



# Spotlighting power dynamics: **Metacoupling as a lens for understanding equitable resilience in southern African**

A metacoupling approach explores the interconnections and interdependence of social-ecological systems (SES) at multiple scales. This research brief describes the metacoupling framework using southern African case studies linked to export horticultural value chains and transboundary fisheries to demonstrate how a greater focus on cross-scale (i.e. metacoupled) connections can help identify key leverage points for fostering resilience and equity.

Resilience and equity are usually considered within a place-based lens, providing important context-specific insights. However, our current understanding of the interconnected world suggests that external factors have important roles to play in shaping local dynamics and equity outcomes. Thus, pairing a metacoupling lens with an equity assessment allows for a deeper understanding of the complex relationships between SES and the flow of resources, benefits, and burdens across scales.

## Definitions

- **Value chains** refer to the entire process of producing, distributing, and selling a product, from the extraction of raw materials to the end-user. It involves the various stages and actors involved in bringing a product or service to market.
- **Cross-scale value chains** are value chains that operate and involve interactions at multiple levels or dimensions. This could include value chains that span different geographical regions.
- **Equity**, in a comprehensive sense, involves fair and just treatment for all individuals, acknowledging and addressing various dimensions to ensure a balanced and inclusive outcome. It encompasses several key dimensions of distribution, recognition, procedure and context.
- **A social-ecological system** is a concept that emphasises the interdependence and dynamic interactions between human communities and their surrounding ecosystems. It recognizes the reciprocal influences, feedback loops, and adaptive processes between social and ecological elements.
- **Social-ecological resilience** is the capacity to anticipate, respond, adapt, or transform in response to shocks, uncertainty, and change, especially novel systemic changes, in order to facilitate desired outcomes.



# What is metacoupling?

Metacoupling is a new concept of research to systematically understand human-nature interactions (couplings), by highlighting intricate connections between multiple regions and communities. In this way, metacoupling helps to unveil the ways in which environmental changes and resource use in one area can affect communities and ecosystems in distant locations. This can lead to a broader perspective on equity issues, making it clear that seemingly local actions have global consequences, and vice versa.

**Coupling:** Interactions over time and space linking different systems or different parts within a system, often involving fluxes of energy, materials, organisms, and/or information

## Key aspects of metacoupling<sup>1</sup>



Metacoupling refers to the **interconnectedness between multiple coupled human-natural systems** across different spatial and temporal scales.



It involves the study of how **changes in one system can influence and feedback into another system**, leading to complex interactions and outcomes.



Metacoupling **recognises the global nature of social and environmental issues** and emphasizes the need for integrated approaches.



The addition of an **equity lens** to metacoupling frameworks can enable greater understanding of key leverage points for catalysing change.

## Understanding the metacoupling framework<sup>2</sup>

As depicted in Figure 1 on page 3, various human-nature interactions between human systems (e.g. populations, households) and natural systems (e.g. biodiversity, climate) are generated by flows within the system (intracoupling), between adjacent systems (pericoupling) and between different systems (telecoupling).

Human-nature interactions occur horizontally (among systems of different hierarchical structures at the same spatial scale), diagonally (among systems of different hierarchical structures at different spatial scales), and vertically (among systems of the same hierarchical structure across different spatial scales); and change over time.

1. <https://www.canr.msu.edu/telecoupling/metacoupling/>

2. Liu, 2023. <https://esajournals.onlinelibrary.wiley.com/doi/full/10.1002/fee.2289>

## Metacoupling

Coupling **within** a system and **across** different systems

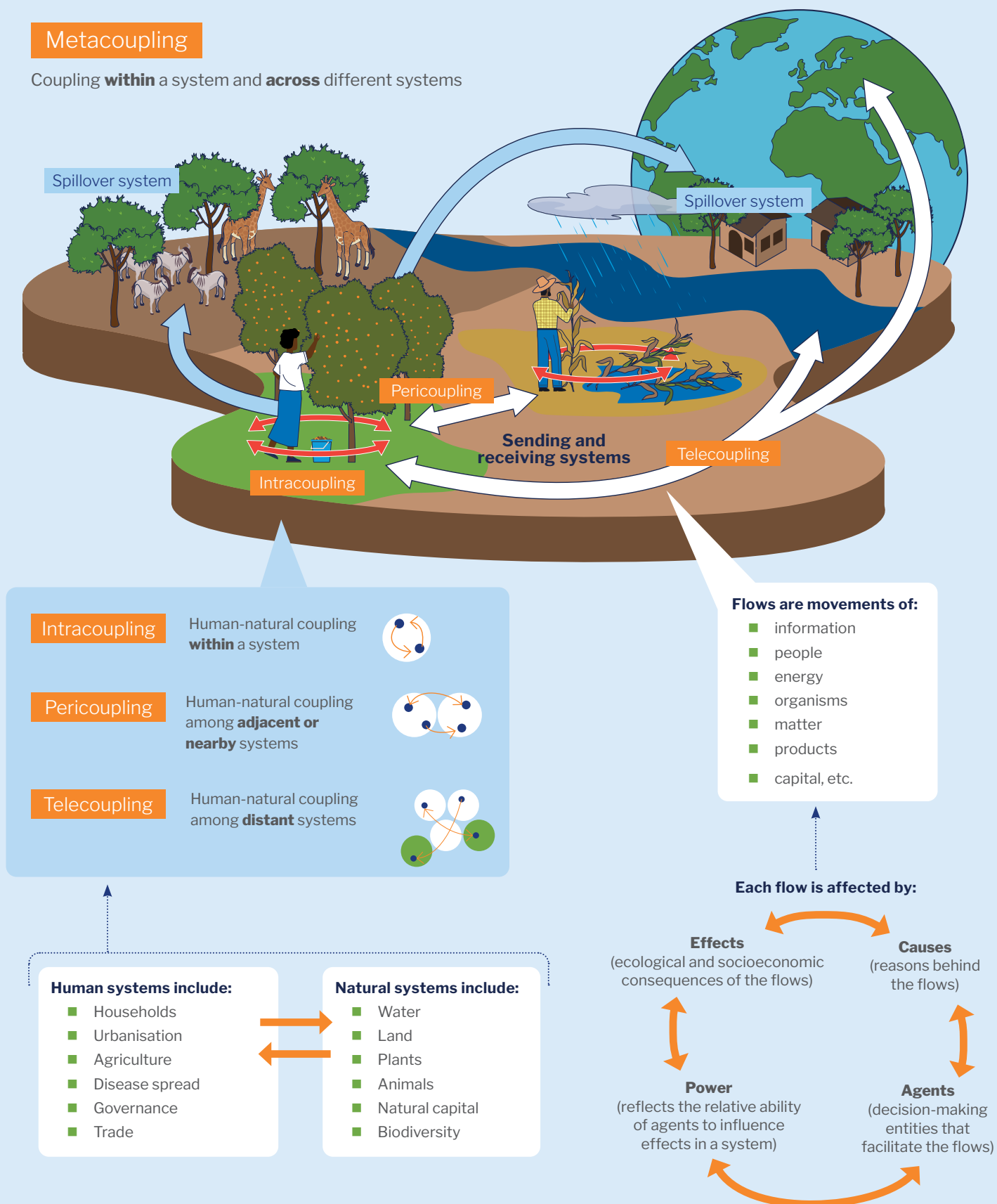


Figure 1: A diagram of the metacoupling framework and its relationship to sustainability.

# Why metacoupling?

Metacoupling provides a nuanced understanding of various systems that helps to create awareness and better inform policymakers and stakeholders about the potential ripple effects of their decisions on distant regions.

Metacoupling analysis can lead to more informed and equitable policy choices that consider the interests and needs of not only local populations but also those who might be indirectly impacted by those decisions.

It can also serve as a basis for educational initiatives and advocacy efforts, fostering a sense of shared responsibility for addressing disparities worldwide.

The framework does however have some drawbacks. For instance, data collection and integration can be complex, models might over-simplify reality and miss nuances, and often there is a limited understanding of certain interactions and feedbacks.

➤ See also 'Key principles for applying a metacoupling framework'

## Benefits of a metacoupling framework



### Understanding interconnections:

Metacoupling highlights the intricate connections between different regions and communities. This understanding helps to unveil the ways in which environmental changes and resource use in one area can affect vulnerable communities and ecosystems in distant locations. This can lead to a broader perspective on equity issues, making it clear that seemingly local actions have global consequences.



### Addressing root causes:

Metacoupling encourages addressing the root causes of equity issues by examining the complex web of interactions. Instead of focusing solely on the symptoms, this approach facilitates a deeper understanding of how economic, social, and environmental factors contribute to global disparities.



### Global equity awareness:

By acknowledging the global interdependence of social-ecological systems, metacoupling encourages discussions around global equity. It makes it harder to ignore the inequities present in resource distribution, access to benefits, and the disproportionate impacts of environmental changes on marginalised communities around the world.



### Collaborative solutions:

To effectively address meta-coupled equity issues, collaboration becomes essential. Communities, governments, and organizations are encouraged to work together across boundaries to develop holistic solutions that consider the interconnectedness of the challenges and opportunities.



### Policy and decision-making:

Metacoupling informs policymakers and stakeholders about the potential ripple effects of their decisions on distant regions. This can lead to more informed and equitable policy choices that consider the interests and needs of not only local populations but also those who might be indirectly impacted by those decisions.



### Promoting environmental justice:

Environmental injustices often stem from unequal distribution of resources and impacts. Metacoupling helps reveal these disparities and fosters a sense of global responsibility to rectify them. This aligns with the principles of environmental justice, which advocates for fair treatment and meaningful involvement of all people in environmental decisions.



### Education and advocacy:

Metacoupling can be a powerful tool for raising awareness about equity issues in a global context. It can serve as a basis for educational initiatives and advocacy efforts, fostering a sense of shared responsibility for addressing disparities worldwide.

## Using a metacoupling lens to understand equity dimensions

Sustainable development cannot be achieved without addressing equity and justice. Despite this, there is still inequality in various sectors of society, including within and between countries' consumption of materials, in the food system, and within international trade and value chains. **Bringing in the issue of equity requires an understanding of dynamics such as distributional issues, procedural equity, and recognitional equity within specific social-ecological contexts** (see Figure 2).

By combining this new metacoupling framework together with an analysis of the multidimensional aspects of equity, we hope to deepen our understanding of the diverse social-ecological feedbacks and flows (e.g., cross-scalar tradeoffs, feedbacks, synergies and tensions), in order to spotlight key leverage points for enhancing management and governance decisions that can improve social-ecological outcomes at local to global scales.

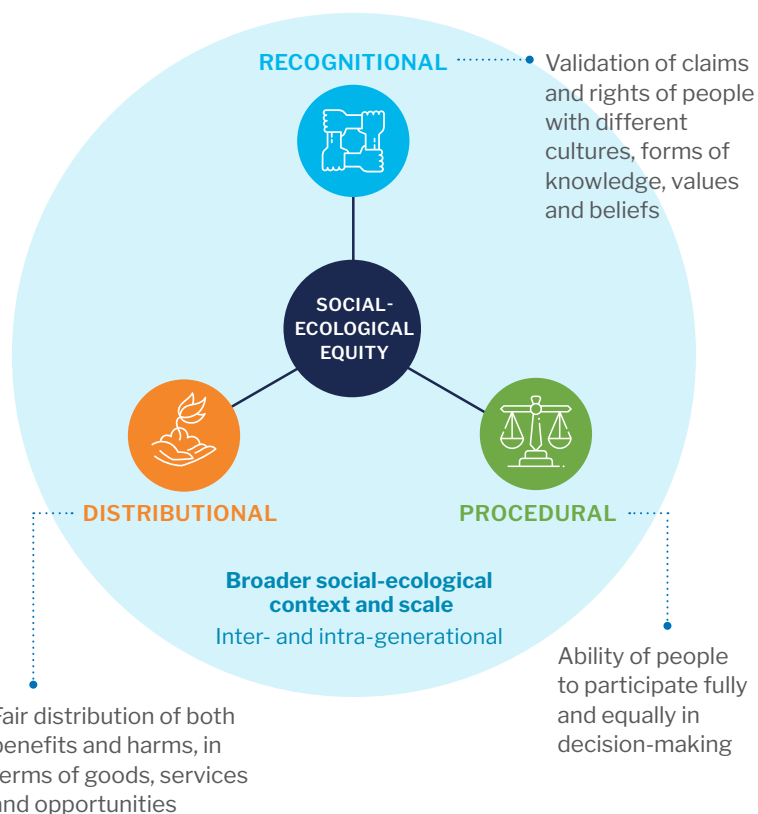


Figure 2: Dimensions of equity.

### Highlighting multiple scales

Metacoupling emphasises the interplay between multiple actors, interacting at multiple scales, underscoring the importance of 'zooming in' or sharpening focus on how cross-scale interactions shape system behaviour.

**This is useful for the mobilisation or co-development of specific policy instruments** that can be effective at different scales for different actors and institutions, for example:

- **socio-cultural instruments** (e.g. co-management agreements, certification and labelling, socially responsible investments, corporate social responsibility and awareness raising initiatives),
- **legal and regulatory instruments** (e.g. legally protected areas, ecological reserves, expanding food market transparency, commodity chain regulation, trade bans, rights of nature approaches, environmental public

interest litigation and environmental impact assessments),

- **economic and financial instruments** (e.g. taxes on consumption, environmental subsidies and eliminating harmful subsidies and payment for ecosystem services), and especially
- **rights-based instruments** (e.g. customary instruments that strengthen collective rights and customary institutions of Indigenous and local communities promoting fair and equitable management of resources, access and benefit sharing, free prior and informed consent and other effective area-based conservation measures).

By shining a light on multiple scales, one is able to surface connections between global flows and local equity issues which might be otherwise missed.

# Case studies

The objective of this study was to use a metacoupling approach to spotlight equity dynamics that can strengthen or undermine resilience in interconnected and cross-scale value-chains. We investigated three local-level case studies involving value chains that have transboundary or metacoupled interactions (as depicted in Figure 3):



## Breede Catchment, South Africa:

Export of stone and pome fruit to Europe, UK and Russia from South Africa



## Groot Letaba Catchment, South Africa:

Export of citrus to Europe, UK, Russia and China from South Africa.



## Transboundary fish trade, Namibia:

Export of fish stocks to Zambia and DRC from Zambezi region, Namibia

**We focused specifically on factors that might enable or constrain equity dynamics, that is, focusing on actors and/or institutions, agency and power dynamics at various mediation points in the value chains to identify potential leverage points for intervention.**

We applied the learning from these case studies in a fourth case to explore the utility of a metacoupling framework for understanding equitable resilience in the context of Biosphere Reserves.

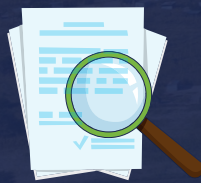
➤ See 'Key principles for applying a metacoupling framework'

## Metacoupling framework were used in case studies to:



### Identify coupled systems

- What are the main flows (movements of material, information, people, etc., within/between places/systems)
- Where do the flows move from and to (sending and receiving places/systems)



### Gather relevant data on the dynamics of each system

- Who benefits from these flows?
- How these flows affect other places and people? (spillover places/systems)
- Identify the key drivers of change in each system and assess how they interact across systems (Who makes the decisions?)



### Analyse interactions

- Explore how changes in one system impact other places and actors.
- Use models and tools to understand feedback loops, cascading effects, and emergent properties.
- Contrast how benefits and burdens are distributed, in order to explore equity issues.



### Explore potential use of the outputs

- Scenario building
- Policy and practice recommendations
- Continuous monitoring, evaluation and learning

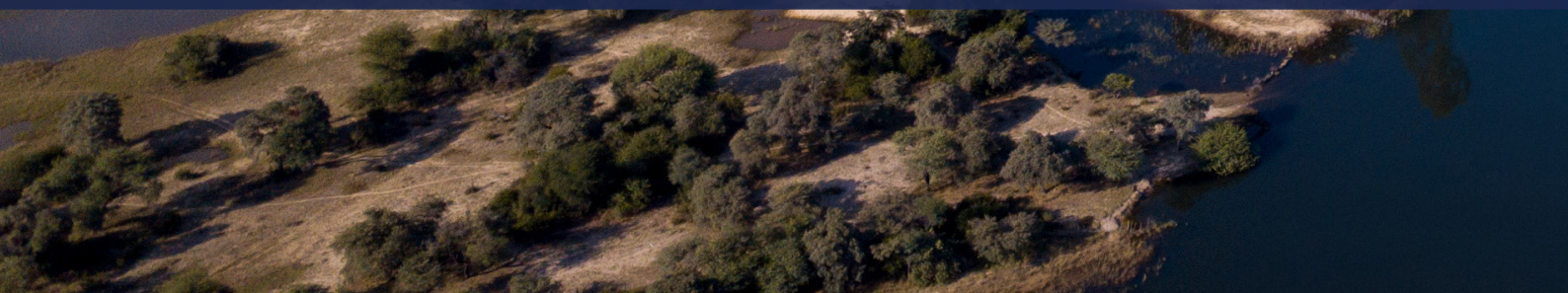
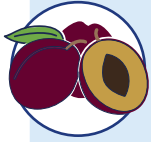




Figure 3: Schematic showing the main flows of citrus, fish, and stone and pome fruit from the case studies to a range of global regions





## CASE STUDY 1

# Breede River Catchment, South Africa

### Background

South Africa was the 6<sup>th</sup> largest exporter of pome fruit and 7<sup>th</sup> largest for stone fruit in 2021, and farms in the Breede River Catchment produce the largest percentage of these fruit in the country. While the destination varies for specific fruit types, the majority is exported to the EU, Russia, the Middle East, the United Kingdom, and Africa.

Agriculture only contributed 2,3% to the South African GDP in 2021, but it is still considered an important source of foreign exchange, employment and food security. Deciduous fruit production in particular is a labour intensive undertaking, providing on-farm employment to approximately 64 200 people.

Around 50% of deciduous fruit is exported, which accounts for 80% of the gross value in the industry. Of the remaining volumes, 17.8% is sold on the fresh produce markets, other markets and directly to retailers, while the rest is processed into either juice, canned or dried products which are sold both internationally and locally.

There are many interactions that have equity implications in metacoupled systems. However, we focus on a few key ones to illustrate how the metacoupling framework can be used to highlight the effects that interactions at one scale can have at another.

### Distributional equity

South African fruit producers draw great benefit through their ability to supply the high value consumer markets of Europe. A favourable exchange rate and relatively low production costs, compared to European producers, allow South African producers who gain access to these markets to achieve a greater return on their products than they would receive in local markets.

Due to the strict certification requirements to achieve standards of food safety, and environmental and social responsibility, international markets are however also the hardest to access. It may require producers to spend more money on, for example, pesticides which have lower environmental or health impacts than the broad spectrum pesticides they may have used previously.

Standards such as these therefore make it harder for emerging and small-scale producers to participate and draw benefits out of the high-value export market. The capital investment required to implement the systems which comply with certification standards may be too costly for producers to afford, while the amount of fruit they produce and sell may be too little to justify the costs of audits through which their fruit becomes certified. Emerging and small-scale producers can therefore be restricted from growing their business in the same way that established, large-scale farmers do when conditions are favourable.





The historical context of South Africa also continues to influence the current distribution of benefits in the deciduous fruit industry. Despite longstanding efforts of economic and land reform to redress the exclusionary effects of Apartheid and similar segregationist policies, there has been very little integration of previously disadvantaged South Africans into the ownership structures of the deciduous fruit industry. The majority of productive resources like land and water is therefore still in possession of white producers, and it is these producers who draw the greatest benefit through their access to international, mostly European, markets.

Where previously disadvantaged individuals do get access to suitable land, high levels of capital input costs, and often their inability to access production loans, further restrict them from producing fruit and gaining access to international markets in the same way that established producers do. These farmers therefore enter the industry on the back foot, since they first have to acquire the funds, knowledge, and other resources to be able to produce fruit, while established farmers pass them down from generation to generation.

### Procedural equity

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The extended value chain which the export fruit industry forms part of consists of many procedural components that mediate the flow of resources and information between people and groups. Power dynamics between South African producers and large multinational retailers favour the retailers, who can therefore dictate terms. Especially small-scale producers are affected by this, since the producer carries the greatest amount of risk amongst the actors involved in the value chain. Part of the power imbalance is seen in the certification standards that are imposed on producers. These represent a basic requirement for producers to access high value markets. Many of the certification requirements are however not relevant to South African producers, and there is little opportunity for producers to provide feedback and influence the standards that are imposed on them.

Many processes at government level also lack input from producers or their representatives. Examples of these are the phytosanitary regulations which EU governments imposed on South African producers at short notice, resulting in excessive losses to producers who have orientated their business exclusively towards the export markets. Locally, the governance of public infrastructure like the electricity network and port and rail facilities also lack processes which allow producers to be included in the decisions that are made. This is especially relevant since the functioning of these

“Where previously disadvantaged individuals do get access to suitable land, high levels of capital input costs, and often their inability to access production loans, further restrict them from producing fruit and gaining access to international markets...”

infrastructures greatly affect the ability of producers to grow and sell their fruit, therefore impacting on the livelihoods of all who are participating in the industry.

### Recognitional equity

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The case also holds examples of a lack of recognition for individuals with legitimate claims, values and knowledge in the fruit industry. While these are less common than the distributional and procedural equity-related issues mentioned above, they are often related in that a lack of recognition may underpin the procedural exclusion of people, and therefore affect the benefits or burdens they receive.

In this case, we see it again play out through certification schemes that impose international standards of food quality, environmental and social conditions which are not all relevant to local producers, and therefore represents a lack of recognition for the local context in which South African producers operate. Generally, there is also a lack of recognition for the difficulties that emerging producers face in order to become stand-alone producers. By recognising the multiple barriers that new and emerging producers need to overcome, and acknowledging the low base from which they have to start their farming operation, it may enable the targeted support which they require to successfully participate in the industry.

Finally, we see various forms of recognitional inequity in the partnership arrangements between emerging and established producers. While these are intended to aid the national objective of land reform, and have achieved marked successes in doing so, there are also instances where emerging farming partners are regarded as “previous employees” and not as equal partners in the eyes of their commercial partners. This lack of recognition devalues the relationship between emerging and established producers, and also prevents the meaningful transfer of knowledge and skills to emerging producers. From the commercial partner’s perspective, there is a lack of recognition for the time and resources which they are required to invest into partnerships, with no added incentive for them to do so.

## Coupled systems identified

The metacoupled system is made up of the deciduous fruit producing industry and its focus on exports to international markets. The intra-coupled system is the Breede River Catchment which is where fruit is produced and is influenced by the historical context of South Africa.

Second is the peri-coupled system which is made up out of the critical infrastructure necessary for fruit production and distribution to international markets, and third is the international retail markets of Europe where the majority of fruit is consumed, and therefore forms the telecoupled connection with the fruit producing farms of the Breede.

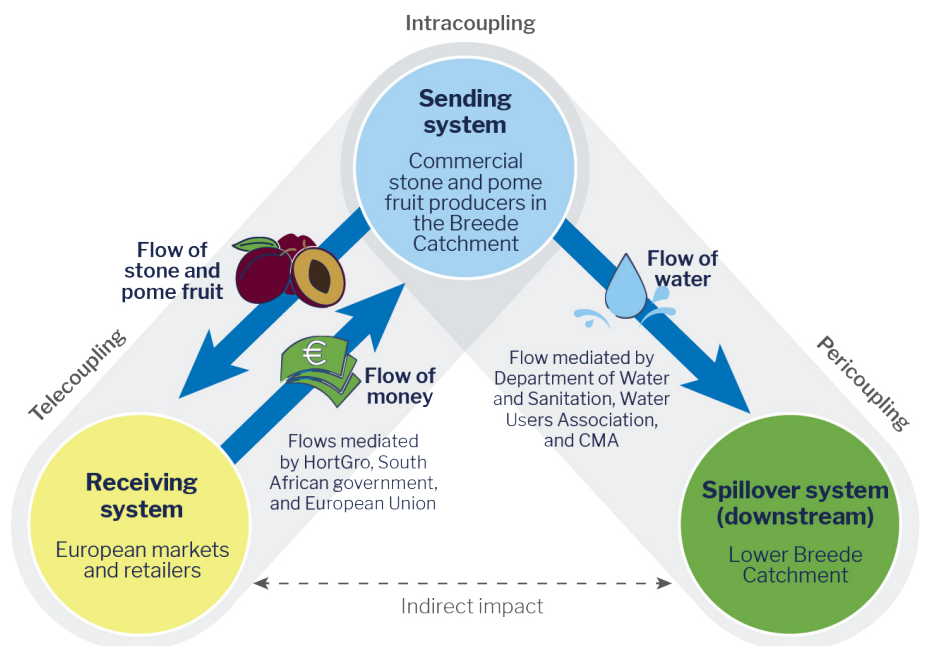


Diagram of the tele-, peri- and intra coupled Breede catchment social-ecological system

## Beneficiary data collected

Direct local beneficiaries are farmers selling their fruit. The well developed industry primarily exports fruit to the high value markets of Europe. However, these markets also impose the most stringent requirements in terms of food safety, quality and certification, requiring additional capital to access. Indirect beneficiaries are those who are employed in the industry, including that of the extended value chain. The Department of Water and Sanitation receives revenue from water use, and the economy benefits from foreign exchange it receives for fruit exports.

Emerging farmers are located in the same catchment, but often lack the resources and knowledge to produce fruit at a scale suitable for exports. These farmers therefore supply their produce to local markets which offer lower returns. Where they are partnered with established commercial farmers, emerging farmers may export fruit to international markets using established channels.

## Analysed interactions

Through our analysis we observe how the structures that mediate the flow of fruit between the Breede River Catchment and Europe influence the ability of producers, particularly small-scale and emerging ones, to participate in the deciduous fruit industry. In many cases, the power imbalance between producers and

retailers, the barriers to market entry, and the lack of support from government and the local community make it exceedingly difficult for these producers to successfully participate in the industry.

We also identify a number of interventions which aim to address many of the inequities that emerge in the metacoupled fruit system. While these interventions achieve successes in correcting distributional and procedural inequities, there is potential for even greater impact by integrating recognitional equity into the implementation of interventions.

## Usable outputs

- There is a need for **greater alignment between the structures that mediate the flow of fruit and the context specific objectives** of local places where fruit is produced.
- An emphasis is placed on the need for the context that has led to the current state of the industry to inform the recognitional, procedural and distributional objectives in metacoupled systems. Furthermore, **interventions should include all three of these dimensions in their planning** as they seek to influence equity in the system.



## CASE STUDY 2

# Export fruit production in the Groot Letaba Catchment, South Africa

## Background

South Africa is the second largest exporter of citrus in the world and supplies fruit to the Netherlands, United Kingdom, United Arab Emirates, Russia, and China. A large portion of this fruit is produced in the Groot Letaba Catchment, which is situated in the Lowveld region in the north east of South Africa.

The catchment can be divided into three distinct agro-ecological zones:

- the upper catchment includes the wet mountainous zone above the town of Tzaneen,
- the middle catchment lies at the foot of the escarpment, and
- the lower catchment stretches towards the western border of Kruger National Park.

Citrus is largely produced by commercial farmers in the lower reaches of the catchment. Below the large citrus producing areas, lie mostly black communities which include smallholder farmers who grow food for consumption and occasionally sell surplus. This dual farming system is a legacy of apartheid, which has shaped the current context and affected inequities in the catchment. Some of these inequities are evident in the allocation of water which is essential for citrus production, with commercial agriculture receiving considerably more water when compared to smallholder farmers. Several smallholder farmers have entered into contract agreements with commercial producers in order to access the export fruit markets. Some community members are also employed as labourers on the commercial citrus farms.

## Data gathered on dynamics and beneficiaries

There are multiple actors involved in the flow of export fruit from the Groot Letaba catchment. In addition to producers, there are also exporters and logistics companies based in South Africa as well as internationally based actors such as receivers (or importers) and supermarkets. The flow of fruit is also mediated by the European Union (EU) and international standards such as Global Gap, while access to resources (such as water and land) is mediated by local actors, including the Department of Water and Sanitation, Traditional Authorities, and Water User Associations (defined as voluntary “associations” of individual water users who wish to undertake water-related activities for their mutual benefit).

## Analysed interactions

The ability of producers to sell their goods on European markets is determined in part by EU regulations. For example, stringent phytosanitary requirements imposed by the European Union to address False Codling Moth have limited the ability of South African growers to market their produce on European markets. At a local scale, water use has in the past been poorly regulated. This led to some export fruit producers reportedly exceeding prescribed limits, particularly during periods of water stress. As a result, there was limited water available for downstream users, with historical accounts of water not reaching Kruger National Park.



## Coupled systems identified

There are a variety of coupled systems in this case study. The lower Groot Letaba catchment is coupled with the EU through the flow of citrus and foreign exchange (tele-coupled system). These lower reaches are also coupled with the Kruger National Park via a secondary flow of water (peri-coupled system) while actors in this portion are connected via water and employment opportunities (intra-coupled system).

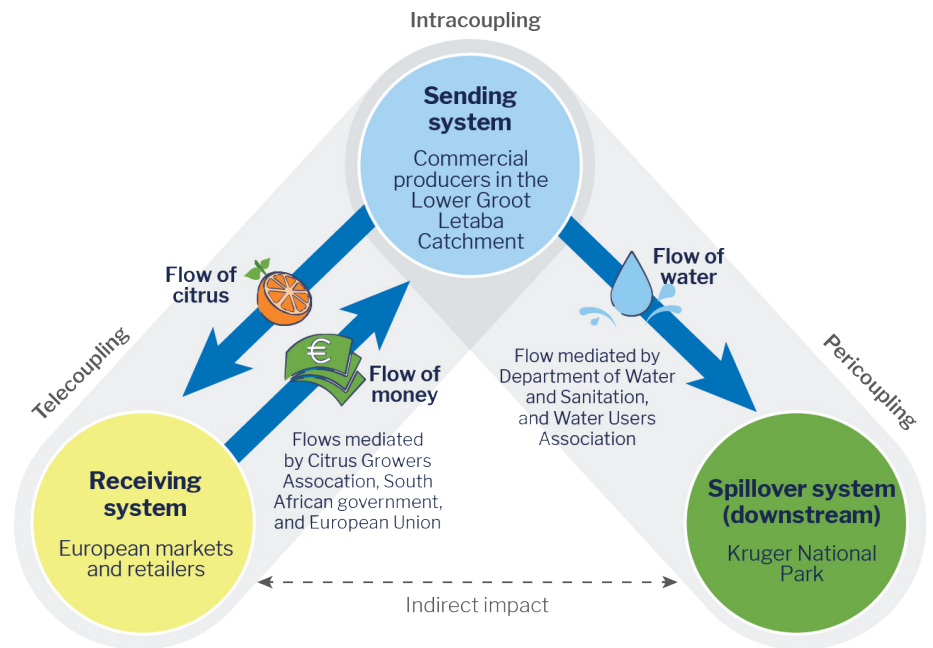


Diagram of the tele-, peri- and intra coupled Groot Letaba social-ecological system

## Equity in the Groot Letaba Catchment

### Distributional equity

- Commercial farmers often have access to training, technical assistance, administrative services, finances, and export markets, while smallholder farmers generally do not. During the dry season or drought periods, smallholder farmers also experience water shortages rather than the upstream commercial farmers.
- Consequently, smallholder farmers without boreholes to supplement irrigation water may be forced to abandon their farms and seek alternative livelihood options. The provision of employment opportunities by commercial farms is frequently highlighted as a substantial benefit to local communities.

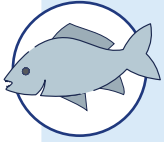
### Procedural equity

- The actors involved in water governance include the Department of Water and Sanitation, the Water User Association, and the municipality.

- Commercial and contract farmers have representatives on the Water Users Association, but smallholder farmers do not. As a result, these actors have very little say in how water is managed in the catchment.

### Recognitional equity

- The Water User Association meetings are conducted in English and Afrikaans, as these are the languages spoken by the majority of WUA members, who are primarily commercial farmers.
- The home languages of smallholder and contract farmers, namely Sepedi and Xitsonga, are not used in these meetings, even though many of them do not understand Afrikaans.
- This makes it difficult for smallholders and contract farmers to engage in water management decisions, including those around allocations and abstractions. Consequently, these actors feel marginalised.



### CASE STUDY 3

## Transboundary fish trade, Namibia

### Background

Freshwater fish is an important source of food and livelihoods for millions of people worldwide but the freshwater ecosystems are undergoing the fastest decline in biodiversity. The decline causes a shortage of supply in large parts of the world, compromising the socio-ecological resilience and creating inequities among communities who are often highly dependent on fish as their main source of animal protein.

The communities in the vast wetland regions of Namibia and specifically the Zambezi region used to rely strongly on fish as their source of food and as part of their cultural identity, but a shift in governance and management regimes left the rivers largely open-access and uncontrolled.

A new demand for fish in other African countries caused an unexpected flow of fish and money between Namibia and Southern African countries, with DRC being the most prominent destination. The Namibian fisheries policy considers the rivers for subsistence use only, but the lack of control provides loopholes for the unlimited extraction of fish for commercial purposes. Increased level of efforts including exploitative employment and the use of illegal and destructive gear, resulted in a sharp decline of fish stocks and diversity in the Namibian rivers.

### Beneficiary data collected

The beneficiaries are fishers, who have a better sales opportunity than locally, and traders/entrepreneurs who are often locals with access to a minimum of funds to cover expenses like processing, storage and transport of fish, and thus leverage substantial income from a communal resource. Other beneficiaries include transport service providers in Namibia and across the border.

### Coupled systems identified

Fish is sold locally (intra-coupled system), exported through the official border posts or smuggled across the rivers to Southern African countries, mostly to the adjacent markets in Zambia (peri-coupled system) and DRC (meta-coupled system); from all systems, money flows back to individual traders and to a lesser extend, to fishermen.

Fishers from Zambia are used as cheap labourers that are exploited. At the same time, alien invasive fish species from aquaculture, mostly from Zambia, bring about a competition to satisfy the market demands but are a threat to the rivers and the integrity of the ecosystem and its ability to deliver goods and services (spill-in).

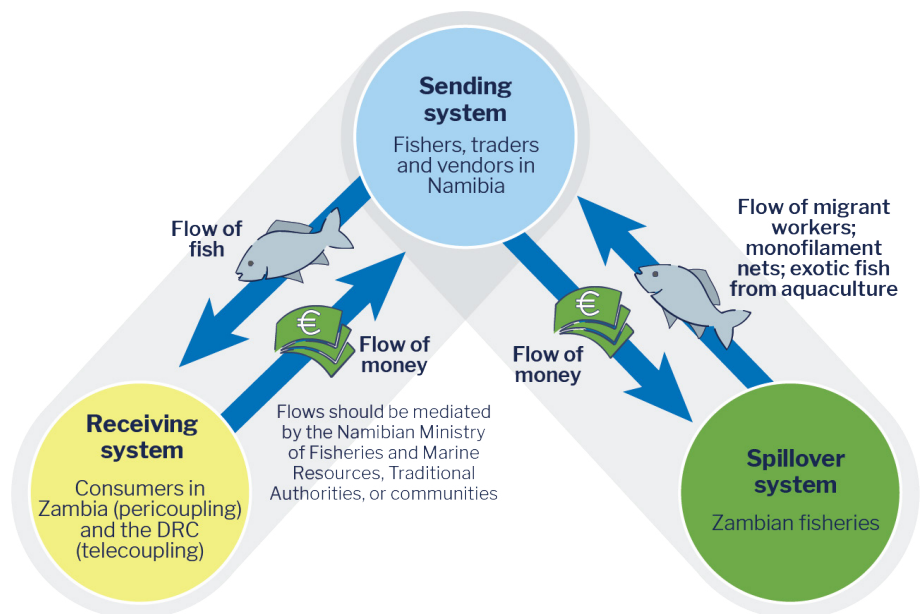


Diagram of the tele-, peri- and intra coupled Namibian fisheries social-ecological system

## Analysed interactions

Fishers have de facto open access to fish and the trade. Dwindling resources caused the price of fish to more than double over the last decade, while the consumption of fish has roughly halved.

The absence of control mechanisms allows individuals to use opportunities to benefit from communal resources: the powers of the traditional authorities have dwindled, the government has little operational and legal means to control the rivers and vast wetlands. The shared nature of the rivers like the Zambezi, and

discrepancies between laws and policies make it very difficult to enforce any law, because the law changes once the middle of the river is crossed.

## Useable outputs

Leverage points that arise from the analysis include:

- Who has the legal obligation and operational means to control the use of resources at local level?
- Who can control, limit or prohibit the export of fish?

## Equity in the Namibia transboundary fish trade

### Distributional

- Fish has become expensive and more difficult to access for the actual resource owners. Vulnerable people (e.g. the elderly and female-headed households) who highly depend on affordable sources of macro- and micronutrients bear the burden of the unlimited exploitation of the communal resources.
- Fishing is part of the social fabric, and fish are an essential part of the culture and heritage, including spiritual and healing/medical purposes. The absence of fish has negatively impacted social cohesion, traditional knowledge and the identity of riverine communities.
- The use of harmful fishing gear and methods (e.g. dragnetting) cause long-term damage to the ecosystem through the destruction of habitats, breeding grounds and juvenile fish populations, reducing the ability of the ecosystem to deliver goods and services. This negatively impacts downstream sectors (e.g. tourism) and the ability of future generations to benefit from fish.

### Procedural

- Access to and trading of fish is open to every member of the riverine communities and, implicitly, also to outsiders that come with the intention to exploit.
- Fisheries need a permit from the Traditional Authority and from the Ministry of Fisheries and Marine Resources, but fishing without permit has little consequences.
- The amount of fish that can be caught is not regulated, which is why the Namibian government can enforce the law only to a limited extent (presence or absence of a permit).

- The export of fish is not regulated but rather promoted through the SADC protocol on fisheries; custom fees are charged for crossing the border but the value of fish was never properly assessed. In Zambia, permission to sell the fish has to be obtained by the local Traditional Authority.
- The power vacuum allows for trade with highly inequitable consequences.

### Recognitional

- The lack of enforcement of statutory law has left the Traditional Authorities, as custodians of the resources, with a diminished ability and willingness to regulate access to and distribution of communal resources.
- Traders often come from wealthy and influential families within the communities and are therefore seen as catalysts of the much desired local development, while they actually abuse the solidarity of other local community members who not only tolerate the business models but consider the traders as role models and as an opportunity to benefit directly or indirectly from the wealth they accumulate.
- There is little willingness and ability, especially among the vulnerable groups who carry the burden, to dare question the unequal distribution of the resources and the benefits arising of it especially when caused by influential members from their own community.
- The willingness of foreigners to work as cheap and often illegal labourers in Namibia and to exploit the fish resources creates animosities and xenophobia, exacerbating potential conflicts around resources and cultural identity.

# Key insights

The research findings enrich the reflections of Liu (2023) and address one of the key concerns of telecoupling and metacoupling research which is how to “empower small agents in a large world”.

- The case studies illustrate the indirect impacts of these value chains on smallholder farmers and local communities, primarily through **changes in access to natural resources** (such as water and land).
- **Increased connectedness in coupled systems alters social structures, access to natural resources, and the livelihoods of smallholder farmers.** Equity dimensions are often concealed in conventional value chain analyses, which typically focus on the power of macro actors in these chains.
- **A metacoupling lens allowed equity considerations to be surfaced** in our case studies through the integration of human-nature interactions within a geographical area, its adjacent areas, and distant ones.
- **A value chain's upstream and downstream interactions revealed inequalities in resource availability and access** (e.g. water access for smallscale farmers in the Groot Letaba case study), commercial possibilities (for emerging farmers in the Breede), and opportunities for people to be involved in decision-making processes linked to the resource (water user associations in both South African case studies, and conservation entities and community members in the fisheries case study).
- **A metacoupling lens offers a more contextual and nuanced understanding of how equity issues are impacted by transboundary interactions** (Namibia fisheries case) and by identifying nodes of influence and paths of resource distribution that can unlock more opportunities for those not previously benefiting.
- Using a metacoupling lens can **surface key leverage points in a system where interventions can unlock opportunities** to build more equitable and resilient SES where people and nature can thrive.

## Reference sources in brief

Liu, J. (2023). Leveraging the metacoupling framework for sustainability science and global sustainable development. *National Science Review*, 10(7).  
 Pascual et al. 2014. Social equity matters in payments for ecosystem services. *Bioscience* 64(11). <https://academic.oup.com/bioscience/article/64/11/1027/2754206>



# SARA's work towards building equitable resilience in Southern Africa

Since 2022, the Southern African Resilience Academy (SARA) has supported collaborative working groups to pursue inter- or transdisciplinary synthesis research under the guiding theme of “**Building equitable resilience in Southern Africa**”.

This is in line with SARA's role as a convening and support space for researchers and practitioners working across Southern Africa to engage around pressing resilience and development challenges in the region.

SARA is an initiative of the Global Resilience Partnership (GRP), with support from the Swedish International Development Cooperation Agency (Sida). The academy's goals are to strengthen existing expert networks, expand collaboration, and facilitate the co-production of policy and practice-relevant knowledge.

Through its links with other regional networks, SARA aims to contribute directly and meaningfully to regional and global policy discussions around resilience and development, and elevate the Southern African voice in international fora.

SARA is coordinated by the Centre for Sustainability Transitions (CST) at Stellenbosch University in South Africa. It is co-funded by the South African Research Chair in Social-Ecological Systems and Resilience.

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#### WORKING GROUP:

#### Enhancing equity and resilience in an interconnected world

Getting a good grasp of how resources are allocated in place for example, may seem to be entirely dependent on laws, norms and governance decisions of the place in question. But outside factors can sometimes play an outsized role in these decisions. For example, growing decisions in a farming community might be driven by demand in faraway and seemingly unconnected places. Equity and resilience are generally viewed through a place-based lens, which offers important context-specific insights. However, the awareness that external factors also play a crucial role in shaping local dynamics and equity outcomes is challenging the completeness of this narrative. The concept of “metacoupling” addresses the interconnections and interdependencies of social-ecological systems at multiple scales which span the local, neighbouring, and global. Applying a metacoupling framework can help to deepen our understanding of the complex relationships between systems and the flow of resources, benefits, and impacts across scales. It can also be used to spotlight the multiple sources of power and associated dynamics that constrain access to resources and opportunities thereby creating or perpetuating inequities.

This working group, comprising of researchers and practitioners, uses a metacoupling framework to explore the multiple dimensions of (in)equity in three southern African case studies linked to export horticultural value chains and transboundary fisheries. Our approach draws attention to the power dynamics and disparities present in the value chains of the agricultural commodities and fisheries that are traded between local and global systems. In so doing, we aim to demonstrate how a greater focus on cross-scale connections can be used to identify key leverage points for fostering resilience and equity and how to empower local actors in an increasingly globally connected world.

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