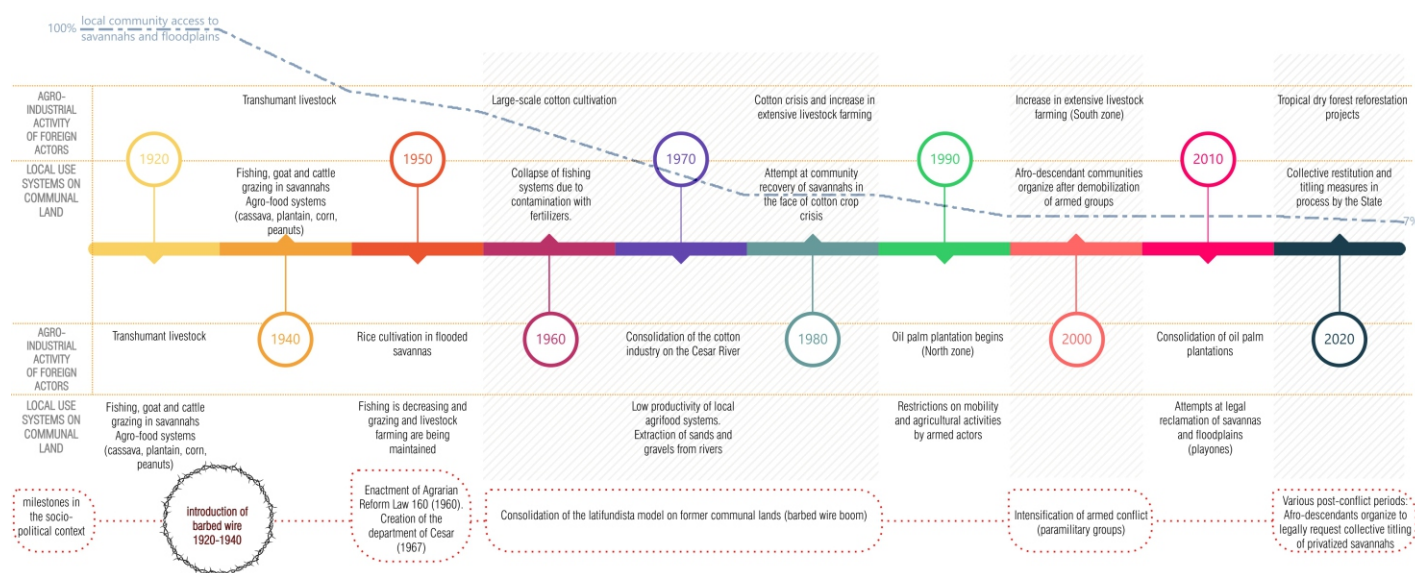


Figure 2. Historical evolution of the reduction in access to the commons based on documentary sources and eld work (Appendix A).

During the fieldwork, the communities and I wondered what must have happened in the environmental history of Valledupar to leave only one wild cashew tree remaining in the community of Los Venados, in the south of the municipality.

The first explanation would be that cotton fever drove the deforestation of this and other trees, but according to local history, the cottonwoods do not appear to be responsible. In fact, the wild cashew was razed mainly by palm companies and cattle ranchers who believed that the guerrillas were hiding behind its trunks. Later, they discovered a prosperous timber business that would further motivate the logging of the wild cashew (*Anacardium excelsum*), claiming that it was a refuge for the guerrillas. The same fate would befall other trees including the carob, achiote, carreto, almond and cañahuate. These trees guaranteed water in times of drought, protected the springs and the soil and sheltered the savannah's avifauna.

As can be seen in Figure 2, the causes are multiple and complex, and although it is a region affected by the armed conflict, what most affects the commons are institutionalized public policies such as large-scale agriculture and cattle ranching.

Hedging Analysis

A multi-temporal analysis of the most recent period of analyzed environmental history shows changes in land cover, especially in the savannah area (Figures 3 and 4). Both in the south and in the north, the areas destined to become monocrops have grown, but at the same time, the areas of shrublands and low vegetation cover typical of these tropical ecosystems have recovered (Table 3). Although the communities have lost their use and communal lands have disappeared in the local zoning, some lands have been regenerated and extensive cattle ranching is decreasing. The communities closest to the city of Valledupar, such as Guacoche and Guacocho (Arcilla, Cardón and Tuna and Los Cardonales on the map) are the only ones where the urban area is growing. The most recent Land Use Plan of Valledupar confirms this trend and considers these areas susceptible to urban expansion (Table A4).

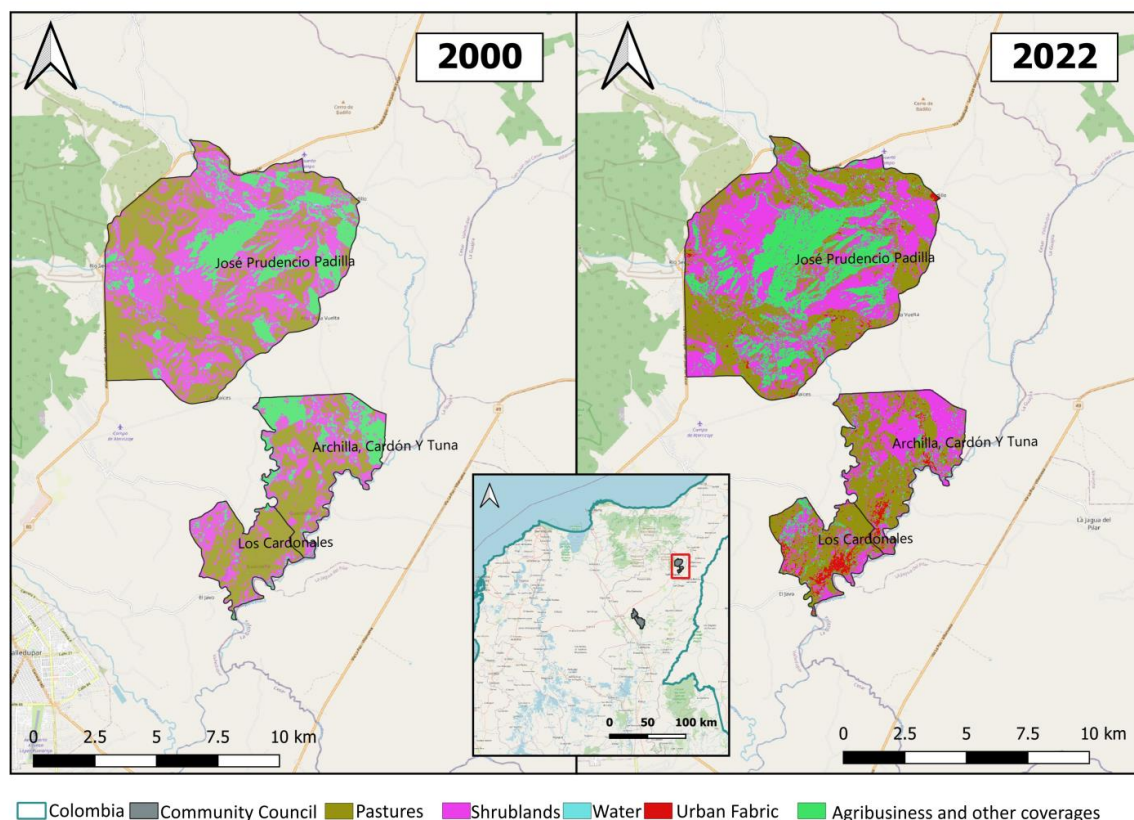


Figure 3. Multitemporal analysis of the northern zone of Valledupar.

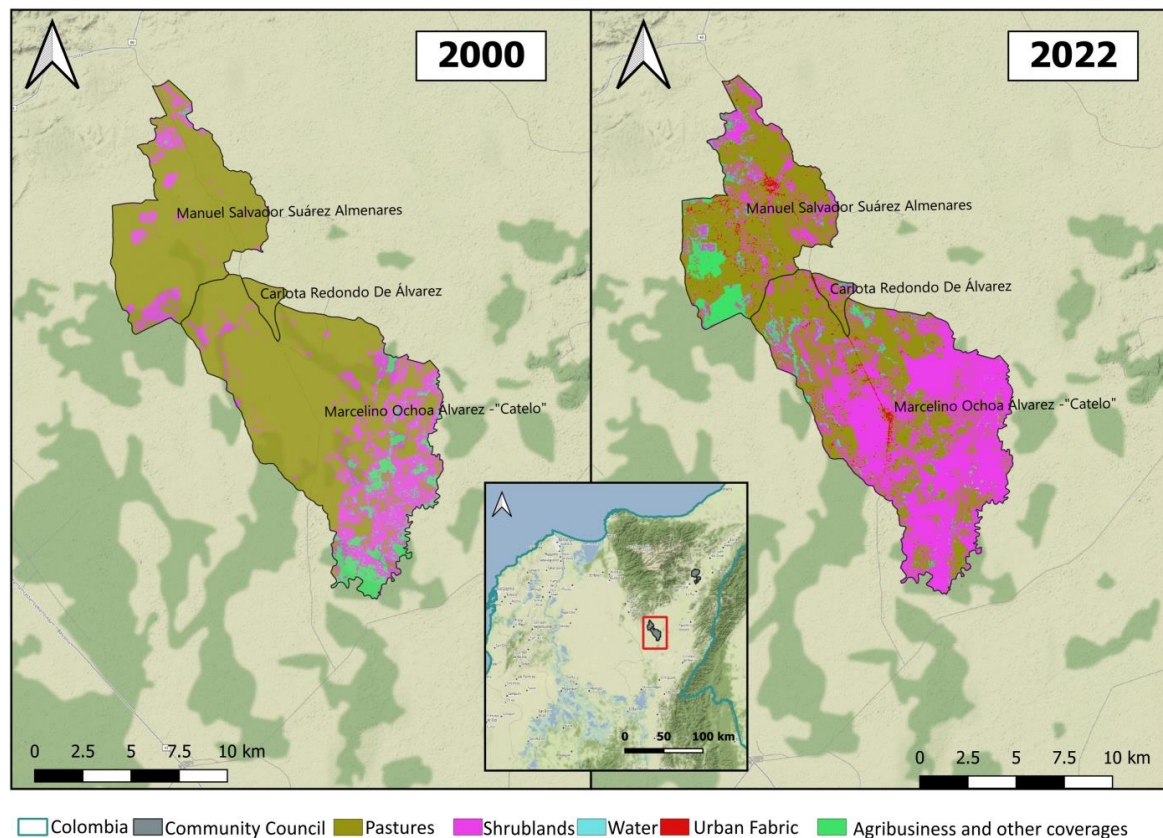


Figure 4. Multitemporal analysis of the southern zone of Valledupar.

Table 3. Hedging analysis of the area south and north of Valledupar.

Land Cover	1960 (%)	2000 (%)	2022 (%)
Community-use savannahs	52	23	7
Population centers (discontinuous urban fabric)	6	20	27
Monocultures (large-scale agriculture area)	13	39.5	53.7
Flooded areas (<i>planices</i> or <i>playones</i>)	28	16.3	9.4
Other coverages	1	1.2	2.9

Sources: The year 1960 was taken from the data available at the Insitituto Agustín Codazzi (cartographic authority of Colombia). The years 2020 and 2022 were photointerpreted from Landsat images described in the methodology.

In Caribbean ecosystems, agricultural disturbances have been found to significantly affect the abundance and richness of fauna and flora species [2] and compromise the long-term resilience of natural systems and food security [34]. Monocultures in Cesar and other Caribbean regions are homogenizing the landscape structure and putting pressure on natural grasslands, forested areas and water recharge zones [47]. This is evident in the northern zone of Valledupar, where oil palm cultivation, as a perennial late-yielding crop, has been growing until it borders the population center and the main water sources. Although there does not seem to be a very clear pattern of growth, in the field observation the community councils noted that the oil palm crop is growing more and more towards the mountainous areas; i.e., it is no longer exclusively in the flat, easily irrigated lands.

The growth of the urban fabric is also an issue to be taken into account in land-use planning policies. The special analysis shows that in 40 years it has increased from 6% to 27% in the savannah landscape matrix. This trend is consistent with the population increase in the Caribbean [17,19]. However, the urban fabric that is growing in the areas near the city of Valledupar, in the community councils of the northern zone, responds to the construction of rest houses or second homes for families from the city. The savannahs do not have the conditions to support houses with swimming pools or infrastructure that

demands water in an ecosystem that suffers long periods of drought [2]. Aspects such as basic sanitation and environmental management have not been considered in this urban explosion. The long-term impact is clear: there will be a greater demand for goods and services and new obstacles to secure tenure rights for Afro-descendant peoples [7].

In the 1960 period of analysis, the configuration of coverage was typical of a dry Caribbean valley, a landscape matrix dominated by savannahs, scattered population centers and aquifer recharge areas in a percentage close to 30%. By that year, there was already evidence of a group of properties dedicated to monoculture: in this case, there was both rice and cotton. By the beginning of the 2000s, a trend of decreasing communal savannahs and floodable ecosystems had already been consolidated, in agreement with other studies on common goods in the Caribbean [19,33]. It is clear that monocultures are growing to the detriment of natural covers, including pastures for grazing. Finally, the year 2022 shows the consolidation of a model of the privatization of common lands, and now the landscape matrix is dominated by agroindustrial crops in a natural system that has steadily lost its water potential [7].

4.3. Challenges in the Current Policy on Ecological Transition, Politics and Peace Building

A recent report by the Colombian Truth Commission [4] proposed a periodization of the occurrence of the conflict in the Caribbean region ranging from the first half of the 20th century to the year 2021. The most significant milestones are marked by the transformation of the hacienda model towards small towns and dispersed cities. The hacienda has been defined by Fals Borda as an invention of the New World, with its concrete expression varying from one era to another according to the development of productive forces but strongly marked by cattle ranching and a certain political culture that transcends traditional productive systems and that is part of many levels of social life [49]. It is difficult to understand the environmental history of the Caribbean without recognizing the hacienda model and its transition from cattle ranching to other productive systems and forms of land use, including the construction of cities. This model oriented spatial organization and had a great impact on the deforestation of vegetation cover related to floodable areas [35].

These dispossessions involving the period of violence in Valledupar produced ruptures in community livelihoods linked to both environmental regime changes and ecological events. An investigation promoted by the *Unidad para las Víctimas* (a transitional state institution) identified more than one hundred sites of violent events that redefined relationships within the territory (the file was consulted at the UN office in Valledupar in 2021). The project, supported by UNDP, was titled “Identification of possible collective damages and places of victimizing events of the community councils of black communities in the municipality of Valledupar”, was executed between 2003–2014 and takes into account Decree Law 4635 of 2011. The identified damages correspond to the categories of damage to cultural integrity and environmental and territorial damage). According to the *Unidad para las Víctimas* study, the savannahs were cemeteries during the paramilitary period, and the central plazas went from being meeting points to places of fear and intimidation (Table 4).

For all these reasons, Valledupar is part of the regions targeted by several of the transitional justice entities, including the aforementioned peace tribunal (JEP). During the field work, it became evident that the community councils and local public entities are considering that the ecological damages and affectations should be known and sanctioned by the judges of the peace tribunal (On the peace tribunal’s web page, the work region is considered in case 08. This means that the community councils that have been victims of the armed conflict will be able to participate in the processes that the tribunal will enable and request reparation measures <https://www.jep.gov.co/macrocasos/caso08.html> (accessed on 25 January 2023)). Regarding what the loss of natural ecosystems has meant for local communities and for the entire region, they consider that restorative justice, a recent approach of the peace court, should take into account the restoration of transformed socio-ecological systems [50].

Table 4. Synthesis of focus groups and interviews.

Spaces Affected by Privatization	Type of Actor Promoting Privatization	Main Changes Perceived in the Ways and Means of Living
Savannahs and <i>playones</i>	<ul style="list-style-type: none"> - Large-scale cattle ranchers (large estates) - Rice industries - Palm oil industrialists - Armed actors - State 	<ul style="list-style-type: none"> - Moving away from fishing communities and savannah herders has been the main change. - The majority of the land has been prepared by landowners for the planting of rice and African palm. - Although some natives sold land, the buyers ran the barbed wire at more than double what they bought it for. - There is overcrowding in the population centers, especially in Badillo, because there is no area available for urban expansion or growth, since the entire territory is used for rice and oil palm plantations. - High levels of contamination due to pesticide spraying of rice and palm oil. - The palm and rice owners have closed the roads or corridors that helped the communities communicate with the savannahs and other towns. - In communities such as Guacoche and Guacochito, because they are close to the city of Valledupar, there is growing pressure from real estate groups that want to build expensive houses in gated condominiums. - During periods when armed groups, especially paramilitaries, were present, the community was prohibited from using communal lands, and all agricultural and livestock activities and mobility between one community and another were controlled.

Sources: Focus groups with 16 members of the local community and authorities of the Afro-descendant people cross-checked with 49 interviews (Table A1).

Colombia's environmental history has never been so crucial. The future decisions of this court should be based on the facts that changed the relationship between the local communities and their ecosystems and on the measures that contribute to channel models of ecological and cultural sustainability that are compatible with the standards of justice demanded by the victims and society [50].

In addition, Colombia's new government has recently presented the National Development Plan (abbreviated to PND in Spanish) with the guidelines that will guide the country for the next four years. Among these is the change in the land-use planning model. Once again, environmental history and socio-ecological systems are in force, since the PND considers that the planning that most contributes to sustainability is the one that considers water as the structuring axis of environmental and agrarian plans and policies. Water management, as it was conducted by the communities of the Cesar River before the arrival of extensive cattle ranching and agribusiness, seems to be one of the criteria of the new national policy. (The National Development Plan 2022–2026 was designed based on a broadly participatory methodology called Binding Dialogues. In February 2023, the government published an extensive document with everything they found in the regions of the country by way of challenges for change. The three sectors that received the most proposals are housing, city and territory; agriculture, fishing and rural development; and environment and sustainability. The plan is available at <https://www.dnp.gov.co/Paginas/plan-nacional-de-desarrollo-2023-2026.aspx> (accessed on 22 March 2023).)

This implies technical, socio-cultural, ecological and, of course, political challenges. The environmental history of Valledupar shows how, in 100 years, the commons have disappeared due to changes in the use of structures, tenure systems, ecosystems and socio-political dynamics. Common spatial patterns in other Caribbean regions [51], in which some ways of life have been imposed over others, and some management models, contrary

to collective rights, have been consolidated. Of the 28,500 hectares demarcated as areas of the traditional occupation of Afro-descendant communities in Valledupar, the Colombian state does not report any progress in its information systems because it has not responded to the insistent claims of the communities or of academic and international organizations present in the region. (Since 2010, the community councils have been accompanied by international organizations that have provided technical, environmental, legal and socio-cultural support. These include the UNDP office of the UN and the Rights and Resources Initiative Coalition. Numerous universities are also present in the region).

Thus, under this new political climate and the change in models that Colombia is experiencing, cases such as that of Valledupar should be addressed permanently by the state. This creates a great opportunity to articulate the historical approach to the study of ecosystems under comprehensive sustainability criteria. This case shows that, without the recognition of tenure rights, the recovery of savannahs and water bodies is insufficient, and that it is necessary to balance the use rights of the communities with the restoration of the savannahs and alluvial plains and the recovery of the Cesar River.

Some of the main challenges that this study found in light of the field data are conceptual or interpretative and operational. The following are some aspects that may be indicative for the use of the environmental history approach and the social–ecological systems approach (SES) in the current transition in Colombia and especially in the Caribbean region (Table 5).

Table 5. Interaction between environmental history and transitional politics.

Main Topics under Discussion	Conceptual/Interpretive Challenges	Operational–Methodological Challenges	Adjustments from Environmental History and SES
Public-use properties, wastelands and ancestral lands or territories	When the scale of analysis is a watershed such as the Cesar River, these notions interact and overlap. Contrary to what happens in other areas of the country, in Valledupar, the lands of the Afro-descendant communities have no demarcation. Thus, from the state’s perspective, these types of basins are interpreted as public lands on which there may be private property of diverse origins. There is a risk of making invisible the collective tenure structures that have been erased as a result of privatization models.	<ul style="list-style-type: none"> - Rural cadastral sources have high levels of outdatedness. - The topology cartographic bases should be updated with spatiotemporal analyses that show spatiotemporal changes in ecosystem cover and use. This provides factual evidence for land-use plans and peace-building policies. - Since 2011, when the Victims Law and the specific decrees for ethnic groups came into force, various state institutions, academics and community organizations have carried out diagnoses that already show the articulation between institutional cartographies with local visions of the territory. 	Transcend the vision of land as a legal asset or as an asset of a productive process. From the ecosystemic dimension, land is part of a set of interactions between social and natural systems that have coexisted and co-evolved. In Palacios’s words, when land is considered an environmental category, new aspects must be included in a historical framework, i.e., studied in the context of a multiplicity of cultural meanings intertwined with natural factors [52].

Table 5. Cont.

Main Topics under Discussion	Conceptual/Interpretive Challenges	Operational–Methodological Challenges	Adjustments from Environmental History and SES
Tenure rights	<p>Legal restrictions have prevented the state from collectively titling the savannah and floodplain lands of Valledupar. (According to the Observatory of Ethnic Territories of the Javeriana University, as of 2022 there are 437 requests for collective titling that Afro-descendant communities have submitted to the Colombian state. Of these, 159 are located in the Caribbean region). For this reason, collective tenure rights are currently being demanded by community councils. Some of the requests have already been pending for 10 years without a response from the state. In Law 70 of 1993, the definition of collective tenure for Afro-descendant communities is significantly different from the forms in which these relationships occur in the Caribbean.</p>	<ul style="list-style-type: none"> - In the Caribbean, there are about 160 applications for collective titling. There are many applications but little land available, according to the Land Fund of the agrarian institution (abbreviated as ANT in Spanish). - Title applications should overlap with ecosystems susceptible to community use such as savannahs, floodplains and other similar landscapes where the current or former presence of local communities has been verified. 	<p>Incorporating the notion of territory into tenure rights would facilitate the reorganization of space under socio-ecological criteria, considering what has happened in the watershed, why it has changed and in what periods. This would make it possible to situate tenure rights as an integral part of the socio-ecological system and not as a legal attribute to be recognized by the state. Nature conceived as territory is related to the way in which actors appropriate and organize nature based on systems of knowledge and use.</p>
Cross-cultural environmental justice	<p>In the JEP's restorative justice approach, its interpretative framework should be broadened. One way is to consider that in ecoregions the temporal scales of greater victimization also coincide with significant changes in the structure and functionality of natural systems (the arrival of productive models demanding high quantities of biomass). In general, this landscape transition is only analyzed as a change in production systems or rural development models.</p>	<ul style="list-style-type: none"> - The instruments of transitional justice can and should be in dialogue with the Land Management Plans at the level of the political-administrative units, and with the life plans of the ethnic groups. - Any measures taken by state entities must take into account the specific needs of the ethnic groups. - The diagnostic and characterization instruments that the state uses as a baseline to propose environmental projects and policies should recognize local ecological knowledge as valid knowledge. 	<p>The interpretative framework of transitional justice must incorporate the environmental and intercultural dimension [53]. Afro-descendant communities consider the main damages to be the loss of natural systems and the limitations of collective practices such as fishing or grazing [54]. Therefore, an ecosystemic and socio-ecological approach could situate land cover changes, whether abrupt or gradual, as serious impacts on natural systems. These could be agroecosystems, dry forest areas, fishing systems, flooded lands or a mixture of all of them, as in fact occurs in tropical heterogeneous landscapes.</p>

Sources: Focus groups with 16 members of the local community and authorities of the Afro-descendant people, interviews, and cited references.

5. Discussion

The commons documented here from the environmental history of Valledupar show how there has been a close and constitutive relationship between Afro-descendant peoples

in the savannah and floodplain ecosystems. In the expectations of recognition and the formalization of tenure rights over these ecosystems, it was found that the collective character prevails despite the privatization model that has been consolidated in most of the 20th century and so far in the 21st century [8,19].

The history of savannahs requires long-term knowledge and different scales that show the anthropic evolution and show how changes respond to a cumulative process related to processual and arbitrary alterations in the structure and functioning of ecosystems [12]. The Cesar River basin shows how the consolidation of the cattle ranching and plantation model was superimposed on the associative practices of gathering, fishing and grazing in the inland Caribbean [55], and although the structure of the ecosystems maintains some of its main elements, the functionality has changed drastically. The area under collective management has been reduced by up to 93% in 100 years. Studies in similar regions show that the livelihoods of the rural poor depend regularly on the use of natural resources and the provision of ecosystem services. They are therefore highly vulnerable to environmental degradation, especially if it limits their ability to sustain their consumption of goods and services over time [56].

The actors in dispute are dissimilar. On the one hand, the state seeks to exercise public ownership over the national *baldíos* that, until now, have never been incorporated into the cadastre as public property or managed in their use as public goods; on the other hand, since 2010, the community councils of Valledupar have been asking the state to recognize the collective ownership of ecosystems that were, for the most part, spaces shared by Afro-descendant communities who populated the margins of the Cesar River and other major bodies of water [57]. Today, barbed wire prevents their collective appropriation and hinders the work of the state in clarifying what is and what is not a *baldío*. The wire fencing produces a de facto boundary between private property and community occupation and is the most effective symbol of the other actor that shapes this dispute between agroindustrial entrepreneurs, Afro-descendant communities and the state [58].

According to Riviel, barbed wire was invented because various technological advances led in a single direction, with the emerging possibility and desire to control space not only as a sequence of points but also in its entirety, along an entire plane. If its use emerged in agriculture and spread to warfare and political control, it was because in agriculture, warfare and politics alike there was a need for a cheap tool to control space that could be deployed quickly and on a large scale [58].

The boundary between a *baldío*, a reserved *baldío*, a public asset, an ethnic territory and monoculture land is blurred for several reasons. The legal instruments and concepts of Western law that gave rise to the concept of *baldío* are far removed from the actual practices on these properties. In addition to the fact that the law is inconsistent with the practices of those who inhabit it, within the law itself there are debates regarding who can access it and under which rules of the game and at what scope it can be accessed. Destabilizing what we understand as public lands in Valledupar requires a judicious review of the settlement histories of this rural fraction of the Caribbean. From this historization, between local history and bibliographic sources, important milestones emerge in the dispossession of natural resources, largely due to privatization and land grabbing phenomena [5,59]. According to Senent-De Frutos, in order for areas such as law to take seriously ecological damage and changes in the way of life of local communities, the criterion of sustainability, complexly understood, must be introduced thoughtfully into the legal system as a whole as a way to make the reparation measures issued by the courts viable, fair and feasible [53].

From the socio-ecological approach, regime shifts are one of the theses that show how change in a given ecological cycle can be driven by other changes in the forms of use and the management of a resource or ecosystem. Drastic fluctuations in the forms of common resource use may be indicative of changes in social structure and governance regimes, climate, pollination cycles and flooding patterns, among other signs of an ecosystem in crisis [60,61]. Crumley proposes another approach, analyzing how different historical

events have transformed the way in which ecological systems operate in the face of market pressures, wars and a competition over resources [62].

These practices fragmented what is known in the area as the great extended family of the savannah and, among the main effects, caused the loss of knowledge systems and resilience [63]. They undermined the confidence to walk along alleys and irrigation ditches, to spend the night out on the *playones*, to go fishing, to organize community meetings for administering natural resources and, above all, for exercising politics. The initial scenario the abandonment of traditional productive activities. Land, animal husbandry and grazing in the communal savannahs were forcibly abandoned, and, according to testimonies, there was no longer anyone to watch out for those who would cross the barbed wire.

Currently, most conflicts involve the availability, access and control of natural resources, which is the reason why the effects cannot be expressed in terms of abandoned, usurped or dispossessed hectares but rather of the violation of socio-ecological systems. Thus, framed within the historical confrontations between landowners and communities is a case of strict control of natural resources rooted in power relations, discrimination and racism. As examples of this situation, the research by Ojeda, Petzl, Quiroga, Rodríguez and Rojas analyze the expansion in other Caribbean regions of large oil palm and forestry plantations that cut off paths, produce borders, block neighboring spaces and shape what the authors call landscapes of daily dispossession [64].

In Valledupar, the multi-temporal analysis showed the pressure on wetland areas due to the expansion of urban infrastructure. Other studies show that the urbanization of this municipality has been carried out in an uncontrolled manner, without taking into account the characteristics of the watershed ecosystems, as the road infrastructure near the bodies of water continues to increase [65]. Especially in emerging countries such as Latin America and the Caribbean, land use and occupation have undergone several transformations in recent decades [66]. The transition from the communal savannah to other tenure systems shows the concrete uses of environmental history and its potential use for contemporary and prospective problems [67].

If the institutions leading the peace-building policy in the country are opting for the restorative character of transitional justice, this could be the path to rebuilding the link between the community councils of the Caribbean and their territory, which is fractured as a consequence of armed action and the dispossession of ancestral lands. However, it is necessary to consider that the responses provided by the mechanisms of truth, justice and reparation and the guarantees of non-repetition must take a particular approach that accounts in real terms for the socio-territorial and socio-environmental damages.

Although collective titling is the main means of protection, Afro-descendants need a subsidiary and expeditious mechanism to limit the large-scale exploitation of land and common goods by third parties because this exacerbates existing conflicts and creates new disputes that the communities alone cannot confront. Palm monocultures, the real estate boom and extensive cattle ranching are just some of the problems on a long list that continue to undermine the permanence of these populations in the savannah ecosystems [1].

Seeing territory as a victim has been a request and claim for years in Colombia [57]. Social movements, mainly driven by ethnic groups, positioned the notions of territory and territoriality as indivisible elements of their identity, history and materially rooted collective practices [68]. However, the intersection between ecology and transitional justice has only occurred explicitly since 2019 with a decision by the Special Jurisdiction for Peace that considered the territory of ethnic groups to be a victim of the armed conflict. This led to socio-legal analyses suggesting that the Colombian peace process is transforming the territory from an object to a legal subject that suffers harm and needs to be repaired [50,69]. The JEP is based on the systematic interpretation of the worldview of ethnic peoples according to national and international legal instruments on the protection of their rights and the determination of the socio-environmental and territorial damages that occurred in the ecosystems in the cases analyzed by the high court. (The detailed explanation can be found in Orders 079 of 2019 and 02 of 2020 of the Recognition Chamber of the JEP,

in which the territories of the indigenous peoples Awá, Nasa and Misak are recognized as victims at the request of the peoples themselves, who have an integral conception of the world and understand the territory as a sacred living being and as a whole). This approach broadens the notion of victim while recognizing the relationality of social and ecological systems, their co-evolution and their co-dependence [63], as well as reinforcing the transcendental way in which indigenous and Afro-descendant peoples are linked to the land and ecosystems.

6. Conclusions

This research presented a detailed analysis of the transformation of socioecological systems in two regions of the Cesar River basin based on the documentation of environmental history. These results are generalizable to other regions of the dry Caribbean that have a similar ecosystem structure and population dynamics. Similarly, the patterns of the privatization of the commons are similar to those of other inland Caribbean basins where agroindustrial models have substituted natural cover and replaced the associative ways of life of pastoralists, fishing communities, collectors and small- and medium-scale agriculturists.

The most significant transition found in this basin for those who study common goods, community lands or family use and tenure systems is the loss of savannahs and alluvial plains in alarming percentages. In the documented historical evolution, it was found that Afro-descendant peoples currently have access to only 7% of the savannah areas they have inhabited for the last 100 years. A similar trend is seen in the beach areas that have been drained or imported for industrial rice and oil palm irrigation systems.

In a socio-ecosystem that is being transformed and confined, associative practices persist, and, above all, the will of collectives organized as community councils to recover former communal lands via special mechanisms of collective titling and reparations to those who have been victims of violence persists too but by considering new challenges such as climate change and biodiversity loss.

For all these reasons, the question of sustainability is crucial, along with other questions regarding what kind of lands can be recovered, what projects can be promoted by the communities and other actors in the region that can be ecologically and culturally appropriate, how to guarantee a fair integration of Afro-descendant peoples in land-use planning models, what standards of environmental justice could be applied in these cases, etc. The challenges are conceptual, methodological and operational as I discussed in Table 5. One of the challenges for environmental history research is the methodological approach. In this research, I proposed a mixed methods procedure that allows for confronting spatial and alphanumeric data with SES levels. Crucially, environmental history brings different nuances about tenure rights. This is not a history of property rights but a reconstruction of the interactions between community councils and the savannah and beach systems in the context of the multiple forces that condition this relationship, including occupation models, the state, the market, conflicts, etc.

In this historical narrative, based on changes in the landscape, it was possible to recognize how the SESs are closely linked to tenure systems. The possibility of hunting, fishing, circulating, gathering, building a house or having grazing animals depends exclusively on access to common goods. The tenure structure in these regions has only two options: communal land or private property. In this case study, the private property is not in the name of community members but belongs to outside individuals and companies. Therefore, the right of usufruct, decision making and inheritance rights for future generations will depend on the recovery of communal lands.

Finally, adequate state intervention can resolve the tension between the individual rights of business actors present in the region and the Afro-descendant peoples who expect to consolidate collective property titles that will allow them to continue with their ecosystem use and management practices and that will guarantee food security and roots for future generations. In this opportunity, the peace-building agenda seems to be the

clearest window of opportunity for the new restorative justice approaches and the special consideration of the ecological damages that must be compensated.

The environmental history of the Caribbean is making it possible to finely weave the past and present with the complexity of the relationships that exist between natural systems and cultural systems, relationships that go beyond the practical sense of chronologies, facts and sources. The history of the systems of use of these flooded landscapes now drained, and of the commons now privatized, raises critical questions about what environmental studies have commonly called cover transformation or ecosystem degradation. For ecological and cultural sustainability today, it must matter what the implications of these changes are and how they compromise the future reconfiguration of ways of life historically forged in collective praxis.

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Appendix A

Table A1. Selection and representativeness of participants in qualitative fieldwork phase.

	Phase 0 Instrument Design	Phase 1 Field Instrument Coordination November 2019	Phase 2 Implementation and Application of Instruments September–October 2022
Instruments	Stakeholders' experience and knowledge about the following phases.	Considerations of the ethnic authorities on requirements.	Final selection of participants.
Semi-structured interviews on environmental history with emphasis on biophysical aspects.	People knowledgeable about the rural and environmental world of the savannah communities, ideally with trades linked to the use of natural resources such as fishing or the harvesting of dry forest fruits, or people within the community with an interest in historical or environmental aspects (such as teachers in local schools).	It should be taken into account that each community council has people considered by them to be "wise men" who act as local historians. These are people who know the history of the region and are responsible for the transmission of oral memory about settlement, uses and customs, problems and achievements. They recommended that at least two people in each community should be contacted in this role.	In the field, the willingness of stakeholders to participate was confirmed. Contacted savants: The Dog: 1 (♂) Guacoche: 2 (♂) Guacochito: 2 (1 ♂ and 1 ♀) Badillo: 3 (2 ♂ and 1 ♀) Los Venados: 1 (♂) Guaymaral: 1 (♂) Average age: 88 Total: 10 interviews

Table A1. Cont.

Phase 0 Instrument Design	Phase 1 Field Instrument Coordination November 2019	Phase 2 Implementation and Application of Instruments September–October 2022
Semi-structured interviews on changes in production systems (effects of privatization)	Men or women with knowledge of grazing or natural resource extraction activities in the areas of savannahs that were privatized. People with an interest in these issues such as local teachers.	<p>It should be taken into account that herding can be a family or associative activity. It was considered that there are no fishermen left in the communities, but there are people who were involved in this activity before the collapse of the system. It was considered that some people who are currently dedicated to the extraction of sand from the river for the sale of construction material were once fishermen. They are known locally as “paleros”.</p> <p>In addition, they recommended including at least 1 local schoolteacher per community.</p> <p>Shepherds: 9 (♂) Person who is or was engaged in riverine fishing: 7 (♂) Local schoolteachers: 6 (4 ♀ + 2 ♂) Paleros: 7 (♂)</p> <p>The Dog: 2 Guacochi: 4 Guacochito: 5 Badillo: 5 Los Venados: 6 Guaymaral: 7</p> <p>Average age: 69</p> <p>Total: 29 interviews</p>
Interviews’ socio-political and organizational context	Men or women with organizational leadership roles in community councils and the movements of victims of violence.	<p>Each community council has a delegate for dialogue with the national and regional government. These are men and women who are familiar with the rights agenda. The councils also have groups of young people organized around environmental recovery projects. Regarding the victims of the armed conflict, they suggested conducting telephone interviews with members of the communities that are currently collaborating with various transitional justice agencies.</p> <p>Leaders in dialogue with the state: 6 (2 ♀ + 4 ♂), with 1 from each council. Youth groups: 4 (3 ♀ + 1 ♂). Only those from Guacochi, Guacochito and Badillo could be contacted.</p> <p>Average age: 34</p> <p>Total: 7 field interviews + 3 telephone interviews with victims of the armed conflict).</p>
Focus groups on explanatory factors and effects in the SES approach.	People interested in initiating dialogue and debate aspects about the social history of the Afro-descendant communities in the region, the changes in the landscape and the current conditions as current subjects that aspire to be repaired by the state.	<p>The ethnic authorities recommended conducting the focus group with delegates who had already been interviewed and who expressed their willingness to participate in the deliberative spaces suggested by this research.</p> <p>A total of 3 focus groups were conducted with the participation of 16 members (9 ♀ + 8 ♂), with one group in the northern zone, another in the southern zone and a third focus group in the northern zone, given that peacebuilding actions and victim reparation measures have been prioritized in that region.</p>

Table A2. Instrument designed for recording and guiding semi-structured dialogues with stakeholders on sustainability dimensions.

Spaces Affected by Privatization	What is the Type of Actor Promoting Privatization?	What Are the Main Changes Perceived in the Natural System?	What Are the Main Changes Perceived in Livelihoods?	Which Periods Are the Most Important?
Savannahs				
Alluvial plains (locally known as <i>playones</i>)				
Ponds and other bodies of water for fishing				
Tropical dry forest areas				

Appendix B

Table A3. Results of the multi-temporal analysis in the community council areas claimed from the state in collective titling.

Coverages	2000 Hectares	2000%	2022 Hectares	2022%
Pastures	17,685.46	62.22%	12,114.99	42.62%
Open shrublands	7839.58	27.58%	12,300.39	43.27%
Alluvial plains (locally known as <i>playones</i>)	45.32	0.16%	61.52	0.22%
Other coverages	2855.26	10.04%	3381.28	11.90%
Urban fabric	-		567.42	2.00%
	28,425.62		28,425.62	

Table A4. Results of the multi-temporal analysis in the buffer areas of the community's population centers.

Coverages	2000 Hectares	2000%	2022 Hectares	2022%
Pastures	3553.87	79.05%	2320	51.62%
Open shrublands	669.82	14.90%	1762.184	39.21%
Alluvial plains (locally known as <i>playones</i>)	12.7387	0.28%	10.034	0.22%
Other coverages		0.00%	272.542	6.06%
Urban fabric	259.092	5.76%	129.761	2.89%
	4495.52		4494.52	

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Capítulo 3

Conclusiones y líneas futuras de investigación

Si bien cada artículo tiene una sección de conclusiones, a continuación se presentan de forma transversal los aspectos que se consideran más determinantes en el estudio de la privatización de bienes comunes como un aporte a los estudios sobre la sostenibilidad a la luz de la teorización y casos de estudio seleccionados.

Sistemas inundables

La bibliografía consultada permite afirmar que hay un cierto florecimiento interdisciplinario en el desarrollo de modelos predictivos y análisis socioecológicos que se centran específicamente en cuencas y sistemas hidrológicos. Todos estos esfuerzos tienen el potencial de ayudar a restaurar ríos y ciénagas, devolviéndoles sus niveles óptimos de uso. Paralelamente a los avances tecnológicos y teóricos, se ha ido posicionado el debate ético y crítico sobre la distribución del agua. El objetivo también debe ser superar las realidades desiguales a partir de una comprensión de la interdependencia de los sistemas naturales, sociales y culturales.

En los sistemas inundables estudiados en el Caribe colombiano, especialmente en el Caribe interior, se confirmó que la privatización del agua causa degradación de los sistemas naturales y exclusión social. Los estudios de cambio de coberturas constatados en imágenes satelitales muestran que las coberturas tienen una tendencia hacia el colapso, salvo la regeneración de arbustales en los sabanales de Valledupar. Esto debe ser determinante en la gestión del ordenamiento y la planificación del uso de los bienes comunes, razón por lo que esta tesis propuso variables y modelos para acercar las políticas de sostenibilidad y la interculturalidad.

A la vista de los casos analizados, puede deducirse que privatización y exclusión suelen ir de la mano. La privatización es un mecanismo legal o de facto que conlleva la pérdida de bienes comunales para los pueblos locales y, en consecuencia, las priva de derechos históricos. La privatización implica una desigualdad en la forma en que estas comunidades son tratadas por el Estado que suele regular sobre quiénes se benefician de los bienes comunes y qué tipo de derechos puede acreditar.

Por otra parte, las ciénagas y otros ecosistemas de agua dulce también han cambiado sus regímenes ecológicos debido a las intervenciones antropogénicas (Vilardy & González, 2015). Como lo afirma Rocha et al. (2015), se requieren enfoques teóricos y empíricos de tales cambios para evaluar mejor cómo se producen, qué ecosistemas se ven más afectados y qué grupos sociales sufren un mayor impacto como consecuencia.

Estas transformaciones de los ecosistemas, que se manifiestan en cambios en la cobertura vegetal natural, afectan la disponibilidad de agua para las comunidades locales. Esto conlleva también cambios en el sistema hídrico que son difíciles de revertir. A su vez, las alteraciones pueden desencadenar catástrofes y limitar la resiliencia de los ecosistemas, con el agravante del influjo de condiciones extremas por el cambio climático (Vilardy, 2015). Los casos analizados en los artículos I y III ilustran los efectos adversos de las dinámicas de privatización en el sistema socioecológico, sobre todo por la sobreexplotación y los cambios abruptos en las formas de uso, así como muestran el peso que sobre estos sistemas tiene las condiciones climáticas extremas.

El primer artículo describió cómo el Estado colombiano ha favorecido y legitimado directa o indirectamente visiones y modelos de desarrollo que polarizan la gestión del agua y otros bienes comunes. Por un lado, se permite a la agroindustria el uso, manejo e interrupción de cauces, mientras que, por el otro, se deja por fuera tanto de los escenarios de decisión, como del uso directo del agua, a las comunidades que manejan los sistemas tradicionales de riego. Por lo tanto, apremia que el Estado pueda reevaluar el conocimiento ecológico local que históricamente permitió el uso sostenible de planicies y ríos antes de los cambios abruptos en los patrones de ocupación y desarrollo. Además del declive ecológico, basándose en los casos de

estudio, es posible afirmar que la privatización del agua, a través de infraestructuras de regadío formales o informales, ha provocado cambios en la tenencia colectiva y ha generado una nueva regulación privada de los ecosistemas que deberían pertenecer exclusivamente al dominio público y a los sistemas de gobernanza de los pueblos afrodescendientes.

Acercar la justicia socioambiental intercultural al desarrollo sostenible

Especialmente en el segundo artículo se mostró que los diseños de gobernanza pública disponibles para los litorales del Caribe, que se han alineado con la Agenda 2030, se hallan inmersos en dos estrategias claramente definidas, por un lado, la estrategia modernizadora de desarrollo social público-privada con predominio de la racionalidad instrumental, y por otro lado, la estrategia de desarrollo del pueblo afrodescendiente que asume una racionalidad reproductiva basada en principios de identidad, autonomía y autodeterminación.

La lectura de las políticas públicas e informes presentados por el Estado colombiano en seguimiento a los ODS permite afirmar que sí están presentes, aunque desarticuladas, las dimensiones de sostenibilidad ecológica, social e intercultural, pero sólo lo están de forma retórica. Fruto de la falta de una real interdependencia en los niveles de sostenibilidad se pudo identificar que prevalece una estrategia modernizadora del sector hotelero y turístico sobre el enfoque de derechos colectivos sobre las costas y el mar. El carácter sistemático de las dimensiones que integran la justicia socioambiental intercultural exige un desarrollo socialmente equilibrado y respetuoso con la naturaleza y la pluralidad de los pueblos afrodescendientes.

El modelo que se propone en el segundo artículo consolida un marco de análisis desde la perspectiva de la justicia socioambiental e intercultural que permite dar cuenta de las relaciones entre diversos actores sociales, así como de los mecanismos de violencia o de injusticia eco-social que se ejercen entre los distintos actores sobre los sujetos colectivos que han ejercido su propio proceso de autodeterminación. Asimismo, se logró determinar el conjunto de prácticas de sostenibilidad ecosocial de las distintas formas de vida y de los procesos culturales y civilizatorios articulados.

Basándose en la isla de Barú es posible afirmar que el examen comparativo del grado de justicia y sostenibilidad entre las estrategias enfrentadas muestra que la estrategia comunitaria combina de forma integradora el desarrollo humano, la equidad y la sostenibilidad. En este sentido, esta estrategia se articula mejor y promueve los objetivos de la Agenda 2030, en particular los objetivos 2, 10 y 14.

El Estado colombiano, en el marco de la Agenda 2030, reconoce el aumento de la presión sobre los ecosistemas a la vez que celebra una mayor preparación y conocimientos científicos para hacer frente a los problemas ambientales. Sin embargo, la dimensión intercultural no es operativa, ya que no se ha considerado que para generar mejores intervenciones desde el sector público la generación de conocimiento debe incluir a los pueblos tradicionales: la gente que conoce el mar y que ha llevado en su memoria y en su conocimiento ecológico local los cambios en su entorno y en sus formas de vida. Esta barrera intercultural de no valorar el conocimiento de los pescadores y no considerarlos sujetos válidos en la conversación científica sobre los Objetivos de Desarrollo Sostenible es uno de los grandes obstáculos para la sostenibilidad.

Colombia cuenta con una sólida estrategia para la implementación de los ODS. En el informe oficial de seguimiento más reciente el porcentaje global de avance de los ODS es del 72,58%. Los objetivos con mayor rezago en el cumplimiento de las metas anuales fueron el ODS 2 (hambre cero), el 10 (reducción de las desigualdades) y el 13 (acción por el clima). Sorprendentemente, el ODS 14 fue el único en el que se alcanzó el 100% de progreso hacia la meta anual y la meta de 2030. Esto se debe al enfoque conservacionista con el que se construyeron los indicadores de este compromiso. Los indicadores miden el porcentaje de estaciones de control de las aguas marinas y las hectáreas de zonas marinas protegidas. Aunque se trata de indicadores muy relevantes, no se midieron los procesos de apropiación social de los mares, el sustento de la vida marina para la pesca artesanal y la navegación, ni la crisis socioecológica que se enfrenta en los litorales. Por lo tanto, estos parámetros son incompletos y podrían mejorar sustancialmente si se adopta un enfoque de justicia socioambiental intercultural.

Historizar los ecosistemas como aporte a la sostenibilidad

Con especial énfasis el artículo III presenta un análisis detallado de la transformación de los sistemas socioecológicos de dos regiones de la cuenca del río Cesar a partir de la documentación de la historia ambiental. Estos resultados son generalizables a otras regiones del Caribe seco que tienen una estructura ecosistémica y una dinámica de poblamiento similar. Asimismo, los patrones de privatización de los bienes comunes son similares a los de otras cuencas del Caribe interior en donde los modelos agroindustriales han sustituido las coberturas naturales y han reemplazado las formas de vida asociativa de comunidades de pastores, pescadores, recolectores y agricultores de pequeña y mediana escala (Herrera, 2023).

La transición más significativa encontrada en esta cuenca es la pérdida de sabanales y planicies aluviales en porcentajes alarmantes para quienes estudian bienes comunes, tierras comunitarias o sistemas de uso y tenencia familiar. En la evolución histórica documentada, se encontró que en la actualidad los pueblos afrodescendientes solo tienen acceso al 7% de las áreas de sabanas que han habitado los últimos 100 años. Tendencia similar siguen los playones que han sido modificados y adaptados en estructura y funcionalidad al riego del arroz industrial y la palma de aceite.

En un socio-ecosistema que se transforma y se confina persisten prácticas asociativas y, principalmente, persiste la voluntad de los colectivos organizados como consejos comunitarios para recuperar las antiguas tierras comunales a través de los mecanismos especiales de titulación colectiva y reparación a quienes han sido víctimas de la violencia, pero considerando los nuevos retos como el cambio climático y la pérdida de biodiversidad.

Por todo ello la pregunta por la sostenibilidad es crucial. Cuestiones cómo: qué tipo de tierras pueden ser recuperadas, qué proyectos pueden ser impulsados por las comunidades y otros actores de la región que puedan ser ecológica y culturalmente adecuados, cómo garantizar una integración justa de los pueblos afrodescendientes

en los modelos de ordenamiento territorial, qué estándares de justicia ambiental podrían ser aplicados en estos casos. Los retos son conceptuales, metodológicos y operativos.

Uno de los retos para la investigación sobre historia ambiental es el enfoque metodológico. En esta tesis se propuso un procedimiento de métodos mixtos que permite confrontar los datos espaciales y alfanuméricos con los niveles de los SES. Resulta fundamental que la historia ambiental aporta diferentes matices sobre los derechos de tenencia. No se trata de una historia de los derechos de propiedad, sino de una reconstrucción de las interacciones entre los consejos comunitarios con los sistemas de sabanas y playones en el contexto de las múltiples fuerzas que condicionan esa relación: los modelo de ocupación, el Estado, el mercado, los conflictos, etc.

En esa reconstrucción histórica de los artículos II y III, sustentado en los cambios del paisaje, fue posible reconocer cómo los SES están estrechamente vinculados con los sistemas de tenencia. La posibilidad de cazar, pescar, circular, recolectar, construir una casa, o tener animales de pastoreo depende exclusivamente del acceso a bienes comunes. La estructura de tenencia de estas regiones combina niveles públicos y privados sobre un mismo ecosistema que, a su vez, es reivindicado por los pueblos afrodescendientes como tierras de ocupación ancestral que no admiten nociones anacrónicas como la de baldío o tierra de la nación.

Una adecuada intervención del Estado puede resolver la tensión entre derechos individuales de actores empresariales presentes en la región y los pueblos afrodescendientes que tienen la expectativa de consolidar títulos de propiedad colectiva que les permitan continuar con sus prácticas de uso y manejo del ecosistema, y que les garantice seguridad alimentaria y arraigo a las generaciones futuras. En esta línea, la agenda de construcción de paz parece ser la ventana de oportunidad más clara por los nuevos enfoques de justicia restaurativa y la consideración especial sobre los daños ecológicos que deben ser resarcidos.

La historia ambiental del Caribe está permitiendo tejer finamente el pasado y el presente con la complejidad de las relaciones que existen entre los sistemas naturales

y los sistemas culturales, relaciones que desbordan el sentido práctico de las cronologías, los hechos, las fuentes. La historia de los sistemas de uso de estos paisajes inundables ahora desecados, y de los bienes comunes hoy privatizados, formula preguntas críticas a lo que comúnmente los estudios ambientales han llamado transformación de coberturas o degradación de ecosistemas. Para la sostenibilidad ecológica y cultural hoy debe importar cuáles son las implicaciones de esos cambios y cómo comprometen a futuro la reconfiguración de formas de vida forjadas históricamente en la praxis colectiva.

Líneas futuras

El próximo 27 de agosto del 2023 se cumplen 30 años de la Ley 70 de 1993, o también conocida como Ley de Comunidades Negras. Un marco normativo que constituye un gran hito, el segundo más importante para los pueblos afrodescendientes en Colombia después de la abolición de la esclavitud. Es una Ley compleja, entraña luchas sociales históricas, pero también perfecciona derechos especiales sobre la tierra y el territorio con el lenguaje propio del multiculturalismo de la década de los noventa.

En líneas futuras de investigación sobre bienes comunes en la tesitura del desarrollo sostenible deben considerar los vacíos de ese marco normativo para los pueblos afrodescendientes que ya ha quedado desactualizado en materia de acceso a bienes públicos mal llamados por el Estado baldíos nacionales. Uno de los ámbitos más importantes para repensar el derecho territorial es el derecho al mar (también conocido como maritorio) a los litorales, no sólo para la pesca y la navegación sino para otras prácticas tradicionales que ocurren en el mar.

En términos de la justicia socioambiental intercultural, el artículo III mostró las posibilidades de articular ese enfoque en la actual jurisdicción de paz que tiene Colombia, y en general en las instancias e instrumentos de justicia transicional. Sin embargo, está por comprender mejor el alcance del reconocimiento de la naturaleza como víctima y el papel de las autoridades de los grupos étnicos en las medidas que tomará el tribunal de paz.

En Colombia es imposible disociar el conflicto ambiental del conflicto armado. Esto supone un reto para las instituciones de transición surgidas del acuerdo de paz entre el Estado colombiano y la antigua guerrilla de las FARC-EP. El despojo y la privatización de los recursos hídricos pueden considerarse un factor subyacente en el conflicto armado. Asuntos como el reconocimiento de la naturaleza como víctima del conflicto armado y el sistema restaurativo impulsado por la Jurisdicción Especial para la Paz son de trascendental importancia para situar la sostenibilidad ecológica y cultural en los retos actuales. Por todo lo anterior hace falta profundizar en puentes teóricos y operativos entre la privatización de bienes comunes dentro de escenarios de justicia transicional.

Adicionalmente, esta tesis muestra que hay necesidad de promover investigaciones que se pregunten críticamente por la sostenibilidad en su base conceptual e instrumental. Esto permitirá ir perfeccionando modelos de referencia en donde se articule con equidad las relaciones entre los sujetos colectivos y otros actores públicos o privados. Ante el creciente número de proyectos, políticas y programas que buscan ser coherentes con los Objetivos de Desarrollo Sostenible se necesitan otras investigaciones que evalúen de forma comparada e histórica la contribución a la sostenibilidad de cada modelo de intervención sobre la biodiversidad y la sociodiversidad.

En lo que se refiere al derecho al mar, la doctoranda se encuentra desarrollando dos proyectos de investigación sobre los maritorios o territorios marinos en el Caribe y en Andalucía para ahondar en las políticas oceánicas alineadas con los Objetivos de Desarrollo Sostenible y la Agenda 2030. En síntesis, se busca consolidar un corpus teórico y de datos suficiente que sirva de base para plantear nuevas propuestas regulatorias que incluyan a los pueblos implicados.

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Anexos

Anexo A: Comunicaciones presentadas en Congresos Internacionales

1. Ponencia presentada en el 39th IAHR World Congress of the International Association for Hydro-environment Engineering and Research (IAHR) 19 al 24 de junio del 2022, Granada, España.

FISHING IN PRIVATIZED SEAS: ENVIRONMENTAL PROBLEMS, AND CHALLENGES FOR SUSTAINABILITY IN THE COLOMBIAN CARIBBEAN

ABSTRACT

In the Colombian Caribbean, the shaping of the landscape and the history of use of the large river basins have created human communities with a close connection to water. Experts call it amphibious cultures to show that this is a complex and adaptive way of life to water regimes. However, little has been explored of coastal lifeways, of those populations that inhabit lagoons of the Caribbean coast and that circulate offshore for fishing and navigation. These coastal and marine populations, mostly Afro-descendant peoples, have developed a model of use and socio-ecological relations with the ocean, with the Greater Caribbean, which show a maritories (maritime territory) that connects Colombia with Insular America (Márquez 2019). This paper wants to emphasize the complex social and environmental realities faced by the coastal peoples of a fraction of the Colombian Caribbean, in Cartagena, which have been rapidly transformed by the tourism, port and hydrocarbon transport industry. These populations belong to ethnic groups and have not had sufficient state recognition to participate in the regulatory decisions that link the coasts and the sea to models of privatization or statization. All this, with the aggravating factor that many of the models analyzed in the northern coast of Colombia are presented as sustainable models, but in practice degrade natural systems and violate the rights of local communities. Theoretically, these analyzed cases

show the transition from coasts and the sea as a common good of local communities, to a mixture of private or state-controlled goods that are inserted in coastal management models that are presented as sustainable and inclusive models. Therefore, based on data on the degradation of natural and social systems in the region, the notion of sustainability that underlies national maritime management policies and that accentuates regulation patterns on the sea tending to scenarios of exclusion of artisanal fishing communities is problematized. An already complex context that is exacerbated by the negative impacts of climate variability, with the devastating effects of commercial-industrial fishing and ocean pollution. However, from the fieldwork elaborated in 2020 and 2021 by the authors, it will be shown that fishermen, as good connoisseurs of adversities, generally rethink their practices and adapt to gradual or abrupt changes in ecosystems (sea-level rise, frequency and intensity of severe weather events), to the extent that their bond with the sea goes beyond the trade, the economic activity. For fishermen, fishing is an identity practice that requires the sea for its survival.

Keywords: Sustainability; Sea regulation; Caribbean; Maritories (maritime territory)

2. Ponencia presentada en el XVIII Encuentro Internacional de la Cátedra Latinoamericana Ignacio Ellacuría SJ: Cuidado de la Casa común y Crisis Ecosocial, conflictos, resistencias, alternativas. Sevilla, España 12, 13 y 14 de diciembre del 2022.

TERRITORIOS COMUNALES EN RIESGO DE PRIVATIZACIÓN Y EXCLUSIÓN EN EL
CARIBE: IMPLICACIONES PARA LA SOSTENIBILIDAD Y LA JUSTICIA
SOCIOAMBIENTAL INTERCULTURAL

RESUMEN

En el Caribe colombiano subsisten tierras comunales y otros bienes comunes, como las áreas de sabanas y de bajamar en la zona insular que se caracterizan por una riqueza en la funcionalidad de sus ecosistemas y por ser la tierra ancestral de grupos étnicos, en su mayoría, poblaciones afrodescendientes. Pero, consideran los estudios consultados que, uno de los principales problemas ha sido la privatización de los espacios de uso comunitario y la degradación de los recursos que dan sustento a las poblaciones nativas, particularmente el acceso al agua. La irrupción de lo privado sobre los territorios colectivos es un eje de discusión importante en el estudio de la sostenibilidad. Sin embargo, la Agenda 2030 ha influido en el diseño de políticas públicas en Colombia y otros países de la región, pero existen muchos vacíos en la manera como una política global puede ser interpretada y adaptada a los territorios. Así, esta ponencia busca discutir críticamente la política pública de sostenibilidad implementada en el Caribe colombiano basada en casos que muestran que los modelos son insuficientes, por lo que se requiere una perspectiva de justicia socioambiental intercultural. Así, el debate teórico sobre el manejo efectivo de los bienes comunes y su sostenibilidad transita por varios espectros. Por un lado, el aumento de la institucionalidad del Estado y el fomento de reglas centralizadas y, por otro, la privatización de los bienes comunes. Adicionalmente, frente a la dicotomía de lo público y lo privado, se debe poner en valor la protección de los sistemas de manejo colectivo a través de arreglos locales de regulación, como una estrategia basada en los derechos de tenencia y la conservación de áreas con importancia ecológica.

Palabras claves: sostenibilidad, Caribe, interculturalidad, privatización, bienes comunes.

Anexo B: Otra Producción Científica y Méritos

Además de los tres artículos JCR que constituyen el resultado central de la tesis doctoral, hay otros artículos publicados en el transcurso de la tesis doctoral en colaboración con grupos de trabajo a nivel internacional

1. Comunicaciones en seminarios internacionales publicadas:
 - **Herrera, J** & Senent, J.A. Fishing in Privatized Seas: environmental problems, local communities, and challenges for sustainability in the Colombian Caribbean. Proceedings of the 39th IAHR World Congress 19–24 June 2022, Granada, Spain doi://10.3850/IAHR-39WC2521716X20221824.
<https://www.iahr.org/library/infor?pid=20736>
 - Bolaños, O. **Herrera, J** & Arrieta M. (2020). Collective Land Tenure in Island Areas of Colombia: legal challenges and obstacles. Conference: “2020 WORLD BANK CONFERENCE ON LAND AND POVERTY” At: Washington DC, USA.
[https://www.researchgate.net/publication/340038688 COLLECTIVE LAND TENURE IN ISLAND AREAS OF COLOMBIA LEGAL CHALLENGES AND OBSTACLES](https://www.researchgate.net/publication/340038688_COLLECTIVE_LAND_TENURE_IN_ISLAND_AREAS_OF_COLOMBIA_LEGAL_CHALLENGES_AND_OBSTACLES)

2. Artículos científicos publicados en colaboración con redes académicas internacionales
 - Mannisi, A., Tapia-Martin, C., **Herrera Arango, J. H.**, Pittungnapoo, W., & Saito, S. (2023). Within Aquatic Life. Beyond the Anthropogenic Maritorium Prospect. *Estoa*. 12(23), 7-18. DOI: <https://doi.org/10.18537/est.v012.n023.a01>
 - Bolaños, O. **Herrera Arango, J.** Guerrero, C. & Helo, E. (2021). Bridging Research and Practice to Influence National Policy: Afro-Colombians Territorial Rights, from Stagnation to Implementation. *Bulletin of Latin American Research* Vol. 41, No. 2. <https://doi.org/10.1111/blar.13248>

3. Estancia predoctoral internacional:

La estancia de tres meses se desarrolló en Roma, Italia en el marco del convenio entre The Food and Agriculture Organization (FAO) y The International Land Coalition quienes estaban diseñando un Ciclo de Aprendizaje sobre Derechos Territoriales de Grupos Étnicos y Sistemas de Información Geográfica. (Agosto – Octubre 2022)

4. Docencia universitaria:

- Universidad Tecnológica de Bolívar (Cartagena). 2021. Profesora invitada a Seminario Métodos de Investigación Ambiental para la Maestría en Desarrollo. (20 horas)
- Universidad de Sevilla. Máster en Ciudades Sostenibles. 2022 y 2023. Profesora invitada a curso Formas de Vida. (6 horas).
- Pontificia Universidad Javeriana. Profesora a cargo del Observatorio de Territorios Étnicos y Campesinos.

5. Participación en proyectos y consultoría:

- Participación en la formulación y puesta en marcha como coinvestigadora del proyecto titulado “De costa a costa: retos socioecológicos en los litorales de Andalucía y el Caribe frente a la Agenda 2030”. Obtuvo el primer lugar en la categoría Andalucía sostenible y ecológica de la Fundación Centro de Estudios Andaluces- CENTRA. 2023-2024.
- Coinvestigadora en proyecto de investigación “titulación de tierras ancestrales de comunidades afrodescendientes”. Universidad Javeriana, Proceso de Comunidades Negras y The Tenure Facility.
- Coinvestigadora en proyecto de investigación “Mapping the Presence, Lands, and Territories of Afro-descendant Peoples in Latin America and the Caribbean: Findings and Challenges for the Climate Debate and Collective Tenure Rights. Universidad Javeriana, Proceso de Comunidades Negras y The Coalition Rights and Resources Initiative

6. Participación en grupos de investigación:

La doctoranda hace parte del grupo de investigación Conflicto, Región y Sociedades Rurales de la Pontificia Universidad Javeriana reconocido por el Ministerio de Ciencias de Colombia en la Categoría A



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