SUSTAINABILITY SCIENCE

PARTICIPATORY RESEARCH

Volume 4

Collective thinking coordinated
by Mina Kleiche-Dray, Maël Goumri and Claire Fréour

IRD Éditions

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Marseille, 2025

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PREFACE

Valérie Verdier
Chairman and Chief Executive Officer of the IRD

What if we didn't just conduct science on societies, but with them?

As society's expectations of science grow, participatory approaches are emerging as a major lever for revitalising how we practice science. By drawing on knowledge rooted in local contexts and involving citizens, communities, and field actors in the production of knowledge, these research initiatives profoundly reshape the relationship between science and society. They play an active role in building an open, inclusive, and responsible science, turning what were once the subjects of study into full-blown partners.

This approach is a source of strength for IRD, which since 2020 has promoted sustainability science based on fair, co-constructed, interdisciplinary partnerships, science that is firmly focused on the needs of local populations and anchored in specific geographies. Participatory approaches are thus a key part of sustainability science, offering a unified and coherent response to major development challenges. By involving all stakeholders in research programmes, these approaches contribute to a lasting transformation of scientific logic and practice.

The opinion of the joint Ethics Committee (INRAE, CIRAD, IFREMER, IRD), published in June 2025, sheds light on this work and supports its momentum. Across three main themes—epistemic issues, the ethics of partnership, and sociopolitical implications—the committee reminds us that participatory research is not just a method, but a genuine scientific stance. It serves as an instrument for democratising science, with ten concrete recommendations to guide researchers and institutions in these endeavours.

This is the perspective I had in mind for this fourth volume of the *Sustainability Science* series. Through two complementary lenses, it first examines participatory research practices within IRD, placing special emphasis on the co-production of science and knowledge. Part 1 offers a rigorous methodological analysis that diagnoses the setting, methods, and

actors involved in participatory approaches. It highlights the diversity of topics and the complexity of engagement levels among affected populations while stressing the particularities of research carried out in the Global South. This booklet also brings to light the institutional and ethical challenges posed by this approach, inviting the construction of a shared framework that fosters a new alliance between research, science, and society.

Part 2 enriches this overview with a collection of concrete case studies that illustrate the variety and richness of locally led projects. Spanning health, nutrition, natural resource management, as well as artistic and intercultural practices, these testimonies convey the engagement of researchers and communities in a dynamic co-construction of knowledge. They also bear witness to the challenges and opportunities encountered in participatory mobilisation, especially within a context defined by major social, environmental, and climate transformations.

This fourth volume of *Sustainability Science* is aimed at anyone interested in an open, collaborative science that is rooted in social realities. It invites a rethinking of the relationships between researchers and local actors from a perspective of empowerment and knowledge sharing, to serve collective, sustainable, and transformative action. While societies are governed by policy, all of them need science to accompany and illuminate the necessary and expected transformations.

I would like to extend my heartfelt thanks to the coordinators of this reflection process, all the authors and editorial teams who have contributed to this work. Their contributions provide invaluable insight for researchers already engaged in these practices and serve as a powerful inspiration for those who wish to adopt them. This booklet is also an invitation to continue to walk together on the journey toward a science in dialogue with the world.

INTRODUCTION

Participatory research includes non-professional researchers or the 'third sector' and has accelerated on the ground and within institutions in recent years. This dynamic is driven by IRD's strategic shift toward sustainability science, the reform of higher education and research and the measures under the French Research Programming Act. Our aim is to restore the pact between researchers and the public, and encourage international institutions to recognise local knowledge.

In 2020, IRD undertook an examination of the challenges posed by participatory research and how institutional support could be structured to encourage it. IRD's decision to pivot toward sustainability science further highlights the priority placed on interdisciplinary work and the territorial rooting of research activities in the Global South as a means of meeting the Sustainable Development Goals (SDGs). This strategy of emphasising the co-construction of technical, social and policy solutions to tackle global challenges also raises questions about partnership research, a central value at IRD. It stresses conducting research 'with the Global South' (or, more simply, 'in the Global South'), including involving non-professional researchers (orientations 1 and 2 of the Contract of Objectives, Resources and Performance–Comp), thereby also questioning participatory approaches in research.

Against this backdrop, IRD has begun to develop an institutional strategy dedicated to participatory research. Even though we are already deeply engaged in participatory research, the spread of our activities in this area and the lack of a coherent overall perspective require us to create a suitable institutional framework. This booklet, *Sustainability Science: Participatory Research*, sets out to revisit this particular stage in the institute's life by tracing the process of institutionalising participatory research at IRD over the past three years (2022-2024). It will outline this extensive endeavour, beginning with a mapping exercise of participatory research across IRD, starting in 2022 and leading up to the launch of its first concrete actions from 2023 onward.

In its first section, the booklet will give a situational assessment that uncovers the diversity and richness of participatory research and science within the institute and its partners. It will also highlight participatory research and science's heterogeneity and fragmentation, the material challenges faced by stakeholders, and the reconfiguration of power dynamics, including those between scientists and the communities concerned by their work. Secondly, this booklet will expose the challenges of participatory research at IRD through profound ethical and institutional questions about the public's role in research, the power relations between scientific and 'other' knowledges, the organisation of research, and also how participatory research itself is called into question by the historical contexts of the Global South. Thereafter, this booklet will revisit the process of institutionalising participatory research. Drawing on this comprehensive assessment, the Institute has embarked on a collegial reflection and taken concrete actions aimed at structuring a community of practice, defining an approach most capable of safeguarding research integrity, and establishing a relationship of trust with affected communities or the associations that represent them. It will outline the initial concrete actions taken to build a shared institutional framework, notably by adapting our administrative structure, prioritising consultations on ethical issues, and establishing a cycle of joint training. The booklet will conclude with the presentation of a 'collection of lessons learned from participatory research in the Global South', intended as a guide for the scientific community and its partners wishing to engage in participatory research there.

Furthermore, beyond the confines of IRD, we intend to use this booklet to share with the entire national and international scientific community an ad hoc method for developing institutional strategy. We aim to offer guiding principles and food for thought on adapting how research is organised, governed and evaluated, addressing epistemological, ethical, and value-based questions about how to involve the populations affected by these studies.


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THIAGO

PART 1

Participatory Research in the Co-Production of Science and Knowledge

What is the verdict on participatory research practices? What are the ethical and institutional issues at stake? The concrete initiatives carried out at IRD are helping to establish a community of practices, define the guarantees of research integrity and build trust between the researchers and the public involved.

A Methodology for Conducting a Situational Diagnosis

Context and Framing of the Diagnosis

Since the early 2000s, France has seen a distinctive upsurge in studies that bring together institutional researchers[1] and the public affected by those studies or their representatives (research's 'third sector') with the aim of co-producing alternative forms of knowledge. These alternative approaches to research carry a range of labels—participatory science, participatory research, collaborative research, partnership research, intervention research, co-research, citizen science, lay expertise, community-based research, and so on—and are embedded in a variety of scientific forms and structures. Meanwhile, participatory research[2] is accelerating. IRD has championed this shift toward sustainability science to achieve the SDGs, the French Research Programming Act has sought to strengthen the dialogue between science, research, and society, and international bodies have been encouraged to improve recognition of local knowledge.

Participatory Research Revitalises the Dialogue Between Science and Society

Co-research and multi-actor co-construction of knowledge have secured a place within the renewal of research and innovation strategies and policies aimed at promoting science in France. This commitment is backed and promoted by the French Ministry of Higher Education, Research and Innovation (MESRI) under the French Research Programming Act and its implementation in the 'Science With and For Society' roadmap, presented on 30 April 2021 at the French National Museum of Natural History. It urges the scientific research sector to deepen the dialogue between science, research and society through programmes that facilitate the involvement of non-professional researchers in research endeavours, thereby broadening public inclusivity and fostering interface spaces between science and society. The aim is no longer simply about

1 • Throughout this booklet, we will use the abbreviation 'CH' to refer to the entire cohort of professional scientific staff, including researchers, engineers, and postdoctoral fellows. Occasionally we will employ the term 'IRE' specifically for engineers when that statutory group is under consideration.

2 • Throughout this booklet, we will use the term 'participatory research'. Nonetheless, we would like to point out that within the scope of this survey, we deliberately opted for the phrase 'participatory approach(es)' to encompass all research involving lay participants, recognising that the CH community also employs alternative labels (see Part 2).

mediating science (an element central to the 22 July 2013 law that highlighted the importance of 'promoting interactions between science and society') but rather about mediating research itself, which entails co-producing knowledge and establishing a third sector of research composed of citizen collectives or civil-society players. Participatory research and its related support systems occupy a central place within this shift toward involving non-scientific stakeholders and reshaping scientific practices. The push to formalise relationships between science, research and society is also aligned with the agendas of European and international institutions such as Horizon Europe.

Participatory Research Examined Through the Prism of South–North Inequality Challenges

In addition to its longstanding commitment to participatory research, IRD has pursued an ambitious policy for several years aimed at establishing a vibrant community of practices. The aim is to foster innovative, rigorous participatory research and partnerships tailored to the unique contexts of countries in the Global South. This strategy notably materialised when IRD joined Alliance Sciences Sociétés (Alliss) in 2017—an organisation that brings together numerous public higher education and research institutions dedicated to participatory practices and civil society's involvement in scientific work. IRD also initiated a substantive internal dialogue, forming the Working Group on Participatory Research and the Global South[3] (GT RP&Sud) in late 2020. Moreover, IRD contributes to many calls for projects and has directed several of them toward this objective, including 'CNRS/IRD Frugal Sciences' and ANR's 'Science With and For Society'.

In 2020, IRD's pivot toward sustainability science—emphasising interdisciplinarity at its core—highlighted its engagement with this national and international movement, highlighting the need for solutions that are not only sustainable but also tailored to the specific contexts in which they will be applied. Sustainability science calls on us to examine whether our scientific production system can simultaneously renew the relationships between natural and social sciences and re-engage with 'other' forms of knowledge to effectively tackle socioenvironmental challenges. Guided by the escalating pressures of a range of environmental crises, this scientific strategy highlights the crucial role of interdisciplinarity and anchoring research programmes territorially in the Global South to effectively contribute toward achieving the SDGs. By fostering the co-construction of technical and policy solutions to tackle global challenges, sustainability science also raises questions about partnership research, a central value at IRD. The message is that research should not

3 • The 2020-2024 working group, chaired by IRD's Scientific Department for Societies and Globalisation (SOC) was composed of: Mina Kleiche-Dray (DSA of the SOC department), Maël Goumri (project officer, SOC), Bernard Moizo (UMR Sens), Laure Emperaire (UMR Paloc), Laurent Vidal (UMR Sesstim and Mali representative), Stéphanie M. Carrière (UMR Sens), Amel Djaffar (mission officer, SOC).

merely be carried out 'in' the Global South, but 'with' it, engaging, among other stakeholders, non-professional researchers as outlined in Orientations 1 and 2 of the Comp., thereby ensuring a fairer, more equitable partnership. Participatory research must be harnessed in building knowledge communities—essential building blocks of sustainability science—to 'systematise the co-construction of research programmes and projects by building bridges for multi-actor dialogue, emphasising plural forms of knowledge, and creating a space for informed, fair, and equitable listening and exchange' (Objective 1.1 of the Comp.).

Participatory Research at the Core of a Fair and Solidarity-Based Partnership

Participatory approaches to research have taken on special significance at IRD due to the very nature of studies carried out in the Global South in a post-colonial environment. While IRD's current aim is co-research and the joint production of multi-actor knowledge for—and with—the Global South, applying methods and research problems conceived in the Global North can be seen as a major ethical problem, yielding insights that are not always useful to or framed from a Southern perspective.

Participatory research, whether tackling broad issues such as poverty, nutrition, housing, health, education, environment or democracy, can thus help better tailor IRD's global research agenda to locally identified priorities. In the Global South, co-research—also referred to as participatory action research or intercultural research—was initially embedded within an engaged science approach that served the most vulnerable populations. Today, it is incorporated into numerous national policy agendas aimed at building more inclusive societies where epistemic justice between scientists and non-scientists, as well as between the Global North and Global South, has become a central concern.

These agendas—often aligned with processes that recognise minority populations' knowledge through international bodies such as the Convention on Biological Diversity, declarations concerning indigenous peoples, rural inhabitants and Afro-descendants, IPBES, the IPCC, and the Citizens' Convention for Climate—promote locally derived knowledge's ability to address major global challenges.

Whether they are indigenous peoples, rural inhabitants or women—whose close interactions with the environment afford them unique perspectives—these 'knowledge holders' are recognised for their capacity to develop particular forms of knowledge (experiential, folk, scholarly) about both humans and non-humans. Such knowledge plays a central role in global challenges, particularly in sustaining biodiversity and adapting to climate change. Moreover, participatory research driven by actors whose worldviews, discourses, and practices differ and vary is acknowledged by these institutions as a means to more broadly reduce the polarisation of knowledge produced by science and

technology. Participatory research inherently positions epistemic justice at the centre of major social justice concerns for the societies of tomorrow. Meanwhile, due to the epistemic and methodological challenges it raises for science, participatory research has become a focal point in the intellectual debates of international scientific communities.

Against this backdrop, IRD has begun to develop an institutional strategy dedicated to participatory research. Even though we are already deeply engaged in participatory research, the spread of our activities in this area and the lack of a coherent overall perspective require us to conduct an audit of the situation in order to create a suitable institutional framework.

A Critical, Thoughtful Audit

This extensive endeavour, steered by the SOC scientific department at IRD and carried out by the 'RP & Suds' working group, began in 2022 with a survey designed to better characterise existing participatory approaches, gathering both qualitative and quantitative factual data. The primary aim was to supplement the 2019 preliminary study 'Diverse Participatory Research: What It Means for IRD Researchers?' (Luneau, 2019), a qualitative analysis drawing on roughly fifteen pioneering participatory research programmes; to support the 'RP & Suds' working group's studies; and to produce an inventory or situational diagnosis based on factual qualitative and quantitative data, thereby laying a solid foundation for a collective deliberation essential to crafting a dedicated institutional strategy.

The preliminary study revealed the diversity of existing practices at IRD while simultaneously highlighting a need for targeted support and recognition within the institution. The audit suggested going further. By documenting how various stakeholders saw the initiative and systematically foregrounding what those engaged in participatory research need and expect from IRD, it sought to deliver a comprehensive map that would suggest concrete, immediate actions as well as avenues for reflection, thereby embedding the participatory approach to research within IRD's scientific agenda on sustainability science.

An Inclusive, Ad Hoc Method

Such an investigation had not previously been undertaken, and was further complicated by IRD's partnership structure. While gaining access to internal stakeholders posed no significant obstacle, accessing external partners (particularly those within IRD's extensive partnership network across the Global South) was considerably more challenging. To address this, the methodology adopted a blend of quantitative and qualitative social science techniques and incorporated reflective feedback loops involving study participants, the wider scientific community, and ongoing dialogue with institutional governance. The approach combined a survey sent to the entire IRD community, semi-structured interviews conducted among a target sample, and documentary research

into dedicated programmes. Throughout the survey, these activities were supplemented by both formal and informal outreach to the broader IRD scientific community, followed by presentations and shared discussions of preliminary findings with that community as well as with key partners in the Global South and Global North. These phases were likewise punctuated by regular discussion sessions with IRD governance, various departmental units, and institutional bodies, each serving as a reflective touchpoint that enriched the analysis.

We think it is important to revisit the methodology's implementation and present the initial findings on respondent profiles prior to delving into the detailed analyses in Chapters 2 and 3.

The survey entitled 'Towards Science with and for Societies in the Global South: Participatory Practices in the Co-Production of Science and Knowledge at IRD', co-designed by the 'RP&Suds' working group and reviewed with several IRD researchers, sought firstly to catalogue existing research initiatives and, secondly, to collect quantitative and qualitative data on participatory research conducted within IRD. The results were later enriched through a qualitative component, comprising semi-structured interviews with those IRD researchers who had agreed to be contacted. The survey—available in French, English, Spanish, and Portuguese—was disseminated across the entire IRD network through a blanket mailing to unit directors, followed by messages sent to IRD liaison offices in partner countries in the Global South. Those offices then forwarded the invitation to unit members, clarifying that it was intended for all IRD scientific personnel and partners, irrespective of whether they were engaged in participatory research. The goal was to make the target population as inclusive as possible. Consequently, the survey targeted scientists, engineers on either permanent or fixed-term contracts, as well as doctoral candidates and post-doctoral researchers linked to IRD-managed research units and their collaborators. The concept of a 'participatory approach' was intentionally kept open-ended so as not to steer respondents' responses. They were invited to articulate freely what the term meant to them, both in terms of descriptors ('what keywords come to mind?') and in practice ('how did you conduct your research?').

The Results

A total of 272 usable replies were obtained from the survey, comprising both fully and partially completed submissions. A majority of respondents (168 in total) were affiliated with IRD, of whom 15% were engineers. The remaining 104 respondents were linked to partner institutions participating in at least one IRD-run research unit, mainly CNRS, universities, INRAE, CIRAD, among others. Compared to IRD's target cohort of 876 scientists (IRD, 2020), the survey's response rate approached 20%. With 44% of replies, female scientists were overrepresented, as were senior CH/DR personnel and the oldest age groups. Respondents who reached the end of the survey were asked to state their gender: among the 197 fully completed responses, 83 were from women

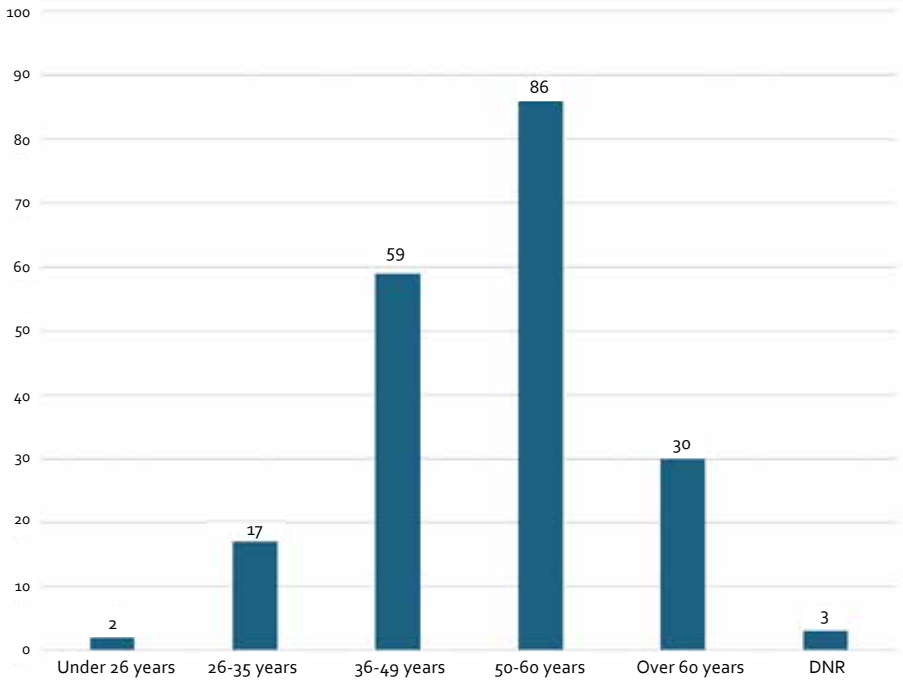
(44%), 104 from men (66%), and nine identified as neither or chose not to disclose. Although these figures encompass all participants, affiliated with IRD or otherwise, a comparison with the 2020 IRD Corporate Report enables closer scrutiny of the sampling. In 2020, women made up 36% of IRD researchers (CH) and 40% of its research-engineer (IR) staff. Consequently, the survey's sample shows a modest overrepresentation of women relative to the overall IRD researcher and engineer workforce.

The survey predominantly engaged tenured CH staff, whether research scientists, directors of research, associate or full professors. These categories were expanded to accommodate institutions such as INRAE that do not distinguish between research scientists and directors of research, as well as foreign ranks by considering so-called 'junior' researchers (with less than five years' experience) as research scientists and senior researchers with more experience and at an advanced stage in their careers as directors of research.

Distribution of ranks among the 272 respondents

Research scientist (or junior researcher): 79
Director of research (or senior researcher): 69
Lecturer (or assistant professor): 33
Professor: 13
PhD candidate: 11
Postdoctoral researcher: 17
Research engineer: 26
Study engineer: 7
Other (associate or visiting researcher, 'Pause' programme, contractor, non-staff, etc.): 8
Unknown: 9

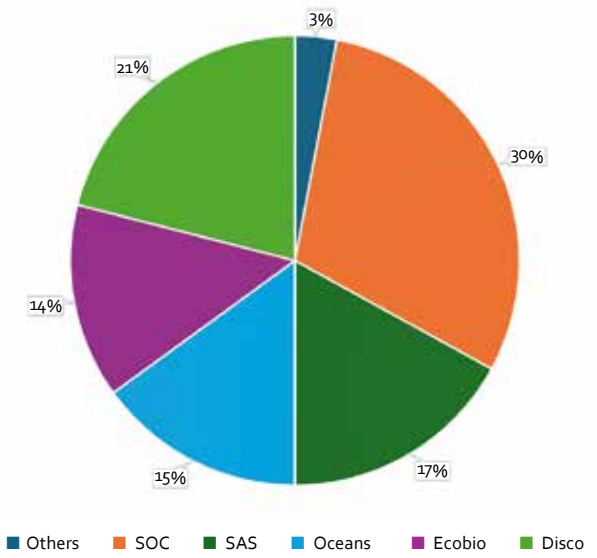
In terms of age, there is a modest overrepresentation of CH and IRE staff aged 50–60 (86 out of the 197 respondents who disclosed their age). This aligns with the most common age bracket in IRD's 2020 Corporate Report, where the 45–54 and over-55 brackets are the largest, with 218 and 598 staff respectively. It should be noted that the average age of tenured civil-service CHs at IRD is 51.5 years. However, because the categories used in the questionnaire differ from those in the 2020 IRD Corporate Report, producing a precise comparison between the survey data and IRD's



Distribution of the 197 respondents by age range.

figures is challenging.Regarding the IRD departments represented, the SOC and Disco units are overrepresented, accounting for 30% and 21% of responses respectively, while they comprise only 15% and 12% of CHs in IRD's Corporate Report. For the SOC department, this overrepresentation can be attributed to its longstanding engagement with participatory research on societal questions and to the fact that several humanities and social science disciplines, such as sociology and anthropology, have traditionally focused on participation issues. The overrepresentation in the Disco department is more surprising, although it most likely reflects heightened engagement with the survey among respondents who have not conducted participatory research—about three-quarters of respondents within that department, compared to just over half overall across all departments.

As with any empirical instrument, the survey does have limits. Firstly, it largely overlooked colleagues from the Global South, a group that was especially underrepresented among



Distribution of IRD responses by scientific department.

respondents. Only two declared affiliations were overseas. Moreover, the replies predominantly came from mainland France; we received just nine responses from overseas territories. The survey was essentially sent in French. Only three respondents opted for English, and just one selected Spanish. It is plausible that respondents thought the survey targeted IRD staff who had already engaged in a participatory approach, despite its introduction. Additionally, it mostly reached researchers with more stable careers, those most likely embedded in closely-knit research collectives. The estimated 20-minute completion time may have deterred some respondents, especially those not involved in a participatory approach or unfamiliar with this kind of initiative. Lastly, the unique public health context in which the survey circulated, with its attendant uncertainty and the increased workload across all ESR staff, likely curtailed the overall response rate.

The survey also facilitated contact with voluntary researchers, enabling us to discuss their approach in semi-directed interviews. Thirty-three researchers who use participatory approaches were subsequently interviewed, providing a qualitative supplement to the quantitative data. Furthermore, and in an effort to give a voice to research's third sector, this study also draws

on six semi-directed interviews conducted with non-research professionals. Additionally, interviews were carried out with the Department of Mobilisation of Research and Innovation for Development (DMOB) from the Development division, which plays a key role in setting up multi-actor structures at IRD. The forty interviews, carried out both online and in person, took place in Bondy, Marseille, and Senegal, where an extended visit enabled us to shadow a research team working on a biodiversity programme. The findings were enriched by comments and open discussions that arose during their public presentation at the study day on the topic, 'Participatory Research at IRD: Towards a Shared Framework?' (SOC, 25 November 2025, MSH Sud, Marseille). That event took place on 25 November 2022 at MSH Sud in Montpellier. Additional input came from the feedback session at the weekly governance meeting (PSM, 17 January 2023) from the participatory research awareness day (Marseille, 12 June 2023), from the launch of a 2023-2025 training cycle, and from SOC's support in helping the scientific community produce feedback sheets and a 'practice guide for RP&Suds'.

In other words, it is the survey results and the collective reflections that have produced the situational diagnosis, the institutional framework, concrete short-term actions, and the avenues for further reflection needed to advance a shared governance of participatory research at IRD—all of which we now propose to develop.

An Audit of Participatory Research

A Broad Range of Research Subjects and Domains

The audit of participatory research activities identified 114 participatory initiatives carried out within research programmes. As a result, this audit could have overlooked individual practices that do not always fit within a larger programme. Of the 228 respondents to the question, 'Have you ever employed a participatory approach outside IRD?', 134 stated that they had indeed used a participatory approach in some form, including research outside IRD.

These numbers might lead one to believe that roughly half of IRD's CHs and IREs have already used participatory methods in the course of their research. However, this result should be viewed with caution, as the survey likely drew greater responses from IRD staff already engaged in participatory research across the organisation. CHs and IREs that have used participatory methods tended

About PR Implementation

In the past five years, have you, together with IRD, implemented or taken part in one or more research projects that, in your opinion, adopted a participatory approach related to the Global South?

Yes: 130/276 (47%)
No: 146/276 (53%)

In your previous research, have you ever involved non-scientific stakeholders more generally (especially outside IRD)?

Yes: 134/228 (59%)
No: 94/228 (41%)

Note: The number of people who answered each of those two questions differs because some respondents abandoned the survey before fully completing it. However, partial responses were still included in the analysis whenever they could be used.

to respond at higher rates than those who have not.

However, it does reveal a degree of vitality and a range of diversity in these approaches. Although certain disciplines are heavily represented—biodiversity, for example, has a long history of employing participatory methods—the survey also revealed that most IRD fields engage in these practices, even those seemingly removed from issues of participation, such as Earth sciences (notably volcanology). The three most represented fields in research programmes are the environment, biodiversity and health, areas that have historically used participatory approaches, whether to facilitate data collection via 'amateurs' (especially in biodiversity monitoring) or to engage with environmental social movements (Ollitrault & Jouzel, 2015; Charvolin, 2019). Health is likewise a domain where participatory approaches have long been entrenched, as evidenced by longstanding advocacy for disease recognition and institutional care, most notably HIV (Epstein, 1996; Akrich et al., 2013).

The distinction between biodiversity and the environment can be quite subtle. Research programmes primarily focused on cataloguing animal or plant species were classified under 'biodiversity'. In contrast, the wider 'environment' category explicitly captures the relationship between the condition of a habitat or resource and human activity. Programmes aimed at the collective management of a natural resource fall within this category. Note that many programmes categorised under 'environment' incorporate social science alongside life sciences approaches (such as natural resource management) and therefore adopt a transdisciplinary approach.

These survey findings were supplemented with a systematic search for participatory research activities listed on IRD's website, together with any related publications. Overall, it illustrates areas located at the crossroads of multiple disciplines. On the one hand, numerous environmental research programmes incorporate social sciences or a significant focus on societal links, particularly in areas concerning the management of habitats or natural resources. On the other, many fields cut across multiple concerns; for example, 'health-environment' issues are highlighted by several research initiatives.

This is especially evident with zoonoses, which are covered by three participatory research programmes (Scaria, Prezode, PPSE)[1]. These topics straddle life-science investigations into disease transmission and social-science analyses of the living conditions of affected communities, and are especially amenable to participatory research. These transdisciplinary programmes allow each discipline's questions to establish a dialogue with one another and reveal solutions that engage both medical and social levers—most notably, preventing disease transmission by improving living conditions or through awareness-raising activities tailored to the relevant social

1 • Scaria : https://www.ird.fr/attenuation-communautaire-de-defis-lies-aux-rongeurs-en-milieu-urbain-africain
Prezode: https://www.ird.fr/linitiative-prezode-pour-une-cooperation-internationale-prometteuse
PPSE : https://www.ird.fr/la-premiere-plateforme-portuaire-publique-privee-technique-et-operationnelle-de-surveillance

List and distribution of the 114 research projects by domain

Disciplines	Number
Biodiversity	23
Environment	22
Health	17
Agroecology	13
Society (including technological risks)	11
Language/Heritage (including art)	6
Earth Sciences	4
Entrepreneurship	3
Governance	3
Zoonosis	3
Climate	3
Digital Infrastructure/Third Places	3
Sustainability Sciences	1
Unknown	2
Total	**114**

and cultural context. Finally, agro-ecological issues are prominently featured in participatory research initiatives (ANR GENgiBRe)[2].

A great number of projects bring together disparate disciplines by tackling both 'hard' or life-science questions and humanities and social-science issues around practical concerns such as diseases, agriculture, the environment, and so forth, which in turn raise scientific, societal, and human-centred questions. One of participatory research's strengths—as observed in this study—is that it encourages collaboration across diverse, even seemingly disparate, disciplines around a common scientific and societal issue.

2 • https://www.ird.fr/lancement-du-projet-gengibre

Examples of participatory research programmes

Sectors	Programmes	Content
Environment	'DeWorm3' (SAS/Merit department): https://www.lmicons-helm.fr/blog/2024/12/17/restitution-des-resultats-du-projet-deworm3/	Assessment of a community-based mass drug administration strategy to interrupt the spread of soil-transmitted parasitic worms.
	Metmut 'Tropical Tuna Fishing between Productivism and Sustainability: A Profession in Transition' (SOC/Sens department): https://www.umr-sens.fr/-/metmut	The project aims to account for the multi-localization of tuna fishing, spanning the home ports in Brittany, the deep-sea fishing grounds in tropical waters, the landing ports (Abidjan and Port Victoria), and the regulatory bodies at the national and European levels.
Biodiversity	Oreanet 'Oceania Regional Acanthaster Network' (Oceans/Entropie department): https://www.ird.fr/oreanet-le-reseau-de-surveillance-citoyen-des-acanthasters-est-de-retour	Participatory monitoring of acanthaster (coral-reef starfish) density in New Caledonia. Citizen surveillance network.
	Mikaroka International Joint Laboratory: 'The Marine & Coastal Biodiversity Observatory and its utilisation in Madagascar' (Oceans/Entropie department): https://www.ird.fr/lmi-mikaroka-observatoire-de-la-biodiversite-marine-et-cotiere-et-de-ses-usages-madagascar	Marine and coastal biodiversity observatory and its utilisation in Madagascar.
Health	'Migration, Mobility and HIV Vulnerability: A Collaborative, Multidisciplinary Approach in Laos' (SAS/Transvihmi department)	Deliver both qualitative and quantitative insights into how an individual's migratory trajectory, as opposed to broader societal shifts and associated migration practices and processes, relates to vulnerability and HIV/STI infection risk in Laos.
	JEAI Ciirex 'Cancer, Infections, Inflammation and Redox Systems' (SAS/Pharmadev department): https://www.ird.fr/jeai-ciirex-cancer-infections-inflammations-et-systemes-redox	The development of technical solutions to harness medicinal plants for pharmacological purposes in the Global South.

Society	ANR Rima 'Inequalities, Radicalities and Women's Citizenries: Plural Islamic Religiosities in the Maghreb /Muslim West Africa Space' (SOC/Imaf department): https://anrrima.hypotheses.org/	A study of how women mobilise socially through Islam across West and Northwest Africa.
	'Jakarta on the road' podcast (SOC department)	History of motorcycles in Senegal.
Earth Sciences	ANR Remake 'Seismic Risk in Ecuador: Mitigation, Anticipation and Knowledge of Earthquakes' (Disco/Geoazur department): https://geoazur.oca.eu/en/research-geoazur/2157-remake-eng	Post-earthquake actions in Ecuador after the 2016 quake.
	'Volcanic Hazard Assessment in Andean Countries' (Disco/LMV department)	Assess the frequency, magnitude and typology of volcanic eruptions and evaluate their associated risks.
Zoonoses	Scaria-Projet 'Towards Sustainable Community-Based Mitigation of rodent Issues in African Cities' (Écobio/CBGP department): https://www.ird.fr/attenuation-communautaire-de-defis-lies-aux-rongeurs-en-milieu-urbain-africain	Community-based mitigation of the socioeconomic and health impacts caused by rodents in African urban areas.
	Prezode 'Preventing Zoonotic Disease Emergence' (SAS/Mivegec department): https://www.ird.fr/linitiative-prezode-pour-une-cooperation-internationale-prometteuse	Prevention of zoonotic emergence and pandemic risks.
Agroecology	RAMSES II 'Leap-Agri Roles of Agroforestry in sustainable intensification of small farMs and food Security for SocIetIes in West Africa' (Écobio/ECO&SOLS department)	Provide innovative scenarios for sustainably intensifying agroforestry parks co-designed with stakeholders, thereby maximising and supporting their adoption.
	ANR GENgiBRe (SOC/CESSMA department): https://www.ird.fr/lancement-du-projet-gengibre	This action research project seeks to understand how women involved in agroecology and feminist movements in Brazil relate to nature.

Behind this broad array of subjects and research domains, however, lie significant methodological disparities. Whereas certain fields have long been accustomed to participatory research issues, this represents a considerably newer approach for disciplines labelled as 'exact' or life and matter sciences, resulting in a distinct mode of engaging non-professional researchers.

Major Disparities in Methods and Populations' Involvement

The diversity of practices implemented by participatory approaches is reflected by the mobilisation of non-scientific and non-research participants at different levels, depending on the programmes' design.

Our survey revealed that these non-professional researchers are predominantly from local communities or their representatives—either community leaders or local association members (86/159)—NGOs were cited infrequently (6/159), roughly on a par with government actors (7/159)—while those from the social and solidarity economy appeared to a lesser extent (33/159). Moreover, the research panel ranges from studies employing traditionally non-participatory methods in the social sciences (e.g. interviews, surveys) to those adopting fully integrated approaches that engage non-professionals throughout every phase of the research process.

This observation should not suggest that certain approaches are merely 'false participatory' endeavours; instead, it highlights the fact that they vary in their level of maturity and ambition with respect to participation. In particular, it should be noted that certain high-visibility programmes, despite successfully involving non-professionals across numerous phases, often originate from comparatively modest ambitions. One such programme is '*Femmes et coquillages*', which became 'Obsaloum'. A similar pattern can be seen with the public-private technical and operational environmental monitoring platform (PPSE) at the port of Cotonou, which subsequently facilitated the expansion of research into invasive species, notably rodents, across other African nations.

This variation in practice becomes apparent when examining the answers supplied through the online survey. One of the first questions was: 'In the past five years, have you—together with IRD—implemented or taken part in one or more research projects that, in your opinion, adopted a participatory approach related to the Global South?'

Respondents who answered 'yes' were subsequently invited to answer a series of follow-up questions to detail the research project they considered 'most significant' among those they had been involved with. Altogether, 89 research programmes were identified as 'most significant.' An overwhelming majority of these 89 research programmes involved the target populations or their representatives in the data collection phase (73 out of 89), followed by a feedback or 'restitution' stage in 61 programmes, and later moments of 'research framing' in 48 of them.

Conversely, bibliographic research (6), publication (25), and data analysis (28) represent the three phases during which non-professional researchers were least involved, according to the survey responses. Their involvement thus varies markedly across the different stages of the research process.

Beyond the routine tasks of data collection—which can readily be outsourced to non-professional researchers—the drive to align with community expectations appears to motivate roughly half of the CHs to co-define the study framing, methodology, and target audiences alongside these non-professionals. In contrast, the purely scientific tasks, such as bibliographic review, data analysis, and publication, are significantly less likely to be shared.

This suggests that integrating non-professional researchers into the core aspects of research remains challenging. We could argue that the public is of little use in bibliographic work; however, it can serve as a way of empowering them as well. Therefore, this invites a broader inquiry into the visibility of non-professional researchers within the scientific community, particularly in published work and whether they are regarded as 'equals' or as people capable of mobilising scholarly knowledge through bibliographic studies.

Involvement of non-professional researchers in 89 research programmes

Emergence of the idea: 34/89
Framing of the research: 48/89
Definition of methodology: 44/89
Bibliographic review: 6/89
Data collection: 73/89
Data analysis: 28/89
Production of output: 43/89
Dissemination of output: 42/89
Identification of target audiences: 45/89
Publications: 25/89
Training sessions: 32/89
Restitution sessions: 61/89
Other: 13

Key Actors in Participatory Research

This distribution of roles also concerns the emergence of participatory research, which is largely due to the CH themselves or their research team. The involvement in research's third sector in the emergence of research is secondary, ranking only third.

The key actors of participatory research identified from the 235 responses to the question: 'Who was the driver behind your participatory practice or research?'

Yourself: 81
Your research team: 54
A request from the public (stakeholder or civil society other than NGO): 31
A request from partner CHs or countries: 30
A request from external CHs: 12
A request from international NGOs: 10
A request from local NGOs: 10
A request from IRD: 7

This diversity of practices can be explained in part by the relatively recent establishment of some programmes. With many programmes still underway, some CHs may have yet to be able to engage the public in interpreting findings or in publishing them. Furthermore, engaging the affected populations frequently requires them to develop new skills, a process that can only unfold over the long term. These observations nonetheless indicate that participatory approaches do not automatically entail a full democratisation of every stage of research, especially the most prestigious or rewarding phases. Some stages still remain solely under the control of scientific staff. Reports detailing how this transition toward participation occurred add further insight. Whether driven by circumstance or a deliberate decision shaped by one's training or the focus of the research, the reasons vary widely. These also involve research that would not have been possible without the backing of the affected communities or local groups, whether due to a funder's stipulation, to sharpen the focus of the inquiry, or simply to gain access to necessary data.

For certain CHs, participatory research forms a core element of a truly equitable and fair partnership model. Therefore, a participatory approach in research, whether incidental or embedded within CHs' practices, is not a marginal or secondary endeavour. Even though it is committed to the dual goals of social and economic justice, it does not serve as a platform for activism. This finding warrants a comparison with how researchers themselves view participatory research.

Co-Construction at the Heart of Participatory Research

Beyond revealing stark methodological divergences, particularly around stages that involve non-professional researchers in participatory approaches, the study highlighted differing perceptions among research participants. We asked participants to provide three key words or brief expressions that captured what a 'participatory approach' meant for them. As the first key word, the idea of 'co-construction' emerged most frequently, cited by 21.6% of respondents. Next came references to 'implication' (6.8%), 'science' (6.8%), 'actors' (5.7%) and 'research' (6.8%).

Word cloud created from the first key word.
Credit: A. Ravalihasy.

Terms such as 'awareness', 'society', 'knowledge', 'partnership', 'citizenship', 'participation' and 'transdisciplinarity' were mentioned by fewer than 5% of participants. The last tier comprised fringe terms—e.g. 'radical', 'expertise', 'democracy'—which were referenced sparingly. Notably, only one negatively-charged term appeared as a primary keyword: 'State disengagement'. This was the only negative term recorded among all the keywords.

For their second term, respondents cited 'knowledge' (8%), 'understanding' (9.1%) and 'sharing' (9.1%). Then came references to 'co-construction' (6.8%) followed by 'society' (3.4 %) and 'research' (4.5%). Terms such as 'interdisciplinarity', 'community', 'collaboration', 'local', 'science', 'data', 'implication', 'process', 'co-production', 'collection' and 'engagement' appeared in roughly 2% of responses. Other concepts ('adaptability', 'mediation', etc.) came up only marginally.

Finally, for the third keyword, the concept most frequently mentioned was 'science' (5.7%). Then came references to 'co-construction' (4.5 %) followed by 'partnership' (4.5 %) and

Word cloud created from the second key word.
Credit: A. Ravalihasy.

Word cloud created from the third key word.
Credit: A. Ravalihasy.

'citizenship' (4.5%). Terms such as 'knowledge', 'participation', 'community', 'understanding' and 'action research' were mentioned by fewer than 4% of respondents. The final two tiers contain only marginally referenced notions. A few, such as 'development' and 'decision-making', crop up in roughly 2% of responses, while others like 'access' and 'adhesion' appear in around 1%.

A favourable view of participatory research also surfaced in the definitions participants gave during the interviews. Every interview with CHs concluded with the question, "what would you say is the definition of participatory science?" Most respondents echoed the terminology that had appeared earlier in the survey: primarily 'co-construction' alongside words such as 'knowledge' or 'understanding', along with references to 'society' and 'public'. In a number of instances, participants incorporated the idea of 'empowerment', which had been less evident in the survey. This highlighted how participatory approaches aim to generate actionable knowledge of use to local communities.

Participatory approaches are thus seen as full-blown scientific approaches, capable of building bodies of knowledge that can legitimately claim the status of science. The almost total lack of negative keywords indicates that the CHs interviewed see participatory research favourably.

The Specificities of Participatory Research in the Global South

Although participatory research has already attracted substantial scholarly attention in the Global North (Epstein, 1996; Akrich et al. 2013; Allen, 2017; Charvolin, 2019), studies that have examined its particularities in the Global South remain comparatively sparse. Our fieldwork, however, brings to light distinctive features of participatory research in the Global South. We find it pertinent to outline these findings here, particularly as they relate to issues of timescale and intermediation, which emerged as primary concerns during the survey.

Participatory Research: Is It Slow Science?

The issue of timescale emerged as one of the most recurrent topics, both in the survey distributed across the research community and in subsequent interviews. By questioning CHs involved in participatory projects across the Global South and by observing various research endeavours, time emerged as the defining specificity of participatory research. In truth, it is unique both to participatory research, which entails working with non-professional researchers who operate according to different timeframes, and to the social and academic environments in the Global South that frequently diverge markedly from the familiar environment of IRD scientists and their partners in the Global North.

Firstly, the practical concerns involved in carrying out participatory research appear to be the most obvious. Scientific staff frequently confront logistical challenges such as transport and communication infrastructure that extend the duration of their research. Transport infrastructure across the Global South is often underperforming, even despite the vehicles and other resources provided by IRD's field offices. On-site fieldwork is consequently hampered by considerable time-consuming difficulties: anticipating a range of contingencies takes time and can give the impression of spending considerably more time on logistics than on actual research.

Perhaps even more than the time spent on logistical matters, the timeframes of non-professional researchers in the Global South can result in projects that take considerably longer than what would be expected from a so-called conventional study. During a visit with the CH team in Senegal for the 'Obsaloum' programme, we noted how difficult it was to schedule meetings ahead of time, even though phones were readily available. Relationship building and informality are key to contacting and securing the participation of non-professional

stakeholders; as a result, being physically present on site is crucial for arranging meetings. Even earnest attempts to schedule meetings remotely and in advance proved fruitless for CHs. In contrast, those who wanted to hold a public meeting to present the project's results and future actions found it easy—once on site—to announce it through formal (via the village teacher) as well as informal channels (word-of-mouth), even with the event scheduled for the following day. The room was consequently packed. The village's informal dynamics and the brief notice period encouraged attendance, as well as the relentless efforts of local CHs to persuade residents to attend and, more importantly, to share the information about the meeting with those around them. More broadly, some of the programme's target groups (namely fishermen) have their own schedules; meeting them requires arriving at the harbour when they return from the sea and taking a moment to greet everyone present, with no exceptions. A successful research approach also requires meeting every local political or administrative representative, effectively visiting all district offices, taking substantial time that cannot otherwise be spent on research.

A final essential aspect of the temporal dimension of participatory research in the Global South is establishing trust. While not unique to the Global South, various traits of the target groups mean that building the essential trust between CHs and local communities inevitably takes more time. This is achieved mainly by maintaining a steady on-site presence, with the activities outlined earlier (e.g. greeting residents, meeting officials) occurring repeatedly and consistently. It is crucial for CHs to set themselves apart from the many one-off NGO initiatives that also claim to be 'participatory'. These organisations often conduct brief, short-term projects and then withdraw, sometimes neglecting the communities' long-term well-being or failing to deliver on promised improvements. The sustained on-site presence that communities anticipate often clashes with a CH's institutional rhythms, with publishing deadlines and the pressure for rapid results, as well as with the shrinking funding cycles typical of project-driven research.

> 'I work with a guide rather than directly with every farmer I could potentially engage; the guide chooses which farmers are included in the study. I explain what I am going to do, who can work with me, who knows the soil well. I explain, and he chooses who will be on the team. A certain amount of trust is required: it takes time to dig into the topic. The culture is different in Madagascar: it takes time to discuss things.'
>
> *Interview with a geographer carrying out participatory mapping work, professor, Madagascar*

This unique sense of time has prompted several CHs encountered to stake a claim to a kind of 'slow science' (Jorm *et al.*, 2021). Instead of attempting to juggle seemingly conflicting expectations, between a short research schedule (even when funds are earmarked for participatory work) and the longer period actually needed to carry out high-quality participatory research.

> 'Ultimately, I discovered this with ethnobotany. It is an approach that aligns more closely with "slow science": I realised that actually, reformulating hypotheses alongside field actors who then take ownership of the work is something I hadn't seen in my earlier projects, where it was usually me arriving with a protocol and ideas while others simply assisted. In building a study project together with the public. Ethnobotany has had a big influence on me.'
>
> *Interview with a biologist, MCF, on a CNRS delegation in South America*

Several CHs even assert that they are not pursuing career advancement, preferring instead to use the freedom they enjoy to carry out work that genuinely matters to them. In turn, they embrace the fact that they publish less than their peers who conduct more traditional, non-participatory research and that they do not plan strategically as regards their careers might advance, whether through promotion or by gaining recognition for their work more generally. It is worth noting, however, that those CHs who adopt this approach are usually civil servants—research directors or managers, research officers or research engineers—and, in many cases, are posted overseas.

> 'I pay very little attention to my career, and I'm not certified to lead research. I don't want to take the exam to become a director of research. I love getting out of my comfort zone through this project. It's exciting; it's what drives me professionally.'
>
> *Interview with a biologist, IRD CR, on assignment in Africa*

This temporal aspect requires an adjustment from the CHs, who are usually compelled to collaborate not only with local communities but also with 'intermediary actors' to reconcile differing timescales. Consequently, the ability to position oneself both intellectually and emotionally is likewise tested and constitutes an essential prerequisite for building partnership-based co-research.

Intermediation: An Indispensable Ally of Research

Using the categories of research's 'third sector' or even society must not obscure the diverse range of actors involved in a participatory approach. Even if the participatory approach is often framed as a point of contact between science and society, this dialogue draws on specific social categories, be they collective groups or individual actors. For 97 respondents, the primary participatory tools used by CHs were associative and citizen networks, including partner-led networks (51 out of the 97). The largest group of intermediaries cited in the interviews were local university stakeholders. Partnerships are seen as a catalyst for participatory research (53 out of 131 respondents) as they provide additional resources and leverage the expertise of partners in the Global South. It represents a standard practice for the Institute, as foreign-based CHs are required to forge ties with their local CH counterparts. Nonetheless, in participatory research, applying them is essential for the project's success. This is particularly evident in the 'Obsaloum' programme in Senegal, which aims for a participatory evaluation of the ark shells harvested by women in the Saloum delta, a resource that has sharply declined. First and foremost, the trust cultivated by the Dakar team with these women paired with the extensive address books of local CHs serve as a key assurance of project success. These assets help navigate logistical challenges typical of research in the Global South and engage with communities via local figures.

The second type of intermediary is made up of individuals holding positions in the community, whether formal (e.g. neighbourhood leaders, doctors, head fishermen) or informal (influential figures, educated community members, someone with specialised skills). Field observations revealed that intermediaries play a pivotal role in 'casting' or selecting participants from local communities. Thanks to their familiarity and authority within the local community, they are frequently well placed to identify and enlist residents who are likely to engage in participatory research. It is therefore essential to delineate these intermediary roles, given that they are critical to programme success and that their involvement can raise ethical concerns, particularly when it comes to compensation.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The Impact of the Institutionalisation of Participatory Research in the Global South

Research Design in the Context of the Institutional Challenges Posed by Participatory Approaches

IRD: A Framework and Instruments Tailored for Participatory Research in the Global South?

In addition to the CH interviews, supplementary conversations with the Development Unit, particularly the Mobilisation of Research and Innovation for Development Department (DMOB), revealed that IRD already possesses tools suited to participatory research. These instruments are actively used to create a conducive environment.

When asked, 'Which institutional mechanisms have you leveraged to carry out your participatory project?', structural arrangements such as 'JEAI' (young teams affiliated with IRD), 'LMI' (international joint laboratories), and 'IRN' (International Research Networks) formed the first tier of responses (40 out of 96). When the CHs were directly asked which supports they would like to see implemented for participatory research, most of the suggestions were already available. In interviews, the top suggestions were postings abroad and in overseas territories. For CHs, they partly answer the question of the different timescales of participatory compared to traditional research. Embedding research within a local context and maintaining stable, long-term projects for statutory CHs facilitates genuine participatory approaches that are harder to sustain under short-duration funding cycles. Likewise, per-diem reimbursements afford the flexibility needed to fund activities that fall outside existing administrative structures.

IRD boasts a longstanding tradition of partnering with Southern CHs and maintaining a footprint via regional field offices. These provide access to practical benefits such as vehicle loans and ease connections with local stakeholders, among other things. Typically, requests revolve around extending existing arrangements, such as enhancing per-diem pay, preserving expatriation schemes, and strengthening partnership-research mechanisms. Demands, however, focus on obtaining greater flexibility in management regulations and easier access to public tenders. The restriction against employing informal services crucial to the field being studied is frequently

seen as an obstacle to interdisciplinary collaboration and the involvement of non-professional researchers. Generally speaking, a deep understanding of the specificities of developing countries by CHs engaged in long-term collaborations proves essential for successful participatory research in the Global South.

To an extent, IRD's organisational structure likewise facilitates disciplinary diversity, a key consideration in participatory research. Extended on-site residencies clearly foster encounters between scientists from different fields, a fact corroborated by multiple accounts. Moreover, the largely multidisciplinary character of most IRD-hosted joint research units encourages everyday collaboration across complementary scientific fields.

Funding Participatory Research

The trend towards shorter funding cycles and reliance on project bids is increasingly affecting all research, including participatory studies. As one former unit director once put it, spreading funds evenly over five or ten years can be better than securing a substantial lump sum for a single year. That said, there is still room for pursuing sizeable one-off project bids; however, such funding typically supports only the later stages of programmes that are already well advanced. In practice, these structural arrangements and CH allocations are often supplemented by a range of disparate funding streams, most commonly drawing on ANR, EU and AFD (*Agence Française de Développement*) support, as noted in the interviews.

However, in both the survey (113/175 responses) and the interviews, the top-priority demand was for additional human resource assistance. And as we have demonstrated, participatory research projects take an especially long time to set up and consequently demand substantial CH availability. A number of respondents also highlighted the need for help in communications and social media management, critical (and notably labour-intensive) tasks for finding non-professionals. Managing non-specialists likewise requires time, although this task could be undertaken by a research assistant or project officer.

Strengthening and Sustaining Intermediation Hubs

In addition, IRD has established multi-actor incubation hubs in France, for example Bond'innov, Cofab-in-Bondy and a collaborative laboratory that partnered with the French FabLab Network and the Francophone West African FabLab Network to bolster local facilities such as CoLAB. In the Global South, similar initiatives (CoLAB projects on food security, maternal and child health, water management) are supported by project engineering through DMOB; these too require strengthening in order to evolve into genuine third-party research hubs. The first steps for IRD.

The co-research processes (co-construction and co-production) require a range of misunderstandings to be addressed: divergent lexical repertoires, differing observation scales, data-corpus construction across collaborating disciplines, and varying expectations among the target populations. The spaces and methods used in participatory research, such as fab labs, science shops or citizen observatories, often facilitate encounters between so-called dominant science and other forms of knowledge, thereby enriching the research process. Deploying science shop networks across Africa thus reflects a broader aim of involving local universities and research bodies in building spaces that bridge knowledge production hubs with their surrounding territories. Therefore, the stage of exchange and mutual understanding between research and civil society must receive stronger support and be fully embedded within the research programme. Piloting a reorientation of a portion of established incubators into true research third places could satisfy the particular requirements of IRD's partnership and participatory research agenda.

Improving Recognition of Participatory Research at Different Levels

The issue of the recognition of participatory research surfaced repeatedly across interviews and was starkly highlighted by the survey findings: a majority of CHs believe that participatory research remains underrecognised in general.

The responses repeatedly highlighted a gap between an institution's outward commitment to sustainability science and participatory methods and CHs' lived experience, particularly when it comes to resource allocation. Such a lack of recognition transcends mere institutional issues; it manifests across multiple levels, from the institute to individual units, and even through to broader scientific governance structures.

Responses to the question (by category): 'Do you believe that participatory approaches receive adequate recognition in scientific settings?'

Responses / Categories	Yes, very much so	Yes, somewhat	No, not enough	No, not at all	I don't know/would prefer not to answer
By scientific peers?	7	42	91	33	26
By scientific institutions?	8	41	94	31	25
For your career advancement?	7	17	64	60	51

First, for IRD, a recurring concern is that engaging in participatory research can hinder one's career advancement. Although some reports claim that certain evaluations underscore and encourage the participatory aspect, this often fails to compensate for a lower number of publications. And the number of publications remains an important criterion in career assessments, especially when being considered for promotion to director of research. Participatory research projects' findings, however, are predominantly disseminated via web pages (41/96) and, to a lesser extent, social media channels (23/96). Without institutional benchmarks that explicitly recognise participatory research, scientific review panels find it difficult to value such endeavours in their assessments of CH performance. Thus, taking into account the specificity of participatory research in career advancement criteria would be a particularly significant gesture to align practices with institutional rhetoric.

The second tier in which this recognition manifests is at the unit level. Anecdotally speaking, many CHs have noted that unit directors do not always regard either training in participatory research approaches or the awarding of additional credit for such work as high priorities. Thus, it could prove worthwhile to focus on educating unit directors about the benefits and unique nature of this research so that they can prioritise needs that might otherwise seem peripheral to standard research agendas.

Lastly, the third tier pertains to the broader scientific community, where participatory research often fails to receive full recognition for its worth. For instance, several CHs have raised concerns about how their work is judged at scientific gatherings (colloquia, conferences and the like) where peers often display a certain scepticism, suggesting that such projects do not constitute 'pure' science. The activist aspect of this work was likewise highlighted, including within the survey itself, and can strike some CHs as a potential bias inherent to participatory research. Although this booklet offers no specific avenues to tackle the widespread lack of recognition that extends well beyond IRD's scope, it is still worthwhile to stress the need to treat participatory research as a full scientific discipline, one that generates valid, useful knowledge in its respective fields. In this regard, we must also recognise the risk of instrumentalising participatory research, labelling it merely as a tool for specific collaboration or joint management of particular problems, and thereby limiting it to concrete social or humanitarian interventions, for example. The goal of co-constructing knowledge sits at the core of participatory research, and this is what sets it apart from these interventions.

Allow for Greater Flexibility in the Management Regulations

During the interviews, the call for increased flexibility in management regulations received widespread support from the CHs. The inability to pay for informal services, such as travel by canoe or cart, hire local catering providers who lack bank accounts, or pay project associates in cash were unanimously regarded as impediments to participatory research, which by definition depends on informal mechanisms. Restrictive regulations around transporting non-professional

researchers frequently came up in discussion. Furthermore, while these regulations do not automatically preclude certain activities, they compel CHs to find workarounds, either routing through associations that re-invoice services at a higher rate than IRD, using informal mechanisms that utilise leftover per-diem funds or, in some cases, CHs covering costs out of 'their own expatriate salaries'. Although some CHs considered it justifiable given their higher salaries compared with local living standards and the disparity with non-professional researchers, the reimbursement of such expenses would nonetheless acknowledge the full range of aspects inherent to participatory research. Above all, streamlining these regulations would free up time for the core research work itself.

> 'I had a real hard time sorting out reception costs. At IRD, we get reimbursed for catering on an administrative certificate. But the caterer or the restaurant offers a collective reception package that can't be covered through IRD's usual channels, and before long you max out your card. My workaround was to go through a local association that set itself up as a provider and billed us; it added a 10% administrative management fee to the invoice sent back to IRD. We ended up juggling several budgets and basically became budget engineers. Add to that the fact that sometimes our credit cards didn't work. And then the understaffed accounting firm stopped offering overseas transfers. That left me paying for the exchange rate charges myself.'
>
> *Interview with a socioeconomist, researcher from the Paris region.*

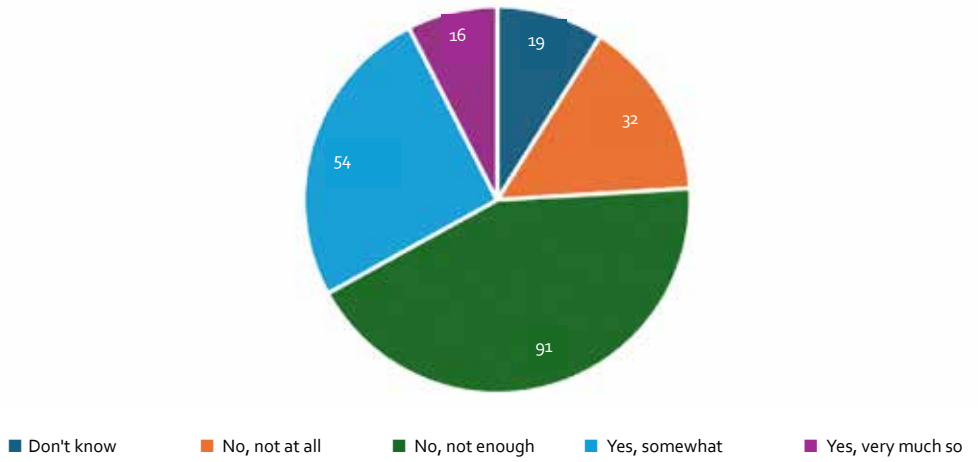
Furthermore, the mismatch between some management tools and the realities of participatory research in the field creates psychosocial risks for both CHs and administrative personnel. That, in turn, entails extra work amid already substantial constraints stemming from staff shortages. In addition, the CHs, often personally and emotionally involved in their work, find it hard to bear the heavy constraints that rigid administrative rules impose on participatory research, at times even forcing them to abandon these scientific approaches.

A Need for Better Information, Training and, Perhaps, Formalisation

Participatory research demands new skills that CHs do not always have. The first key takeaway from the survey was a near-universal lack of training in participatory research, whether at the outset of one's career or later on (136/228). Most of the survey's respondents—who we can safely assume are more deeply involved in participatory research than the broader IRD CH community—stated

that they had never received any training in this area during their university courses. Furthermore, a number of respondents who reported having had training in the subject during their original programmes explained that it actually concerned science popularisation, which is of course quite far removed from participatory research. This likely explains why a great majority of the IRD CHs who responded feel inadequately or not at all trained to carry out participatory research. Conversely, those who claimed to possess such tools said their learning and awareness came largely from self-study, other research institutions, peer discussions or training delivered through associative settings such as theatre exercises, multi-actor participatory workshops, problem-tree mapping, role-playing games, and so on. Nonetheless, several colleagues noted that they had occasionally benefited from one-off assistance by the Institute's audiovisual service, helping them produce, or at least circulate, films or podcasts to those concerned by the research.

IRD has an opportunity to build on these powerful tools and swiftly institute a research framework that not only bolsters what already exists but also enables fresh participatory research projects whose outputs extend beyond scientific publication to include new output such as audiovisual productions or theatrical pieces. Targeted assistance from support functions, such as an audiovisual unit or a commercialisation office, could also prove invaluable in easing the burden on CHs. This would entail upskilling the whole of these support functions who, although aware of and keen on participatory methods, are by no means experts.



Distribution of 212 responses to the question:
'In general, do you feel sufficiently trained or equipped to implement a participatory practice?'

This highlights the need for IRD to focus its efforts on training and support aimed at creating new outputs specific to participatory research, both within foundational programmes or through ongoing professional development. For instance, this might involve novel approaches that put participatory research and popular education techniques into practice (such as training in the Theatre of the Oppressed or Forum-Theatre) via flipped learning or by partnering with third-sector research entities, including those from local communities.

Furthermore, knowledge of cultural contexts and languages is also a decisive factor in a research programme's success. It also expresses a need for strong links with CHs from developing countries who can help negotiate access to the field and populations who may not speak the colonial language or who are particularly unsettled by CHs from countries in the Global North who are also able to speak their languages. As confirmed in Senegal, mobilising colleagues in developing countries, including in disciplines other than the research project's primary domain, is essential to gain access to the field and for building links with the populations concerned. Thus, in many projects in Earth or life sciences, managers involved the social sciences to understand the topic's human aspects and gain all the benefits of taking a participatory approach. This is undoubtedly one of the main advantages of participatory approaches: they foster transdisciplinarity in a practical way. Expanding participatory research therefore raises multiple institutional challenges for IRD that call into question how it organises its research, as we present below.

Significant Ethical Questions

Should Research's Third Sector be Compensated?

Participatory research does raise ethical questions, as 70% of CH respondents to our survey indicated. When we discuss ethical concerns, the issue of compensation for research's third sector often comes up spontaneously. In addition to benefits from participatory research in terms of 'empowerment' or knowledge that is 'useful' for the community, remuneration is often considered necessary. This consists in compensating those who conduct field surveys, observations, or simply engage in discussions with CHs to share 'folk' knowledge that CHs may have yet to grasp. This questioning takes on special meaning when viewed within the context of the Global South, where participants in participatory research activities often live in precarious conditions. While some CHs surveyed admitted that compensation could skew results, most stressed the importance of being able to pay non-research professionals who 'work' on research, for example saying that 'all work deserves to be paid' (interview with an IRD research director and researcher in public health, on assignment in Africa). For an anthropologist specialising in health, participatory research takes place in locations with often extreme poverty

and where it would be 'inconceivable to ask people to work for free when they live in miserable conditions' (interview with an anthropologist and IRD research director, on assignment in Africa). For another researcher, an oceanographer, while remuneration for the third sector raises ethical concerns, so does 'free labour' from populations, 'especially since I earn a salary for doing research' (interview with an oceanographer and CNRS research director, Brest). In other words, a consensus emerged, including in informal conversations, in saying that work, especially high-quality work, deserved compensation. But perhaps even more than paying for work, it is society's attitude towards money in countries of the Global South and the differences in living standards that persuaded CHs to pay non-research professionals, either outright or by reimbursing travel costs.

> 'It's a complex issue that has been taboo for a long time. The issue of compensation was taboo in anthropology, so we don't know much about it. But ultimately, the anthropologist is going to conform to local practices: money flows more freely. [...] As part of AIDS research, there is a culture of compensation. At first, I did not compensate, but then I came around to it. Giving money does not mean we corrupt social relationships. Money is a very good social lubricant. They need it, we can give it for transport, and we can give more. Unless the people are in favourable positions. [...] That's how things work in Africa. We give money to the people we interact with, but it shouldn't become contractualised. There are already explicit, often verbal, contracts. We give money like we do in other life situations. It would be fair to include it in IRD budgets, but these are not large sums of money.'
>
> *Interview with an anthropologist and CNRS researcher, Paris region.*

For one geographer, we should call it 'motivation' instead of compensation (interview with a post-doctoral geographer, University of Dakar) since the money encourages those in research's third sector to take part in long-term projects that may lack tangible results at the start. However, in their view, it is absolutely possible to find funding mechanisms other than simple individual remuneration. In the programme for which he works, funding for a fruit and fish processing cooperative was set up to encourage a community-based organisation process that was experiencing difficulties in obtaining other subsidies. Working in this way helped involve people in the community who saw the research programme as an excellent way to support the village's development and offer future perspectives in an environment where natural resources are becoming more rare, especially fish, which represents the village's main source of income.

Some research programmes specifically plan for some form of compensation for these participants, but in many cases CHs are confronted with either very high administrative hurdles that prevent them from leveraging a traditional administrative framework or a highly informal way of operating prevalent in Southern societies, as we mentioned previously.

The second—and more crucial—issue is what constitutes a fair level of compensation. For several CHs, it is important to avoid offering excessively high compensation since this could divert local communities away from their usual activities. In fact, there is a risk that a form of competition could emerge between subsistence and research activities. Nearly all CHs we met decided to set compensation according to a typical day's work for the people concerned. For example, in a research project observing biodiversity in Africa, the women involved in the programme received the equivalent of what they would have earned working in the fields or fishing, their usual activities. This principle helps avoid upending the local economy, but it also comes at the detriment of gender equality, a particularly relevant concern in an environment with significant income disparities.

Meanwhile, concern was raised several times about participants accustomed to per-diem payments from international organisations working in the Global South and who therefore expect significant compensation for their involvement in participatory research activities. Although this issue does not impact only participatory practices but partnership research more broadly (the core of IRD's work), it is nevertheless a concern since engaging partners in the Global South is crucial to a project's success. Thus for many CHs, participatory research must not be a requirement handed down by the institution but the result of interaction and a shared desire to invest in such a method. It also invites consideration of the potential power dynamics that can arise from money, leading to unbalanced partnerships.

However, we must also consider the participation of CHs who live in precarious conditions, such as a geographer who took part in a biodiversity monitoring programme in Africa. His work was crucial to the research activities in the field, yet he was only reimbursed for his participation. He did not receive a salary. This colleague is a doctor without a formal position and whose only source of income is through short-term appointments he takes on within the university. It strikes us as important that we should have a wholesale examination of compensation in participatory research. The issue concerns not only non-research professionals, but professionals in highly precarious positions as well. As the project manager has admitted, the field missions were successful thanks to the work of this geographer colleague, who coordinated many of the logistical aspects and whose intimate knowledge of the local culture and language facilitated the consistent involvement of non-research professionals and helped to build new partnerships. Participatory research must lead us to examine the methods that build fair partnerships, including with professionals.

The last point concerns how to handle the ethical questions raised by participatory research. Even though the CHs we interviewed felt largely unaffected by ethics committees, recent developments pushing for a more formalised approach to these issues raise fears of bureaucratisation that might undermine research.

The Risks of Bureaucratising Ethical Questions

The risk of bureaucratisation also stems from the recent application of the Nagoya Protocol on protecting biodiversity and endangered species. The CHs interviewed unanimously view this protocol as a severe constraint on research activities. According to their accounts, it is time-consuming for both the researchers and support staff, particularly in preparing the required files, and highly contentious in countries of the Global South. The CHs question the ethics behind asking an uneducated person to sign a document in the colonial language. Sometimes, research objectives are lowered, often by focusing on easier targets when they are not abandoned outright. A researcher working on an invasive species in multiple countries explained how the protocol's stringent procedures took all their time for months on end, preventing them from carrying out their research. For them, the procedures are a burden that hinders the use of transnational mechanisms since the workload is too heavy. But the CHs surveyed were mainly driven by their doubts as to the effectiveness of the measures; they have seen that while this protocol has added to their workload, poaching has not been stopped.

These ethical issues remain unresolved, and several CHs felt that the institution does not offer them enough support in this area. They call for collegial discussions to determine conduct that is fair across all stages of participatory research.

> 'We are being asked to be open and participatory, but these are people in their own countries. It's a sensitive issue. We will need to take some special measures. We are very hesitant to get illiterate people, who have a fear of administration, to sign documents. They think we're land surveyors. Several times a day, we get asked if we're land surveyors. Those who think about inserting ethics committees into contexts like this are doing no good.'
>
> *Interview with a biologist, IRD CR, on assignment in Africa*

'Nagoya is hellish. We have data collected by people, by amateurs: what are we supposed to do about Nagoya? Between Nagoya and ethics, I know which I choose. There are programmes we haven't launched because of Nagoya; a dissertation had to be reoriented because it was under threat. The constraints mean the business world no longer goes after it. We ourselves go there less because it's too much – we just don't have the time. You can't launch a Nagoya procedure or an ethics committee review unless you're sure the project will succeed and be funded. So usually, we start beforehand. The procedure is not at all in step with how research is done. ...Our project is supported by the Belmont Forum; they push us to test generalisable solutions, including multi-site approaches. Preparing a Nagoya file for several countries is tedious and truly complicated – sometimes even impossible. There are genuinely blocking procedures... Those who distort knowledge have the means to bypass Nagoya. It's becoming critical, exceeding a researcher's full-time workload.'

Interview with a biologist, IRD CR, on assignment in Africa.

Examining Ethical Questions Outside Bureaucratic Frameworks

This section aims to open a debate on other ethical questions that were discussed, especially during interviews. The first issue concerns the balance of power between CHs and the populations concerned by research (or their representatives). As we have seen, the involvement of research's third sector varies, and it is sometimes still excluded from what are considered research's most rewarding stages. This is especially the case for publication or participation in scientific events such as colloquia, conventions and conferences. In many cases, even if research's third sector helps to collect data or frame the research, only the CHs are involved in the writing stage or recognised within scientific circles. This may be down to how CHs are organised; they may not think of involving non-professional researchers in these stages, or may not know of the appropriate way to do so. The lack of participation in scientific events could also be due to administrative difficulties. Scientific institutions may not cover travel and participation costs for non-professional researchers. The problem is compounded by administrative and consular obstacles (particularly visa rejections) because such participants are not covered by the authorisation regimes afforded to scientists. The issue is not unique to participatory research—numerous official CHs from the Global South also struggle to obtain visas—yet it raises a fresh concern about the third sector's visibility within research. All these factors contribute to marginalising non-professional researchers, even though they play an important role.

Lastly, another concern that was raised is how such participatory research might influence, even reshape, the profession. The issue becomes especially salient when a study's core objective is to enable marginalised communities to generate data about themselves and, in turn, harness that information as a platform for making social demands. This is what one researcher stated when presenting her eco-feminist research work on agriculture. By aiming to give women a greater role in the production of data on sustainable agriculture—a task that had until then been reserved for men, particularly when it came to assigning or prescribing work—this researcher deliberately changed the role of women in society. Aware of the risk of such an approach, the researcher decided to also involve men in the process, not to allow them to maintain their position but to understand their positions and perspectives through interviews. The intent was to foster a dialogue to defuse tensions and reshape roles with their buy-in.

As we can see, this utopian view of participatory research—depicting partnership and equality between CHs and non-professional researchers—is still vulnerable to the danger that communities may be pigeonholed into particular roles, such as data collection. There is a real risk that non-professional researchers will be perceived simply as inexpensive, low-skill workers able to carry out routine tasks for little money. The other risk is that communities will be involved in participatory approaches simply to be studied more closely, without necessarily sharing the research objectives or recognition that comes with such involvement. Additionally, the hybridisation of knowledge that participatory research promotes raises questions about its effect on the sociocultural conditions under which knowledge is produced, separate from the influence of research or other stakeholders. It is therefore crucial that we remain vigilant regarding the legal frameworks that govern local knowledge, as set out by sovereign states.

Participatory research therefore raises clear ethical dilemmas where the debate over the public's place in research intersects directly with questions of power relations between scientific knowledge and other forms of understanding.

Ethics also extend to what we even mean by 'participatory research.' Given that this survey purposefully adopted an expansive definition of participatory research—referred to as a 'participatory approach'—several authors now ask how best to delineate and label such 'participatory' studies more precisely. Sociologist Barbara Allen has advocated what she calls 'strongly participative' research (Allen, 2018), applying a methodology that invites public involvement at every stage of the scientific process and more explicitly critically examines how power dynamics shape knowledge, and how communities can reclaim it. In short, clarifying what we mean by participatory sciences—positioned within a spectrum that includes open science, partnership research, and so on—could help us ethically design research initiatives that hold great promise yet are laden with governance concerns, ethical dilemmas, training needs, and challenges to preserving local knowledge.

The institutional and ethical challenges that arise from expanding participatory research thus raise profound questions about how research is organised. The governance structures at IRD, along with its staff, have been grappling with these very questions. These issues were extensively debated within IRD during a series of discussions that began with the initial presentation of the survey results. Over a three-year deliberation period centred on the 'RP&Sud' working group, stakeholders—including governance bodies, the scientific community, partners, and both scientific departments and administrative/support services—worked together to determine a course of action, build a community of practice, and establish a trusting relationship with affected communities or their representative associations. These debates concluded that IRD must tackle three challenges: 1) bring about the conditions to preserve each discipline's autonomy and protect the sociocultural conditions of local knowledge production; 2) create multi-actor spaces for intermediation; 3) promote institutional and ethical support.

Toward the Construction of a Shared Institutional Framework?

IRD's institutional commitments aimed to capitalise on proven research tools in the Global South that fit the particularities of participatory research carried out within IRD, while also undertaking, from 2022 onward, a process of reflection on how to craft a roadmap and implement immediate, concrete support actions. Here we revisit the process of adapting the administrative framework and highlight three initial concrete actions: mobilising ethics committees, establishing training services, and drafting a guide on gathering feedback from participatory research in the Global South.

Promoting Institutional Support

A discussion began around updating the criteria used to assess scientific activity, as well as adapting tools for recognition and innovation. The first step involved steering several calls for projects in which IRD closely participates, including the 'CNRS/IRD Frugal Sciences', 'Sustainability Science', and 'Sciences With and For Society' calls from ANR. Moreover, starting in 2023, IRD's core frameworks (Young teams associated with IRD, International Joint Laboratories and International Research Networks) have been expanded to partner with associative groups and organisations in the social and solidarity economy. Since then, any proposal that includes civil society partners, whether associations, social and solidarity economy stakeholders, or any locally or nationally recognised citizen group as part of the research team is now eligible.

Mobilising Ethics Committees

IRD's governing bodies have decided to prioritise participatory research within the 2024 working programme of the INRAE-CIRAD-IFREMER-IRD (C_3E_4) Joint Ethics Committee. This committee

has launched an extensive consultation that examines how the scientific community relates to other societal stakeholders, focusing on the reciprocal benefits they might gain and questioning the legitimacy of this mode of producing knowledge and innovation. The report is due in 2025.

Co-Training Staff and Partners in PR

To deliver targeted training to all IRD staff and partners, a cycle of courses on participatory research geared toward IRD personnel and partner organisations has been incorporated into the 2023-2025 training programme. We think it is worthwhile to revisit the original methodology that underpinned its conception and deployment, aligned with the needs expressed by CHs.

A first awareness-raising workshop for the scientific community grounded in the experiential feedback from IRD researchers was co-designed and organised in June 2023 with the Training, Talent Development & Quality of Life units and the Societies & Globalisation Department. Participants included researchers and support staff alongside external guests—individuals actively engaged in participatory research or reflecting on it within other IRD partner institutions—and those with whom IRD aims to strengthen collaborations. This co-construction initiative targeted at IRD researchers and their partners helped launch a participatory research training cycle over the 2023–2025 period, articulated around four key objectives (Lees, 2024).

- Promote the practical application of interdisciplinary work, which is often essential to participatory research;
- Examine the positions, reflexivity, ethics, and methodological considerations of participatory research for researchers and their collaborators in light of North/South dynamics and post-colonial relationships;
- Question how to preserve disciplinary autonomy while safeguarding the sociocultural conditions that enable local knowledge production;
- Explore the feasibility of implementing participatory research within specific micro-local contexts and among local stakeholder networks.

Additionally, this cycle uses a methodology that blends traditional research theory with active-learning pedagogical tools such as practice-analysis sessions, brainstorming, and dynamic debates to support training. This approach was suggested by an external partner (an anthropologist specialised in participatory research) who supported both its rollout and delivery. It was further enriched by recognising CHs' expertise in participatory research, inviting them to share experiences and demonstrate the tools they use in that context. Beyond the material considerations and budgetary constraints that would allow for this training cycle to be expanded beyond 2026, the interdisciplinary experiences gained during the programme—and the reclaiming of reflective tools from the humanities and social sciences on interdisciplinarity, North/South dynamics, and post-colonial relationships—highlighted a need for collective workshops or ongoing support

throughout research projects. It also highlighted the importance of organising additional, specialised sessions to address specific facets of interdisciplinary practice. The launch of this inaugural training cycle–which also proved to be a first space for intermediation—underscores the importance of establishing venues that foster mutual understanding for all stakeholders involved by expanding the role of incubation spaces to include intermediation and reflective practice. This would entail supplementing this training cycle with project-engineering support and ongoing facilitation throughout the research project. Participatory research, therefore, requires additional support from cross-cutting services such as audiovisual or communications, and these teams should not be isolated from information and training efforts so that they can effectively meet CHs' needs.

Feedback: A Guide for Participatory Research

During the study day on 25 November 2022, a significant discussion took place about the formalisation of research practices. Each time, CHs were asked whether a participatory approach was relevant to their research focus, whether the context allowed them to undertake participatory research and, if so, under what conditions? Some CHs (particularly those from oceanography) asked whether we could draft guides or protocols for participatory research, not only to support the execution of studies but also to foster a degree of consistency across all participatory projects carried out at IRD. Several CHs voiced the need for collective deliberation on what participatory research truly means beyond mere best-practice guides, and for opportunities to share experiences with each other to alleviate the relative isolation that can accompany the start of such projects. The discussions revealed a need to account for community protocols—frameworks that organise and protect the territories, cultures and natural resources of indigenous populations—which are being devised in various countries, particularly across Latin America and Asia. Community protocols play a crucial role in flagging potential risks that could destabilise the sociocultural foundations underpinning local knowledge production, especially when engaging with scientific knowledge, which could give rise to new power dynamics.

This request was reiterated as the training cycle was being implemented. However, we still needed to identify how to meet this need. A guide to participatory best practices? A manual of feedback? A list of recommendations?

These discussions and interactions have convinced us that we cannot devise a toolbox for participatory research without first analysing the specific context in which it is to be used. That is why our position has been to prioritise other forms of intermediation, such as manuals or best practice guides. SOC also suggested gathering feedback about ongoing or completed participatory research initiatives. The scientific community's support in drafting a collection of fact sheets led to the development to an original guide on participatory research, which we are making available in part 2.

The New Alliance Between Science, Research and Societies

All of these initiatives—mapping, diagnostics, outreach, training, and feedback gathering—serve both as outcomes and catalysts for the collaborative deliberation that began at IRD. This process aims to identify best practices that safeguard research integrity while also affirming participatory research's potential to carve a niche within the broader third-sector research landscape. A comprehensive situational assessment and continuous dialogue in an institutional context driven by sustainability science have facilitated a thorough examination of the prerequisites for developing a strategic roadmap for participatory research. In particular, IRD was advised to leverage its core assets for an institutional strategy that simultaneously builds a community of practice while fostering a trusting partnership with research's third sector. Early steps, such as adjusting the administrative framework, prioritising a dedicated mechanism for handling ethical questions, launching a training programme and offering a repository of feedback reports on participatory research feedback reports, all help move this forward. Adapting organisational structures, governance and research evaluation processes provides the initial response to epistemological, ethical and value-based questions about how best to involve the communities impacted by such studies. It also brings together and structures a community of researchers who employ participatory methods. The challenge today is to strengthen this structure by energising and enlarging this community, creating a supportive environment and engaging in dialogue with other ESR members such as CIRAD, INRAE, INSERM, CNRS, universities, and so on, all of whom have already endorsed France's Charter for Participatory Science and Research.

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PART 2

Feedback: A Guide for Participatory Research

Provision of feedback is made available to the scientific community and its partners to help guide future participatory research initiatives in the Global South.

Supporting Parents in Talking About Serious Illness With Children

Experience from Carers and Patients to Improve Care Practices

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Background

Announcing a serious illness such as HIV poses a complex challenge. This approach is all the more sensitive when it involves communicating with children and young people, who are frequently faced with a disease that carries stigma. The Yëgël action-research initiative carried out between 2013 and 2015 in Senegal, in partnership with the Synergie Pour l'Enfance association and the paediatric teams at Albert-Royer Hospital in Dakar and Roi-Baudoin Hospital in Guediawaye, led to the creation of a pilot support framework.

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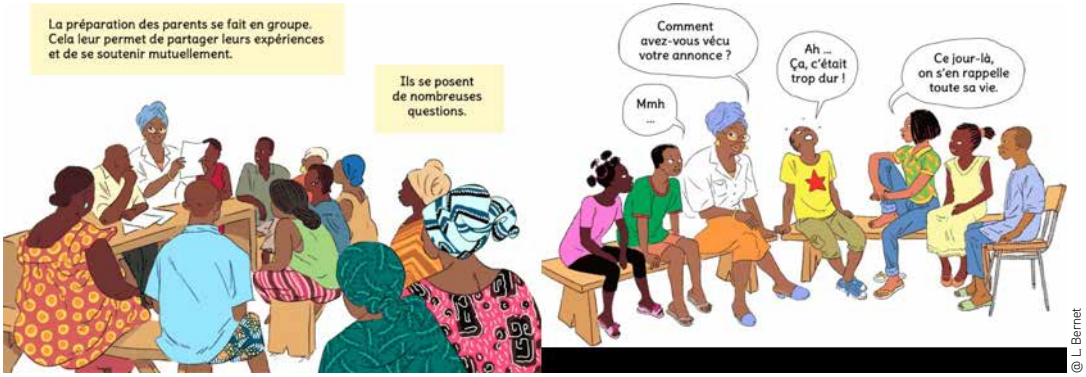
Description of the Research and System

The Yëgël project ('Yëgël' means 'to announce' in Wolof) blends health and anthropology with action-research initiatives, helping to design and assess a system for disclosing HIV status to adolescents. An ethnographic survey involving 30 adolescents, 40 parents and 15 caregivers identified best practices and obstacles to disclosure. Key barriers included parents' reluctance stemming from concerns over the mental and physical health impacts on children, the potential breach of family secrecy, or simply a lack of understanding about how to make the announcement. The findings exposed gaps in training and a lack of explicit protocols for healthcare providers, which resulted in delayed disclosures or unsuitable post-disclosure care, often because critical components like peer support groups or therapeutic education were omitted. Confirmed in workshops with the care teams, these findings led to the development of a standardised pilot disclosure system. Integrated within a broader community-health framework, it uses peer-support initiatives to promote a collective approach to preparing parents and children for the announcement.

The Participatory Research Tools Mobilised

In the Yëgël project, collaborative working sessions were the key tools of the participatory approach. In addition to ethnographic research, the project incorporated regular meetings, consultation workshops, interim presentations of findings and protocol validation sessions at various phases. These exchanges, coupled with post-intervention debriefings with children and parents, forged a unique collaborative environment among clinicians, children, families and the researcher. For example, there was a discussion and approval workshop for the disclosure protocol and the clinicians' guide, and it took into account key points such as:



Preparation of the Parents Group and the Discussion Group.

• Workshop structure and time management: the session brought together six clinicians, a peer child patient and the anthropologist and was designed to be concise yet well-structured, lasting two-and-a-half hours and featuring clear objectives. A detailed agenda, supported by work materials (protocol steps and guide), ensured that the allotted time was respected while facilitating smooth discussion. Documents were sent in advance and printed on the day to aid the process. Strict adherence to timing was essential due to clinicians' scheduling constraints.

• Participatory methodology: the workshop was led by the anthropologist using a straightforward yet rigorous method, tailored to participants who had been involved with the project from the outset. The technique guided discussion through clear turn-taking, allowing everyone a chance to speak, respecting time limits while encouraging everyone's input. After outlining the agenda, the protocol was presented, debated, amended and approved as a group. Thirty minutes were dedicated to reading the guide, followed by clinicians' comments that were incorporated on the spot, allowing a smooth dynamic despite tight timing. Additional time was devoted to translating key information into Wolof for parents, ensuring consistency in the messages conveyed.

• Collection and synthesis of contributions: to ensure we can capitalise on the work, a version incorporating key points and proposed solutions was distributed to participants after the workshop for approval.

By including the voices and experiences of all stakeholders, these shared moments helped to co-build solutions that genuinely suited local realities, enhancing the findings' relevance by aligning them with the specific needs of clinicians, parents and children. This participatory approach also enhanced the legitimacy of the research results and recommendations as they were directly approved by those involved, facilitating their adoption and practical implementation.

The Results and Effects Achieved Through the Research

The Yëgël action-research programme's findings had significant impact on the stakeholders. For the children, the pilot intervention proved both feasible and effective: 32 parents of children over eight agreed to inform their child of their status, and 24 of them made the announcement in the month following the support modules. Due to logistical, family or health constraints, the other seven young patients were notified within the following four months. At the Albert-Royer Children's Hospital in Dakar, where the programme was made permanent, the share of children being informed of their status went from 23% in 2013 to 76% in 2017, reaching 100% for children over 12, showing a profound change in practices.

For parents, the structured support from clinicians during the announcement encouraged them to agree to disclosure, in particular thanks to a better understanding of the stakes as well as the group support on offer. Being able to share their experiences with other parents also played a fundamental role in helping many of them to overcome their feelings of shame and isolation, creating a climate of solidarity and mutual support.

Clinicians saw their work valued and recognised, helping to make them more effective while benefiting from a space to reflect on the emotional aspects of their practice.
Finally, for the researcher, being able to participate in immersion in the announcement consultations allowed them to gain a deeper understanding of crucial problems, such as clinicians' isolation and their emotional burden, and shed light on particularly sensitive moments, such as revealing patients' HIV status or parents' discussions around death and transmission methods, which are often overlooked.

TAKEAWAYS

This action-research initiative showed that collaboration is not limited to discussions or the production of knowledge; it also creates solid bonds between participants. These workshops helped create a rich, unprecedented dialogue that made it easier to express worries that often go ignored, such as those of parents. The programme brought shared concerns to the fore, including among clinicians, who often found themselves isolated in the face of the mental and emotional load of the announcement. These spaces often became shared spaces for listening, learning and affirmation, where each participant shared their experience and challenges while helping to improve healthcare practices.

Nutritional Interventions in School Environments

Participatory Workshops on Challenges and Solutions

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Background

Adolescence is a crucial phase in developing behaviours, particularly dietary habits, that persist into adulthood, thereby offering a unique opportunity to promote healthy eating patterns. In Kenya, while rates of undernutrition and micronutrient deficiencies remain high, there is a continual rise in overweight and obesity problems as well as diet-related non-communicable diseases (diabetes, high blood pressure, etc.). Although schools provide an effective platform for nutrition interventions aimed at adolescents, such initiatives have historically been largely confined to providing meals to boost enrolment, without adopting a comprehensive strategy to address the many ways in which malnutrition can manifest, and remain inadequately documented.

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https://www.nutrition-research-facility.eu/ ; https://www.generationh.org/

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Description of the Research and System

In Kenya, several policy documents, such as the National Nutrition and School Meal Strategy (2017–2022), have been specifically developed to guide the design of health and nutrition programmes in schools. However, the scope of these programmes' implementation and the associated challenges remain poorly documented.

The research project 'SIAA' (School Interventions to Promote Nutritious Diets of Adolescents Living in Urban Africa), funded by the European Commission's Nutrition Research Facility and carried out by the African Population Health Research Centre (APHRC) and IRD, aimed to document which interventions could be implemented or bolstered to improve the diets of 14-18 year olds in city schools. Firstly, we conducted surveys in 30 schools in Nairobi and Kiambu to establish a profile of each school according to the type of interventions. We then launched a participatory research framework to address two questions: 1) What are the challenges associated with implementing nutritional interventions in schools? 2) How can these challenges be overcome?

The Participatory Research Tools Mobilised

At each school, four separate workshops were held with teachers, students, parents and canteen staff to identify the challenges they might face in implementing interventions (28 workshops in total, involving 184 participants). Three activities were organised.

- To verify the accuracy of the school profiles we had available, facilitators displayed photographs in the room depicting the interventions already present at each school (nutrition education, meals, gardens, vaccination, hygiene, etc.). The facilitator reviewed each photo and invited participants to give their opinion via green or red cards on the profile that had been established. Participants described any interventions that were overlooked, and they were added to the school's profile.
- Using large white sheets of paper, participants were asked to discuss challenges to implementing the existing interventions identified in activity 1. These discussions took place freely in small groups before being shared at a plenary session.
- Each participant individually and confidentially assigned a score of 1, 2 or 3 to the three challenges they considered most important among those raised in activity 2. The scores were then tallied to identify the three challenges with the highest overall scores.

Teachers, students, parents and canteen staff subsequently took part in a second workshop to consider solutions for overcoming the most significant challenges (one workshop per school, seven workshops in total, involving 60 participants). Two sub-groups, one comprised of teachers and canteen staff and the other of parents and students, were formed to ensure active participation, particularly from the students. A four-point matrix guided the work, which involved specifying the 'idea' (the proposed solution), identifying 'who' would implement it (stakeholders), outlining 'how' the solution could be implemented (proposed steps or processes), and stating 'what' they would need


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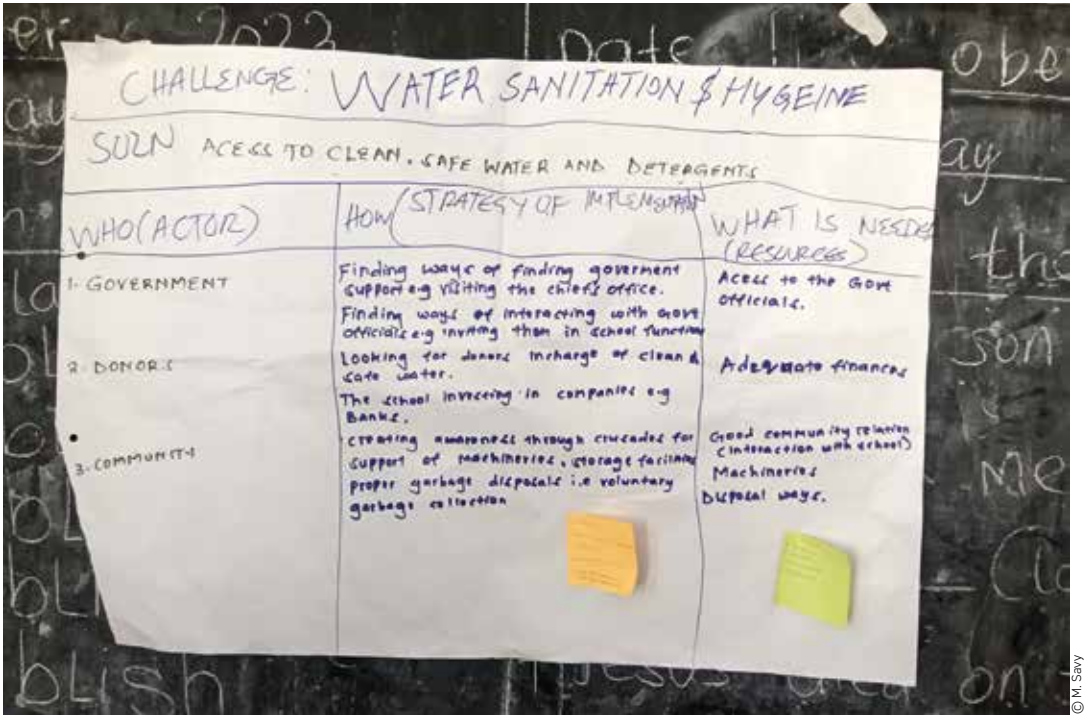
(resources). Participants used coloured sticky notes to add factors that could block or facilitate the implementation of these solutions. The deliberations' results were presented in a plenary session so that each participant could respond and contribute to the discussion.
Each workshop lasted between one and two hours and was led by two facilitators.

The Results and Effects Achieved Through the Research

The school community identified many challenges in implementing nutrition-related



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Workshops on the challenges and solutions in schools.

interventions. Those concerning the quality of school meals were predominant, notably: 1) insufficient portions served to adolescents, a consequence of parents' late payments, high market prices and a lack of knowledge among canteen staff regarding the standard portion sizes required for growing adolescents; 2) a great monotony in the meals served (primarily cereals and legumes throughout the year) due to high food costs and a lack of equipment for preserving perishables; 3) problems with the nutritional quality and sanitary safety of the foods served (overcooked dishes, diluted porridges, contamination by insects), attributable to staff inadequately trained in proper hygiene and preparation practices as well as the lack of modern kitchen facilities that make cooking difficult (wood/charcoal).

The school community proposed several solutions that could be implemented at either the government or school level, for example: 1) implementing taxes on unhealthy foods (such as sodas) to fund infrastructure and school interventions; 2) involving nutritionists and the school community (including parents and students) in developing menus; 3) creating school gardens and optimising production through innovative agricultural approaches by working with dedicated agricultural services to strengthen the abilities of both pupils and staff. These workshops allowed participants to share their everyday challenges, become aware of one another's constraints, and jointly offer concrete, context-appropriate solutions. They encouraged the community to take ownership of nutrition problems, an essential first step to their full involvement.

TAKEAWAYS

This participatory approach allowed for the production of knowledge that closely reflects the problems and expectations of the school community's various members while facilitating co-construction of solutions by providing everyone with a space for expression and exchange where they could feel like agents of change within their institution. The aim now is to translate these ideas into feasible interventions that account for the viewpoints and constraints of decision-makers and managers in implementing the interventions in school environments. This is the objective of a second research project currently being led by UMR Moisa 'Generation-H'.

Putting Local Communities (Back) at the Heart of Knowledge Production

A Study of a Biostimulant Derived From Fermented Forest Litter

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Background

Fermented forest litter (referred to as '*lifofer*') is a biostimulant used by farmers across several regions in the Global South (Southeast Asia and Latin America) to enhance food crop performance through germination, plant growth, and biological control of certain fungi. It may also serve as a probiotic in animal husbandry, for building sanitation or draining soils. The Institut Méditerranéen de Biodiversité et d'Écologie (IMBE), via its Terre et Humanisme (T&H) network, has championed the reappropriation of lifofer, an agent scarcely recognised by farmers and largely underresearched in France, Europe, and Africa. IMBE has also benefited from farmers' knowledge to adjust its research and better answer the agricultural field's questions about the use of lifofer.

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For more information

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Description of the Research and System

T&H and IRD first answered calls for projects to set up laboratory research at IMBE and establish an experimental farmer network through T&H, initially located in the Auvergne-Rhône-Alps region, which involved not only farmers but also independent experts in biofertilisation and agronomics as well as a start-up, all drawn from diverse agricultural sectors such as market gardening, large-scale crops (vineyard), and arboriculture. The group has met twice a year since 2021, tasked with developing lifofer (fermented forest litter) application protocols tailored to various crops, establishing metrics to gauge its impact and addressing producers' questions. For example, at the request of this panel of stakeholders, IRD studied how oxygen or the type of forest litter could influence the production of the solid starter culture. Laboratory studies have helped address doubts about preparing the liquid starter culture: addition of whey, fermentation temperature, storage time for the solid starter culture. Thus, through the exchange of knowledge and practices between science and farmers' experiential know-how, this multi-stakeholder network has helped lifofer to be reclaimed, from the field plot to the laboratory analysis of its scientific validity, and improved, to respond to new contexts of use based on the questions raised by local farmers. Thanks to T&H, the use of lifofer has spread, producing reference farmers, fostering a collaborative network that shares findings and inquiries, and organising specialised work groups in fields such as arboriculture, horticulture, and beyond. The lifofer network now covers a good portion of the country. This mode of co-construction facilitates a genuine exchange between experiential knowledge and scientific insight within the laboratory, in intermediary spaces, and directly on the plots themselves. IRD subsequently presented this model to several partners in the Global South, namely the Indio Hatuey experimental station in Cuba, Ki-Zerbo University in Ouagadougou, and the University of Tunis. The proposal was supported by both public actors (France Agrimer, the French embassy in Cuba) and private stakeholders (the Fondation de France).

The Participatory Research Tools Mobilised

The diverse intermediary spaces instituted by T&H were pivotal to the co-construction of this programme. These include communication tools such as creating an online space (Omnispace) where each experimenter/farmer could post their observations and questions, writing the quarterly lifofer newsletter, drafting a guide, taking part in international events (European Agroecology Forum), or organising meetings with potential professional partners (leaders of organic viticulture). Spaces designed to stimulate knowledge co-production within the multi-actor network were also set up, such as targeted seminars on a particular sector (e.g. arboriculture), or focused on lifofer (including the biannual network meetings).

The Results and Effects Achieved Through the Research

These seminars were well-suited to face-to-face interactions, allowing IRD and AMU researchers and the network's experimental farmers to share their expertise and produce new

knowledge together. Network members were guided through the experimental process and introduced to foundational microbiology concepts. These researchers also steered a portion of their work to answer the farmers' questions about using lifofer. In the laboratory (and with T&H's guidance), IMBE mastered the artisanal lifofer production technique, which involves two stages: first, a one-month fermentation produces a solid starter culture; then, during a second week-long step called 'activation', a liquid starter culture is prepared and applied to crops after being properly diluted. Physicochemical, biochemical and microbiological parameters are monitored throughout both fermentations. IMBE demonstrated the strong acidification of the solid starter culture (pH 4), partly due to lactic-acid production (60 mg/g), along with a predominance of lactic bacteria and yeasts. This ensures a healthy product, free from pathogenic microorganisms such as fungi, that can be stored for several years before being activated. It was also demonstrated that strict anaerobiosis is not required; a slight presence of oxygen (microaerophilia) can actually be beneficial. On the other hand, two plant hormones were found in the liquid starter culture: one that boosts the plant's

Preparing the liquid starter culture.

immune system and another that helps it resist water stress. Finally, research carried out at IMBE showed that lifofer improves the germination rate of lettuce, though no difference in subsequent plant growth was observed when compared with a simple 'water' control sample. These studies helped spark collaborative research between IRD, AMU and CIRAD.

TAKEAWAYS

For fellow researchers: stay attuned to the needs of impacted communities, even if this can be challenging because of cultural, linguistic and world-view differences. Researchers need input from farmers who know the local crops, soils and climate. Farmers can have their questions answered through the tools and methods of scientific research. Our experience shows that intermediation spaces are needed. T&H's platform for exchange and discussion around lifofer brought together farmers/testers, consulting firms, businesses and researchers and played a pivotal role in co-producing new knowledge and rapidly spreading this technique and bioproduct across France and several countries in the Global South.

Local Knowledge

The Domestication of Tropical Fruit Trees

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Background

Fruit trees provide food, drive economies and often hold significant sociocultural value, factors that have historically driven the domestication of many species. The evolutionary journey shaped by gathering, eating and trading habits is largely overlooked. In Cameroon, a country undergoing a food transition, the Agropolis Foundation's 'Arbopolis' project used a participatory approach that brought together growers, consumers and researchers to demonstrate the importance of safou (the fruit of *Dacryodes edulis*) in diet and cultural practices. These findings will bolster the resilience of local food systems and support the sustainable management of this species' genetic resources.

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Description of the Research and System

Plant domestication is the human practice of cultivating and altering wild species so they serve our needs, be it food, medicine or useful materials. This process hinges on selecting and breeding plants that exhibit desirable traits such as larger fruit, enhanced disease resistance, or higher productivity.

The cultivation, harvesting, consumption and trade practices that shaped the domestication of the safou tree formed the core of the Arbopolis project's participatory process, executed in three phases: 1) initial meetings where all project partners jointly defined the research objectives and questions; 2) fieldwork that gathered empirical data; 3) dissemination among our civil-society partners, followed by a transfer-and-mediation session aimed at young people.

A mixed-methods platform combining focus groups, presentation workshops and a public results-sharing campaign was deployed in both urban and rural sites. The data focused on local ecological knowledge, cultivation and perceptions of the species, including its 'ethnovarieties', as well as flavour preferences and consumption volumes. Simultaneously, leaf samples were taken to assess the genetic diversity of the species across the survey sites. A cross-analysis linking the genetic and ethnoecological aspects was then used to examine how social and cultural factors shape the species' genetic diversity.

The Participatory Research Tools Mobilised

In participatory research, a 'focus group' is a qualitative technique that uses group discussion to gather the views, ideas and experiences

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Left: children playing under a fruit-bearing safou tree.
Right: children painting a safou tree and its surroundings during an art activity.

of participants as to their involvement on a given topic while ensuring that all stakeholders' perspectives are taken into account. The project's focus groups enabled local stakeholders, including researchers, community members and growers, to identify key ecological, agronomic and economic challenges surrounding safou tree management and consumption in Cameroon. These challenges vary depending on whether the species is viewed through a commercial lens or not. The group discussions also served as a platform to explore the role of this traditional food amid rising urbanisation, shifting dietary patterns and malnutrition, issues closely tied to the steep price increases of food staples, particularly in urban areas.

Subsequently, the findings were debated and revisited during follow-up workshops with industry stakeholders and families engaged in safou cultivation. The workshops facilitate the exchange of knowledge, allow for feedback, confirm or challenge specific findings, and help plan out next steps.

Drawing on the insights gained during the project, we launched an environmental awareness campaign that included stop-motion animation workshops covering scriptwriting, set and character design, filming, sound recording and editing, as well as art sessions with children from several schools in our study area, all organised through the IRD 'Domestication, Conservation and Transformation of Safou' Youth Club.

Through the drawing exercise and follow-up discussions, the children expressed how they see their social and natural surroundings and the particular place that trees, especially the safou, occupy within them. Individual conversations held after each piece of art helped us understand why specific elements were included, highlighting how certain tree species that are familiar to the children play a vital role in their daily lives.

The Results and Effects Achieved Through the Research

By leveraging a participatory research framework across all phases of the research project, we gained insights into the safou tree's biological diversity, the factors shaping growers' and buyers' preferences, and its role in the local diet. These findings confirm the species' sociocultural significance in Cameroon. The species is widely recognised and highly valued across all ethnic groups in Cameroon, as evidenced by the extensive range of names for its various fruit types. From June to September, during its peak harvest season, safou is consumed extensively, prepared in a variety of ways and paired with starchy side dishes, making it a major contributor to both rural and urban household diets. In agroforests, safou contributes to the high level of diversity in native and introduced species, both naturally occurring and deliberately planted, that help sustain these systems' ecological resilience while bolstering the social and economic resilience of the households that rely on them. Consumer preferences were identified. In addition, urban homeowners grow safou in their private gardens using seeds from highly prized fruits, either sourced from their native villages or bought at Yaoundé's markets, thereby helping to conserve the species' genetic diversity.

TAKEAWAYS

Participatory research demands substantial time, and its activity schedules often clash with funding deadlines and the fixed timelines required for research. Adopting a participatory approach typically requires specific calls for projects and a lengthy implementation period, often exceeding three years.

Enhancing Capabilities in Fisheries Resource Management

Artisanal Shellfish Harvesting in Senegal

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Background

Artisanal shellfish harvesting in West Africa, particularly within the Sine-Saloum delta, has been practiced for nearly 5,000 years. It remains a core element of local tradition, supported especially by women who handle catching, processing and sales. However, the practice faces serious threats from climate change and overexploitation, jeopardising the food security of vulnerable communities. Following a decade-long research partnership between scientists and women monitoring stocks of the ark clam species *Senilia senilis*, our project takes a participatory approach designed to untangle the constraints posed by climate change and overexploitation while building local capacity through the development of management tools and decision-support systems.

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Description of the Research and System

In the villages of the Sine-Saloum delta, most women are involved in artisanal shellfish harvesting. Confronted with dwindling stocks and smaller catches, they turned to institutions for help in managing their operations. Led by the University of Dakar and IRD researchers, participatory science initiatives were launched to study the dynamics of this largely understudied socio-ecosystem. Our 'Obsaloum' project (an IRD/CNRS frugal science initiative) fits into this trajectory, concentrating on a single bivalve species: the ark clam *Senilia senilis*, locally known as the 'pagne'. This species is central to the local socioecological system and has been harvested for millennia, as attested by the numerous shell mounds that dot the landscape. And yet there has been no formal assessment of the fishing pressure on this species made to date. Our goal is to implement a participatory monitoring strategy that tracks the pressures on this shellfish resource to help shed light on stock dynamics and lead to the creation of management tools.

A series of field visits facilitated discussions with a range of stakeholders, including women fishers, members of the local fisheries committee, pirogue operators as well as the headmaster and life science teachers at the nearby secondary school. These interviews allowed us to co-construct an action plan with three steps: 1) a comprehensive survey of women fishers' practices in the villages of Niodior and Falia; 2) workshops to co-design a strategy for tracking fishing catches; and 3) a participatory monitoring programme that follows those catches over one year.

The survey was administered with the participation of female villagers, helping to gather sociodemographic and socioeconomic data on the women fishers themselves. Following two community feedback sessions held in each village, we jointly devised a monitoring protocol and launched an initial pilot initiative—subsequently assessed and refined for broader rollout. The female surveyors provided women fishers with a form to fill in at three critical

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Return of an experimental catch with the women from the village of Falia (Sine-Saloum, Senegal) for monitoring the stock of pagne clams (*Senilia senilis*).

points, gathering details on the fishing locations visited, daily fishing hours, fishing days spent within each tide cycle, quantity of catch, and fishing technique used. Over two thousand data forms were digitised into a single database, enabling a holistic analysis of the information collected.

Our project also sought to build capacity in environmental monitoring, an indispensable aspect to understanding the underlying dynamics. We designed a low-cost, autonomous, open-source monitoring kit capable of recording water variables such as temperature, salinity and turbidity at high frequency. Prototype units were installed in experimental plots across both villages, with active involvement from the local women fishers.

The Participatory Research Tools Mobilised

Our project employed a range of participatory research approaches. We held workshops to co-build the project's aims and intervention strategy. These workshops were complemented by interviews and an extensive survey involving local women who helped gather the data. Women fishers also took part on a regular basis in the scientific collection of shells. Finally, the monitoring of fishing returns was conducted with the help of investigators from both villages and Niodior pirogue operators. This allowed us to collect information from nearly every fisherwoman. Follow-up workshops were then held to review the findings and decide on subsequent actions.

Meanwhile, we carried out a range of information-sharing, training and capacity-building activities aimed at embedding these instrumental developments for the long term and ensuring that they were adopted by the scientific community. A workshop focused on low-cost oceanographic instrumentation was hosted at the Ker Thiossane FabLab in Dakar. It brought together scientists, showcased our developments and included hands-on workshops with students. The project helped establish a new FabLab within the IRD-Ucad centre in Hann, also in Dakar, to further strengthen the scientific community's toolset.

The Results and Effects Achieved Through the Research

Over several years of close collaboration between scientists and fishers, this project has sustained a constructive dialogue between science and society within an atmosphere of mutual trust. Such collaboration is essential for addressing genuine needs and reconciling the differing timescales that exist between day-to-day field realities and the slower pace of scientific research.

The participatory approach also helped establish and reinforce an interdisciplinary research approach and community that blends natural sciences with the humanities, enabling us to tackle the challenges of sustainability science and achieve integrated, co-constructed, and transformative knowledge production. This ambition has spurred a dissertation project that will use support modelling techniques to co-design management strategies grounded in the knowledge we have gathered.

This participatory research deepened our understanding of the Sine-Saloum socioecological system by providing key insights into the species' biology, its sensitivity to environmental change,

and patterns of fishing activity – information that will help shape effective management measures. It also serves as a proof-of-concept for institutions, paving the way toward a national coastal observatory and recognising participatory science as a legitimate, fully fledged tool.

TAKEAWAYS

Spanning more than a decade, this project highlights the importance of long-term commitment when designing projects that imbue scientific work with real significance. Such a long-term perspective is needed to build a balanced partnership rooted in trust with both the local communities and our regional collaborators. The extended timescale has enabled us to construct and reinforce a genuinely interdisciplinary approach that effectively addresses the real needs of local communities.

When Pacific Children Sketch the Sea and Their Fishing Practices

Involving Children in Marine Social Science Research

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Background

The 'SOCPacific' project (A Sea of Connections: Contextualising Fisheries in the South Pacific Region, 2018-2022, funded by ANR-DFG) sought to investigate the 'sea of connections' in which fishing practices and fisheries management are embedded across the South Pacific. Engaging children was crucial for adopting a marine sustainability framework that recognises intergenerational justice concerns and upholds children's rights. Children in the region are active participants in fishing activities and play a key role in sustaining the connections among people, the ocean, and marine life. Just like adults, they too can exercise their rights and responsibilities toward the ocean. Art workshops allowed them to take part in co-building our research agenda.

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Description of the Research and System

The peoples of Oceania regard themselves as the 'keepers of the ocean', protecting it for the common good. For these peoples, pursuing the Sustainable Development Goals, particularly SDG 14 (Life Below Water) and its links with all other SDGs, has a long and significant history, most recently reflected in public policies grounded in 'oceanic sovereignty'. These policies especially concern both the coastal and deep-sea fisheries that lie at the heart of South Pacific economies and livelihoods. The 'SOCPacific' project aimed to deepen understanding and recognition of the myriad aspects and interconnections of fisheries in the South Pacific—a region that has become a central arena for imagining the future of oceans and their governance. In particular, it sought to bring together diverse perspectives from actors involved in or affected by fishing issues. It also sought to acknowledge the involvement of women and children in fisheries, since their contributions are often marginalised in official statistics, management practices and research projects. Engaging children in a research project requires an ethical, playful, and age-appropriate framework capable of bringing out the sensitive aspects of their relationship with the environment (here, the land–sea continuum). We chose drawing.

The Participatory Research Tools Mobilised

Drawing workshops were held with children aged 9 to 15 in a range of schools located in both urban and rural settings. Each school received identical art supplies (A4 drawing paper, graphite and coloured pencils, sharpener, and erasers), and the children were given a single instruction: 'Draw the sea and what you and others do at sea' (translated into their everyday language). The word 'fishing' was deliberately left out so we could see whether the children would spontaneously link the sea to their fishing activities or those of other people. Afterward, brief one-to-one interviews were conducted to allow the children to comment on what they had just drawn and to give a short account of their family background.

This approach enabled the children to take part in the research project, while researchers gained insight into the children's world and worldview. Contrary to approaches that reduce children to malleable minds or future adults who must be educated and sensitised, we argue that their knowledge should instead be foregrounded, opening a path for their inclusion in discussions and decision-making about the land-sea continuum. This is an initial but vital step toward participatory research—a stage often overlooked in co-construction processes in research (from establishing research questions to analysing and disseminating the data produced).

The Results and Effects Achieved Through the Research

The interdisciplinary analysis of the children's drawings and accompanying interviews shows that the land-sea continuum is obvious to children in Fiji, New Caledonia and Vanuatu, who view the sea as inseparably linked to the land. It also highlights ecological connections (for instance, relationships among different

marine species and between those species and their habitats) and sociocultural ties (such as attachment to places and iconic species) that children observe and experience within this continuum, especially through their own fishing practices. Most children indeed associate the sea with subsistence fishing in their drawings, presenting it as an essential means of sustaining strong links among people (particularly children), the sea, and all the living beings it hosts.

Children's drawings produced in this project, and in ethnoecology more broadly, expand the arena for interaction between science and society by opening up several avenues of dialogue: 1) between researchers from different disciplines; 2) between those researchers, the participating children and their families, school principals and teachers involved, and potentially other local stakeholders; and 3) between researchers and citizens who take on roles in teaching, mediation or decision-making.

Children's drawings, like the ones done in this project, are a valuable tool for laying the groundwork of co-constructed research with very young participants. They help illuminate the children's perceptions, practices and concerns while encouraging them to articulate and express the marine sustainability issues as they see them.

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Drawing workshops conducted in 2019 at schools in Fiji (left) and New Caledonia (right)

TAKEAWAYS

Children's participation in research remains rare and limited. Drawing offers a way to involve them at various levels or stages of participation: from recognising their legitimacy in contributing to data or knowledge production (as illustrated by the 'SOCPacific' project) to co-constructing an entire research project, a perspective we hope to explore in future work.

Senegalese Youth Living with HIV as Actors in a Participatory Empowerment Process

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Background

Disclosing one's HIV status is a critical issue for young people living with HIV (YLHIV) who have had the infection since childhood, as they are more vulnerable psychosocially (experiencing self-stigma and isolation), are economically dependent, and have limited influence over decision-making compared to adults. Revealing their status can lead to discrimination and rejection by those around them. Conversely, sharing it with trusted individuals can enhance self-esteem, improve adherence to antiretroviral therapy, and enable greater social and financial support. Senegal is experiencing a low-prevalence HIV epidemic that remains concentrated among key populations, and discrimination against people living with HIV remains highly pronounced.

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Description of the Research and System

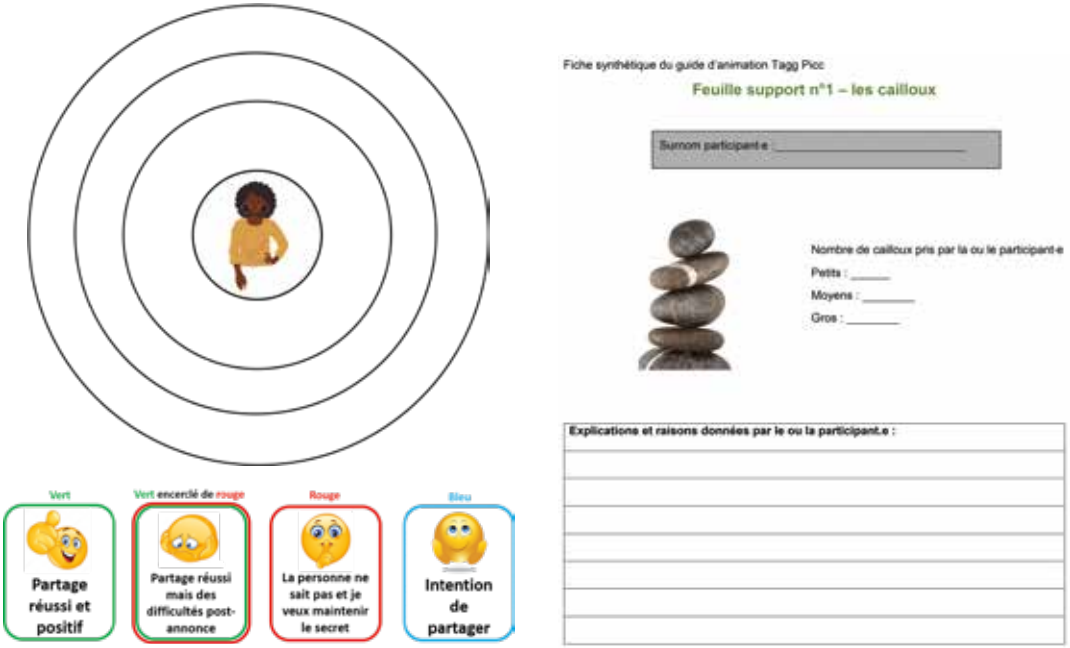
The Convergence Youth Network (Réseau Convergence Jeunes - RCJ) brings together around 150 Senegalese young people infected with HIV, most of whom acquired the virus from their mother in the womb. As a partner of TransVIHMI (IRD) on several research projects, RCJ expressed a need for support in managing HIV status among YLHIV. In 2021, the community-based participatory study 'Tagg Picc' (meaning 'the bird's nest' in Wolof) was co-developed to help YLHIV make informed decisions about whether to disclose or conceal their HIV status, identify strategies, implement them, and manage any resulting consequences. During a participatory research residency, RCJ youth leaders identified this challenge as a priority and collectively devised community support strategies. The researcher and RCJ then formed a partnership with the team behind the 'Gundo So' project (Arcad Santé Plus, Coalition Plus, and the Social Psychology unit at University of Lyon-II), which has been running an empowerment programme for women living with HIV in Mali since 2017. Empowerment here refers to women's ability to control their environment by choosing whether to disclose their HIV status to their husband, building their social network among peers and within the care structure that provides social support. The aim of this collaboration was to rethink this model with and for Senegalese YLHIV, and to explore its effectiveness and acceptability.

The Participatory Research Tools Mobilised

At every stage of the process we adopted a participatory approach. Collective-intelligence tools—empathy exercises, collaboration, communication, collective reflection—and participatory methods such as problem trees, role-playing, forum-theatre, serious games and native podcasts were all used to identify challenges and strategies, co-design the research project, adapt it, transfer skills, capitalise on learning and co-author deliverables.

Adaptation. A collaborative workshop helped us to adapt the Malian toolkit to create outputs that were specific to the 'Tagg Picc' study and to the lifestyles and constraints of the young participants. Over a week, RCJ youths familiarised themselves with each activity and methodology used in the nine-session Malian programme by engaging in role plays and producing written and verbal reflections. Among other changes, they reduced the number of empowerment sessions to seven and revised the training visual, which had been deemed 'too conventional'. For instance, they used rocks to represent the weight of keeping an HIV status secret, and map out the people with whom they would like to share that information versus those with whom they prefer to keep it secret. These are plotted on concentric circles that reflect social or familial proximity.

Skills Transfer. A workshop was devoted to transferring facilitation skills from the Malian 'tatas' to nine peer-facilitators (four of whom were women) from the RCJ, and also to raise



Tools used by the "Tagg Picc" facilitators: 'The Weight of the Secret'.
Source : C. Cames

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Adaptation and Skill-Transfer Workshops for Facilitators and Researchers in the 'Tagg Picc' Project.

awareness about managing emotions. Meanwhile, three peer researchers (including one woman) were trained in interview techniques, transcription and verbatim encoding by Mathilde Perray, a social psychology researcher.

Intervention. The revised seven empowerment sessions were delivered by peer facilitators and supported by a psychologist as part of an analysis of practices and psychological support process. The intervention involved 19 YLHIV participants aged 18-25, including 11 women, who were divided into three groups and supervised by three peer facilitators. Mixed qualitative and quantitative data were gathered by the peer researchers both before the programme began and at least four weeks after the final session.

Capitalisation. The process, carried out over time, documented best practices for supporting people in managing their HIV status. It highlighted how facilitators valued acquiring key skills from the Malian 'tatas', such as active listening, building trust, session preparation and emotional regulation, and emphasised the impeccable conduct expected of them. A concern emerged regarding some young facilitators feeling pressured to 'cure' their peers or 'free them from their suffering'. Reflective practice helped reassure them that they are not 'super heroes', but simply supporters.

The Results and Effects Achieved Through the Research

Before the intervention, only 25% of participants had ever disclosed their status to anyone; 35% felt able to weigh up the pros and cons, while 70% and 47% wanted support from 'Tagg Picc' for sharing and keeping their HIV status confidential, respectively. Young people reported living with HIV as a burden in social settings that offered them little autonomy. After 'Tagg Picc', the YLHIV valued the knowledge and skills gained to manage their HIV status and navigate their surroundings more easily. For the first time, they felt that they belonged to a group, and experienced physical and psychological well-being through regular outings organised among participants. Many of them exercised their agency by successfully disclosing their status to one or several people after completing the programme.

The RCJ launched a 'Tagg Picc Season 2' with 20 new YLHIV participants. The results, still being processed, will lead to scientific dissemination and a public release in the form of a short film (© IRD/Kourtrajmé Dakar).

TAKEAWAYS

'Tagg Picc' is an example of community-led research carried out with and for YLHIV that emerged from a participatory process guided by senior researchers and community elders, yet driven by the expertise of young people. The participatory approach highlighted the creativity, wealth of skills, know-how and experiential knowledge possessed by most YLHIV, who generally have limited schooling. The project achieved its empowerment goal for youth while simultaneously strengthening the researchers' own skills and knowledge. These once-marginalised young people now feel prepared to join national authorities in fighting HIV and to take on community leadership roles.

Engaging Vulnerable Populations in the Co-Production of Knowledge

HIV, Sexual and Reproductive Health in Laos

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Background

In Laos, HIV-control programmes struggle to reach people living in remote areas. Accessing data is a major challenge, compounded by a shortage of trained staff and the requirement that every researcher must be accompanied on the ground by a government representative. Producing science under such conditions and building the trust required for ethnographic work are difficult tasks. These constraints demand participatory research strategies to create new spaces for knowledge co-production. This is what our 'Migr Lao' and 'Health' projects aim to do: explore links between human mobility, intimate relationships and vulnerability to infection.

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Description of the Research and System

Since 2013, these programmes aim to shed light on the links between biographical and migratory pathways, gendered social reconfigurations, and to improve sexual and reproductive health care and HIV risk management for populations living in isolated rural areas, particularly young people who migrate to semi-urban zones in Laos. They also seek to co-design with multi-actor partners the possible spaces where knowledge can be produced and disseminated within this context. A range of participatory research tools has been employed, including life-history interviews and forum-theatre, both as means of collecting and generating scientific data. Forum-theatre is a theatrical technique that enables everyone (audience and actors alike) to discuss and collectively imagine alternative solutions to specific problems. This approach has allowed us to build and strengthen local capacities while fostering an inclusive research stance that incorporates diverse perspectives for a more holistic understanding of health challenges in Laotian society.

Take the example of the project 'Migration, Mobility and HIV/STI Vulnerability. An Interdisciplinary & Community-Based Participatory Research in Laos,' funded by Expertise France, carried out with researchers from Laos' University of Health Sciences and involving men and women representatives from organisations of people living with HIV.

The Participatory Research Tools Mobilised

After receiving training on basic qualitative research methods and certain confidentiality guidelines, these men and women carried out the data collection themselves. Each was tasked with gathering biographical information from three people living with HIV within their own networks; the interviews were recorded and conducted on three separate occasions. The material was then transcribed into Lao and subsequently translated into English. They describe life conditions in rural Laos and how poverty drives migration to perform (often illegal) work in Thailand. The accounts reveal social and domestic violence, sex work practices, use of illicit substances, but also stories of love that arise and fade. This data was used to co-create a performance titled 'Live With It'[1] (a blend of dance and theatre) with Thiane Khamvongsa, artist and director of the troupe *Les Bêtes sur la Lune*, and the Fang Lao company. While the accounts were rooted in anthropological data, the performance stepped beyond the scientific field and data presentation to enter an emotional realm expressed through body, movement, words, and music. A female doctor and one of the people living with HIV whom we had worked with on the data collection were recruited to facilitate audience interaction sessions that followed each performance, addressing questions about HIV risks and related topics.

1 • https://anthroms.com/live-with-it-performance/

The Results and Effects Achieved Through the Research

What about the visibility, impact and applicability of these findings? Our participatory research experiences demonstrate the validity of the method by producing high-quality scientific data while allowing those involved to adopt the tool themselves after training them in research practice. Seeing the laughter, good humour, active and enthusiastic participation from villagers and the audience's reactions gives an immediate sense of satisfaction. In terms of applying scientific knowledge to action, mobilising this tool aims at effectively implementing the measures identified as necessary to improve access to care. Even well-thought-out, coherent and engaging participatory research has its limits, however. On the one hand, the solutions it generates are confronted by class inequalities and social and ethnic affiliations that shape vulnerable people's access to health services in Laos. Some of these solutions may be implemented in the medium term but require a longer horizon than the 36-month project implementation cycle as well as sustained funding (which was not the case for this particular project). Finally, across all our projects many initiatives are devoted to building links between the research team and those responsible for care programmes: preparation meetings and long-term reporting to decision-makers during implementation, workshops for health workers and sometimes the wider public, research reports, press releases, conferences, publications, policy papers. Nevertheless, producing a wealth of information and insights and making them available to inform the roll-out of care programmes does not automatically translate into the social change we hope for.

TAKEAWAYS

The application of research relies on building allies and networks, particularly through capacity-building and training, and on the synergy of diverse interests that participation can foster, often going beyond the publication of a single scientific paper, no matter how good it may be. Nevertheless, engaging in participatory research represents a time-consuming shift in direction, and an approach that is not always recognised within the academic community. It requires forging relationships, staying alert to opportunities, learning and experimenting with new tools, building trust in oneself and in others, and letting go!

Developing Commons through Participatory Mapping

Co-Creating Desirable Territorial Futures in Lower Casamance

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Background

Casamance, in the south of Senegal, is rebuilding after almost forty years of civil war. The involvement of local stakeholders, particularly women, is essential to revitalise agricultural systems. Thus, the 'Concerted Governance of Southern Coastlines: Casamance, Guinea-Bissau' programme (PGCL 2014-2017), supported by AFD, aimed to promote dialogue among citizens, users of natural resources and the authorities to arrive at coordinated governance rules for seaside zones. Participatory mapping was one of the main tools used to rebuild social and spatial commons. To this end, from 30 June to 4 July 2014 a thematic workshop on participatory mapping was organised in Diembering, Lower Casamance, by LMI Pateo (*Patrimoine et Territoires de l'Eau*).

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Description of the Research and System

Participatory approaches in general (and participatory mapping (PM) in particular) have seen a surge of interest since the 1960s. Participatory mapping is the mapping of a territory by a group of residents under the guidance of experts. As a collective effort, the approach seeks to strengthen social cohesion and enhance local actors' analytical and advocacy capabilities. Building on reflections led by UMR Paloc members, the workshop on PM in Lower Casamance provided a critical and reflective analysis of the process. It also allowed us to share our experiences. The indoor sessions (day 1) fed into field excursions (days 2 and 3), followed by discussions during the presentation day (day 4) with heavy involvement from local communities.

The workshop sessions brought together a diverse panel of 30 participants, including about ten scientists, ten NGO members, civil society representatives, and the providers of spatial data, including focal points from the town of Diembering in Lower Casamance (two to three per village, roughly ten in total). In the field, the entire population of the three villages in Diembering were mobilised, with further efforts to respect inclusivity and parity (gender, age group, status, etc.). More than 60 villagers took an active part in the sessions. A meeting was also convened with local authorities. It should be noted that the population is fairly homogenous: mostly Joola rice farmers, which made it easier to identify local representatives. Focal points—voices within their respective villages—were chosen on the basis of their standing in the community and their knowledge of the terrain. Pre-workshop sessions had informed the city's residents about our surveys.

The Participatory Research Tools Mobilised

The participatory mapping school was organised around three actions leveraging various knowledge co-construction tools.

The framing session. Through the seven expert presentations, the framing exercise allowed participants to explore concepts and methods and to develop a shared framework. Local representatives took part in order to gain a clearer understanding of the approach and its expectations.

Field Implementation. Two days of fieldwork tested the shared framework in one of the PGCL workshop zones, with strong involvement from the local community. Three villages in the Diembering city limits (Diembering, Bouyouye and Cabrousse) were selected, as were two thematic areas (rice cultivation and heritage). In each of the six groups of four to five people, a local representative led the field teams and took part in data collection. The thematic group visits produced maps: past and present terroirs (village territories) and transects by targeted theme. To promote inclusivity, sessions were organised by gender or age group. Young people (15-25 years) were more comfortable writing or drawing a map, whereas older participants brought memories of places and events. Women often stayed on the sidelines at first, but their effective input later complemented the maps produced by men.

Collective Mapping Session of the Terroir
(Diembering, June 2014).

The Presentation Phase. In each village, sub-groups presented their findings in the presence of local residents and under the guidance of focal points. Community members' active participation during these presentations and debates helped to correct errors and confirm data at the village level. A general presentation was also held with institutional partners and community representatives, drawing out the main lessons from this exercise and producing syntheses and perspectives for the next phase of the PGCL.

The Results and Effects Achieved Through the Research

This experience helped to visualise and discuss what brings the city's inhabitants 'together'. Participatory mapping is a very original and powerful tool that facilitates communication

among speakers from diverse backgrounds and languages. Collective mapping, the creation of transects, and subsequent field verification are all means of expression (drawing and speaking), consultation and dialogue. Trusting relationships, transparency about objectives and solid grounding in the field are prerequisites for a successful participatory mapping project. The methodology tested at this school has since been applied to other PGCL sites in Lower Casamance and Guinea-Bissau. Among the main scientific outputs from this initiative are a joint article (Sané *et al.*, 2017), four monographs, and several master's theses.

TAKEAWAYS

Participatory mapping of a city's territory combines tools (historical interviews, maps of the old and current terroirs, transects and activity surveys, observations) that help to co-produce knowledge. It is primarily a mechanism to facilitate expression and dialogue among diverse actors. This approach enables thinking about spatial and social commons (past, present and future) to reveal the choices communities make to enhance their terroir, help understand their adaptation strategies in a changing context, and ultimately support the development of territorial scenarios. However, it requires a long-term investment on the ground to establish trustful relationships and genuine participation from all stakeholders.

A Socioenvironmental Dialogue on the Incomati River Flows in Mozambique

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Background

The 'Eflows' project in Mozambique is part of the larger 'Didem' initiative (IRD-FFEM6CRDI), which aims to promote science-policy dialogue across the South-West Indian Ocean region, and the UNEP 'WIOSAP' project on land-sea interactions. Its goal is to establish flow regimes for the Incomati River dams that balance the estuary's productivity with the needs of people living in the delta. However, the conceptual frameworks used to define so-called 'environmental' flows in Southern Africa have been developed sectorially for activities in South Africa and mainly target ecological outcomes. They are poorly suited to Mozambique's lower valleys, where local communities practice a complementary mix of fishing, livestock rearing, agriculture and gathering.

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https://didem-project.org

Description of the Research and System

The Incomati River, which flows through South Africa, Eswatini and downstream to Mozambique, has experienced a 100-fold reduction in flow since the 1950s, largely due to water consumption by sugar cane and eucalyptus plantations upstream. Even with these low flows, flood arrivals are regulated by a series of dams in both South Africa and Mozambique. The Mozambican government is renegotiating the amount of water that can be supplied by South Africa and is setting out a management timetable for the Corumana Dam and the future Mamboa-Major dam. Mozambique's Ministry of Environment, which will receive the results of the 'Eflows' project, is calling for an environmental flow definition to support the estuary's productivity. A Franco-Mozambican research team based at the Itango-MOZ Young team associated with IRD (JEAI) brings together hydrologists, biologists, agronomists and modellers from Eduardo Mondlane University, as well as geographers, historians and anthropologists from the UMR Paloc and Imaf units. They have proposed a participatory process to co-construct scenarios that will help reduce salinity in the Incomati estuary.

The transdisciplinary initiative includes a participatory rural strategy observatory, an estuary productivity observatory built around a citizen science platform (e-bird), and hydroecological survey campaigns that feed into flow and productivity modelling. With this foundation, researchers, residents and managers have been able to jointly deliberate on how to identify the most favourable flood scenarios.

The Participatory Research Tools Mobilised

The Participatory Rural Strategy Observatory. Before the observatory was established, a study of rural practices and access rights to the delta's natural resources was carried out using ethnoscience and conventional geographical methods (observation, unstructured interviews, biographies, landscape transects, mapping). Fifteen observers representing different production systems were recruited and kept logbooks documenting the state of the river and the activities undertaken during the hydrological season, such as fishing, agriculture, gathering, and livestock rearing. Spring-loaded balances were supplied where necessary to estimate fish catch quantities. They shared their notebooks during workshops and explained the strategic choices they had made.

The Estuary Productivity Observatory. It was decided to test whether the abundance of fish-eating birds could serve as an indicator of fishery productivity. Ecological spatial units were defined, regular counts were carried out by professional ornithologists, along with hydroecological measurements (water depth, salinity, phytoplankton and zooplankton, etc.). Access to and moderation of Incomati Delta data was requested from the e-bird citizen science platform, and amateur ornithologists (primarily from nearby Maputo and South Africa) were encouraged to make observations. The researchers' collected data was cross-referenced with e-bird records and then subjected to statistical analysis.

Discussion Workshops of Possible Scenarios. These workshops brought together researchers, observers and managers. A serious game

Rice cultivation in the Incomati floodplain.

representing a miniature model of the estuary and its floodplains was used to simulate various annual flood scenarios. The advantages and disadvantages of each scenario were then debated.

The Results and Effects Achieved Through the Research

For residents, the main constraint is avoiding the inundation of floodplains and fields by saltwater during the equinoctial tides in September. The rural strategies participatory observatory allowed this significant constraint to be heard and understood by basin agency managers and expert hydrologists. Without it, only the estuary's ecological needs would have been considered. Likewise, involving ornithologists through e-bird improved spatial coverage. The analyses confirmed that post-flood abundance of fish-eating birds is a reliable indicator of delta fishery productivity. An additional outcome has been the boost to amateur observer groups and the training of local guides.

Finally, the scenario workshops helped participants to agree on the importance of releasing fresh water before equinoctial tides in order to reduce salinity during flood events that reach the plains, prevent disruption to rice cultivation, and promote fish and shrimp reproduction.

This scenario was subsequently simulated using a delta flooding model. A timetable for freshwater releases from upstream dams was proposed to managers. The approach therefore meets the expectations of hydrologists (hydraulically realistic), ecologists (biodiversity promotion), and residents (facilitating rice cultivation, shrimp and fish fishing).

Defining a shared favourable scenario does not imply that everyone shares the same vision of how the catchment operates. In fact, it is important that this should not be the case and that researchers and technicians do not impose their worldview. Several models for explaining these floods emerged during these workshops: for residents, a good pre-September flood results from properly performed ancestor ceremonies; for hydrologists and managers, it stems from well-calibrated dam releases. The shared conclusion is that water inflow must be negotiated both with the ancestors AND with the dams.

TAKEAWAYS

The success of a participatory system rests on a subtle balance of several elements: a nuanced understanding of the context, good knowledge of local actors, relevance of the question posed collectively, and adaptation of participatory tools to both the setting and its participants. Above all, it is a matter of the researcher's approach: dialogue is only possible if they take an attitude of openness and acceptance that science is not the dominant explanatory model for the world.

Museums for the Convergence of Worlds and Knowledge

Reexamining Collections with Indigenous Researchers

Pascale de Robert, IRD, UMR Paloc (IRD/MNHN), Paris, for the 'Colam' project team, France

Background

For many years museums have been trapped in the colonial contexts in which they were created and enriched, placing them at the centre of disputes between universalist and more or less radical anti-colonial positions. At the same time, local collaborative research shows that they could become sites for dialogue on contemporary challenges. This is the case in Brazil. Our Franco-Brazilian project 'Colam' *(Collections of Others and memories of encounters. Chronicles of a collaborative research project)* suggests reexamining Amazonian collections based on the questions, priorities and expertise of Indigenous colleagues and their communities. It fits within the renewal of studies on collections and associated knowledge, the development of new forms of collaborative research, and the assessment of how environmental and cultural policies, together with international legislation, affect heritage.

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For more information

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Description of the Research and System

The 'Colam' project arose from encounters with participatory research experiences carried out around ethnographic collections in Brazil and France. Co-ordinated by the Local Heritage, Environment and Governance joint research project (IRD-MNHN-CNRS), it brings together members of indigenous communities, museum institutions, associations, research laboratories and universities on a regular basis to study artefacts that are either stored or displayed in museums. Its aim is to foster a collective reflection on what drives the collection of objects: which exchanges, encounters and stories ultimately turn a set of items into 'heritage'? In 2018, we examined collections from the Quai Branly Museum and Museum of Toulouse chosen in partnership with the Mebêngôkre, Baniwa and Piratapuya peoples and their associations (AFP, ACIMRN, ISA), colleagues and students from the Museu Paraense Emílio-Goeldi (MPEG Belém), universities in Recife (Nepe, UFPE) and the Sorbonne Nouvelle (Crepal, USN). The team that came together then organised subsequent editions in 2019, 2022, 2023 and 2024, with funding supplemented by various partners as further indigenous researchers and institutions joined the project. Each edition is structured around collaborative research workshops in museum reserves, followed by an international thematic colloquium and local presentations for museums and Indigenous villages. Guided by interests and proposals, the topics have broadened (living plants in collections, dispersed objects and recomposed collections, contemporary art and ethnographic collection, etc.), and indigenous partners have come from the Mebêngôkre (Pará, PA), Baniwa (Amazonas, AM), Piratapuya (AM), Wayana-Aparai (PA), Potiguara (Paraíba and Rio Grande do Norte), Ka'apor (PA), Pankararu (Pernambuco), Rankokamekrá (Maranhão), Tremembé (Ceará, CE), Tikuna (AM), Kanindé (CE), Karipuna (Amapá) and Tupinambá (Bahia).

The Participatory Research Tools Mobilised

The research is 'participatory' insofar as representatives of the local communities (in this case, Brazilian indigenous peoples) are involved from the outset on an equal footing with scholars (museologists, anthropologists and students from Brazil and France). For each Colam edition, we begin by retracing the history of museum collections; the objects to be examined are selected jointly with the indigenous communities, who nominate their own experts to join the team. During the workshop, the group breaks into discussion teams that examine the presented collections in light of their cultural origins. Video and photography of the exchanges and of the artefacts themselves become the primary tools for reporting back to the communities and for museum documentation. A mapping project of ethnographic holdings scattered across French museums, which runs alongside an inventory of items likely to interest indigenous researchers, is being carried out in parallel. A comparable cartography project exists in Brazil, and it would be valuable to bring these two initiatives together. We have prioritised oral traditions in the dissemination of results: recordings and videos are sent back to villages, presented at public colloquia and

Artwork commentary at the Musée du Quai Branly-Jacques Chirac and research workshop at the Muséum in Toulouse (2018).

round-table discussions, performed by a storyteller alongside indigenous participants, and we routinely use digital tools to communicate with those who remain in their communities. For Colam, we chose an open-access journal that facilitates publication in highly varied formats–individual essays, conventional scientific articles, transcriptions and translations of voice messages, photographs, exhibition reports, field journal excerpts, collective articles co-authored by all participants, and so on. The working methods and tools are reshaped at each session to meet the needs of our partners and the logistical constraints of every meeting (for example, the Covid pandemic prompted us to run a 'virtual workshop').

The Results and Effects Achieved Through the Research

In the wake of work carried out with MPEG Belém, the Colam project came about from a specific request to examine ethnographic collection objects that would interest our indigenous partners in two French museums. After this first endeavour, funded by the Observatory of Heritage of the Sorbonne-University Alliance (Opus-SU), the group felt compelled to repeat the experience and gradually broaden its network. Colam has therefore become an almost annual collective adventure that has assembled a team specially put together to study a particular heritage collection, once on one side of the ocean, then on the other. Although it is currently without funding, the growing appetite for similar initiatives among museums, indigenous communities and the public should continue to nurture exchanges and convergence between projects. This is already happening with new research into Tupinambá heritage (the Ocara project, USN-Crepal/IRD-MNHN). Beyond contributing to knowledge, each Colam edition opens up fresh research avenues and raises new methodological and epistemological questions. In addition to results in the form of conferences, follow-up meetings and publications, the project has also served as training for several students (master's internships, courses, video training for Indigenous peoples, etc.).

TAKEAWAYS

Flexibility first and foremost, or as the Brazilians say, *jogo de cintura*. Collaborative research requires us to be attuned to the various ways in which the objects under study are approached: the protocols and rituals or the shifting time imperatives, languages or customary modes of communication and presentation. It is usually conceived within long-term exchanges rather than short contracts, and it does not always fit neatly with the standards of tenders or academic journals. Participatory research means that every participant must also be ready to learn from each other and act as a co-author. It offers a pathway toward science that engages with society in the face of an increasingly complex array of contemporary socioenvironmental challenges.

Merging Knowledge with Forum-Theatre Non-Violent Communication (FT-NVC)

The 'Schools, Families, Neighbourhood' Project (France, Morocco)

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Background

The city centre of Marseille (the 3rd arrondissement) and the Sidi Moumen neighbourhood in Casablanca are marked by high levels of poverty and significant immigrant populations, both international and rural. Relationships between schools, families and the wider neighbourhood there are complex. A school can act as a resource and mediation hub, yet it also reveals socioethnic inequalities and tensions. Researchers interested in these settings encounter a range of state-run and non-governmental educational schemes from different generations, along with an extensive body of scientific literature and expertise produced by associations and consultants. In this context, working-class neighbourhoods become prime sites for the reconfiguration of knowledge and the relationships between those that produce it.

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For more information

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Description of the Research and System

The participatory action research (PAR) project aimed to bring together knowledge about the challenges of schooling in these neighbourhoods from two complementary angles: 1) enhancing educational support and territorial dialogue (the action component). For instance, in Marseille, how can teachers (often from middle-class backgrounds, living outside the neighbourhood and subject to multiple national educational directives) and parents (generally from disadvantaged social classes, residing in the neighbourhood and with a dual culture from migration) reach agreement on the homework assigned after lessons? and 2) analysing the benefits and pitfalls of different knowledge-exchange mechanisms (the research component). For example, how do understandings of key problems differ when using qualitative parent surveys, debate cafés, forum-theatre workshops with various members of the educational community, etc.? Instead of first conducting a scientific study for the researchers and a separate diagnostic for the associations, the project sought to share perspectives and knowledge among scholars, 'experts' (professionals from specialised associations) and active citizens (teachers, educators, parents, adolescents) from the very start of the project. These cross-pollinations took place through forum-theatre Non-Violent Communication (FT-NVC) workshops led by the researchers and 'outreach' workshops run by NGOs. These sessions were later analysed and followed by 'solution' workshops to identify possible concrete actions and avenues for research.

Forum-theatre performance 'L'Étiquette' on the impact of stereotypes in education ('Schools, Families, Neighbourhoods' project, Spring 2022 tour).

The Participatory Research Tools Mobilised

One of the tools used was FT-NVC, which blends Augusto Boal's Theatre of the Oppressed with Marshall Rosenberg's non-violent communication. The goal is for every social group, including researchers, to give their views on the chosen topic in the most equitable way possible. Participants included parents, teachers, neighbourhood educators and facilitators, programme coordinators, adolescents and researchers (initially in pairs, then in mixed groups). A forum-theatre play was created and performed across the neighbourhoods, soliciting fresh feedback from those concerned.

Drawing on participants' lived experiences, FT-NVC plays out the problems they want to resolve, then the audience (or the other half of the group) steps onto the stage to alter the story's course and uncover solutions (forum-theatre). For instance, the Marseille play titled L'Étiquette focused on the issue of stereotypes that exist between teachers and parents. It used the example of a migrant-origin teenager whose giftedness was overlooked by the educational team, who instead filed an ADHD (attention deficit/hyperactivity disorder) disability file for her. A confrontation ensues with her mother, and the adolescent refuses to return to school.

From these characters and the complex scenes drawn from real-life stories selected by participants, we try to uncover the core needs that lie behind their claims or behaviours and the outcomes in which they choose cooperation over conflict through non-violent communication. For example, in L'Étiquette, the teacher's primary need is support while the mother seeks recognition; the clash over the disability file merely reflects years of difficulty. Each character (and the social group they represent) is encouraged to understand the other's needs and find solutions that satisfy everyone. The proposed solutions must account for differences in power and culture among stakeholders.

Once a range of solutions has been enacted with an analysis of power relations, cultural differences, onstage representations and empathy for the characters, the group goes through various processes to decide on short- and long-term actions to carry out individually and collectively. After L'Étiquette, several initiatives were suggested to promote mutual understanding and collaboration between teachers and parents: a 'relay team' of professors, teachers, parents and regional representatives; a 'grand buffet' between teachers and parents at the start of each academic year; and 'city walks' so that educational teams can learn about and understand the local neighbourhoods

The Results and Effects Achieved Through the Research

Beyond the concrete educational measures described above, the research has resulted in: 1) a shift in the relationship between researchers and residents: by taking part in the entire FT-NVC workshop process, researchers went from a dual data-extraction dynamic (researcher–respondent) to one of reciprocal knowledge exchange; and 2) new insights for further study, particularly regarding the role of non-verbal language, bodily expression, and emotions in social conflicts that pertain to education.

TAKEAWAYS

By promoting complementarity, horizontal research methods enable a shift in the stance of scholars and their institutions (towards NGOs, residents, etc.). Similarly, employing knowledge-exchange techniques that incorporate cognition while also attending to the physical body and emotions allows for certain problems to emerge that had previously gone unsaid. Collaboration among each social group is encouraged by embedding such methods within long-term partnerships or programmes (although this is often challenging).

Co-Construction for Transformative Action

Feminist Mobilisations in Brazilian Agroecology

Isabelle Hillenkamp, IRD, CESSMA, Paris, France

Background

Brazil has once again become a leading international supplier of agricultural and mineral raw materials. Globalised markets are making greater inroads into rural farms and so-called traditional communities, reshaping both the environment and gender relations. For most male farmers, integrating these markets, even if it entails subordination, offers a way to meet their families' needs and consolidates their decision-making power. Female farmers are left with the responsibility of caring for people's bodies and the environment. Agroecology, both as a social movement and a set of knowledge and practices toward the ecologisation of agriculture, provides a route for resistance as well as transformation for both women and men.

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For more information

https://www.ird.fr/lancement-du-projet-gengibre
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Description of the Research and System

Understanding the significance of these changes and agroecology's potential requires giving voice to women farmers who have long been marginalised. How do these women, along with male farmers and so-called traditional communities, position themselves in relation to the intensification of pesticide use, genetically modified seeds, mining extraction, and the 'green' economy on their lands? By what knowledge, practices and economic and political organisations do they (re)construct themselves and their environment? What are the power dynamics between these men and women? In what ways does gender impact how both globalised markets and agroecology-based resistances are organised, and how is it redefined by them?

To answer these questions, the 'ANR GENgiBRe' project roots itself in kitchens, fields, forests, soils and rivers across two southeastern Brazilian regions, where our team has maintained longstanding political ties with six local women-farmer collectives. Without overlooking men, we start with the voices of these women, patiently bringing them to the fore through action research as a process of knowledge co-construction that serves transformative work—in this case, elevating the knowledge and labour of women within agroecology. Our team consists of 18 people: researchers, professors and students in social sciences and agroecology (IRD, Federal University of Viçosa and University of Toulouse Jean-Jaurès), plus agronomists active in NGOs and the Brazilian feminist movement (Centre for Alternative Technologies of Zona da Mata and Sempreviva Organização Feminista).

The Participatory Research Tools Mobilised

The women farmers involved in this action research programme live and work in rural areas, producing a wide variety of foods for family consumption and local sales. They are organised into unions, agroecology networks or solidarity economy groups, and many also campaign within women's movements. These various organisations served as inspiration and a basis for our action research initiative.

Our exchanges were guided by key principles: bring the voices of women farmers to the fore, start from the local scales where their knowledge is concentrated, and then systematise it in appropriate ways. These principles then translated into a three-tiered methodology: 1) an 'ethnographic mapping' of the living and working spaces of 30 women farmers, supplemented by interviews with the women themselves and with men from their families, enabled us to co-construct the gendered division of labour and agricultural spaces; 2) mapping workshops and poster sessions titled 'Body-Territory' and 'Rivers of Life in the Landscape', carried out with each of the six groups (about 220 participants in total), brought forth their perceptions of socioenvironmental threats and resistances. Two 'caravans' brought women farmers from the various groups together to present research materials before key stakeholders (local leaders, policy makers, students, etc.), combining popular education, knowledge construction, and political impact; 3) standard tools such as interviews, participant observation and documentary collection with key informants gave us access to a broad range of viewpoints, including those that were opposed to the women farmers.

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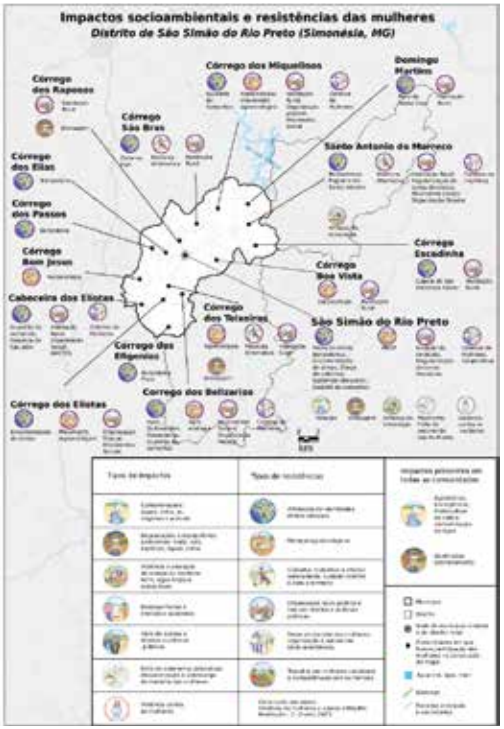

These maps were co-constructed with the research team and the women farmers; the socioenvironmental map also involved two local artists and a geographer.

The Results and Effects Achieved Through the Research

The action research methodology enabled us to show how agroecology is constructed from the women farmers' own way of life and existence, particularly their resistances. These women reject the profit motive that is spreading across their local areas, targeting the men within their families and creating masculinities that focus on the market as a source of recognition while also marginalising them in relation to the dominant actors on those markets. These women, as well as certain male farmers, oppose this gendered model and resist the system of production, environmental destruction, violence, and the denial of their rights. For them, the struggle is an intra-family dispute over both productive spaces and agricultural techniques, expressed through a range of collective mobilisations. Conducted within economic organisations (cooperatives, associations), these mobilisations value their own production and, carried out in political

organisations (trade unions, social movements), they influence environmental regulations and secure recognition of their rights.
Our research team's proximity to these women allowed us to systematise the knowledge that emerged, producing maps, posters, podcasts, videos and academic support aimed at counteracting what amounts to an epistemic injustice. This role delineates both the contribution of our work and its limitations in terms of transformative change. Academically, our position with these women and the interdisciplinary nature of our team combining social sciences and agroecology was an original approach that treated agroecology as being permeated by gender relations and power dynamics across multiple scales. In this way, we help to renew each of those fields.

TAKEAWAYS

Incorporating research as a process of knowledge construction into transformative action allows us to tap into the know-how of dominated populations. It is both a necessary and 'effective' method for this type of subject, but it also places a responsibility on researchers to balance how that knowledge is used. The aim is to allocate time, human resources and financial support for use by these communities, rather than only for academic ends.

Using Intercultural Research

To Promote Diversity and Serve the Futures of Traditional Peoples

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Laure Emperaire, Pascale de Robert, IRD, UMR Paloc, IRD, MNHN, Paris, France

Background

The 'Traditional Peoples and Biodiversity in Brazil' project examines the contributions of indigenous peoples and traditional communities (IPLC) in Brazil to biodiversity and aims to expand research into its future amid global change. The foundations of intercultural research go back to the 1980s, with the struggles to return democracy to the country and the entry into force of the 1988 Constitution, which recognises the territorial, ethnic and social rights of indigenous peoples, quilombos and a variety of traditional communities. Today, the fight for agrarian reform, the resistance to deforestation, and the socio-environmental debates taking place both in Brazil and abroad highlight these territories' sociocultural and environmental significance. It is therefore urgent to establish new forms of dialogue between local and academic knowledge.

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For more information
https://portal.sbpcnet.org.br/publicacoes/povos-tradicionais-e-biodiversidade-no-brasil/

Description of the Research and System

The aim of the research is to produce a comprehensive synthesis of IPLCs' contributions to biodiversity that can serve as a reference for making policy decisions. The project is coordinated by Manuela Carneiro da Cunha, Sônia Magalhães and Cristina Adams. Thirteen out of seventeen volumes of this synthesis have already been published. Two of the volumes describe five intercultural research projects carried out with peoples who have distinct life histories, identities and territories, whether in the Atlantic Forest, Caatinga, Cerrado or Amazonian forest in Brazil. The methodologies employed are varied but share common features: they are long-term, grounded in ethnographic data that reflect depth and trust built on the ground, and based on political solidarity between local populations and researchers. This solidarity particularly stems from shared struggles for the recognition of territories that sustain ways of life typically rooted in socioenvironmental sustainability.

The constituent elements of intercultural research rely on recognising others through fieldwork, a long timescale—often difficult to implement within calls for projects—and socioenvironmental political solidarity. The adopted approach raises questions about the conditions for knowledge production, the transition from knowledge to writing, and the effects of these new configurations on how the outputs of this research are appropriated.

The Participatory Research Tools Mobilised

Firstly, we must point out the difference between producing information and analyses and the who is the owner of the writing. The case studies mentioned outline a diversity of configurations, each following its own trajectory. The Quilombolas of upper Trombetas in northern Amazonia live on land claimed by a mining company that overlaps a biological reserve and a national forest. In light of environmental legislation and territorial rights law, these Afro-descendant communities are urged to produce 'diagnostics' to assess the 'environmental impacts' of mining and forestry activities. In accordance with their prior free and informed consultation protocol established in 2018, the association of this quilombo's communities launched an internal discussion on the relevance, methodology and feasibility of a participatory diagnosis. The production of this diagnosis should not, however, eclipse the already dense priorities of the communities that are due to other demands. It also had to take into account the various organisational levels of this territory, where 300 families live grouped into several communities. Coordination was carried out by two researchers and two Quilombolas. There was already an extensive body of published data resulting from previous scientific work, but it was presented in a language that was not easily accessible. It required further processing, as did documents produced by and for public bodies. Five documents were selected and scrutinised for the existence of discursive or cartographic data on biodiversity and the impact of public policies. This data was debated with the quilombola representatives acting as project managers. The Quilombola representatives combined this data with results obtained through their own community's traditional methodologies, interpreting them in a way that made them intelligible from their perspective. Nevertheless, even when published or collected by an 'other', Quilombolas maintain that knowledge derived from their society remains theirs and must be recognised as such.

The Results and Effects Achieved Through the Research

Volumes 16 and 17 provide avenues for better understanding intercultural research practice. The points mentioned invite a rethinking of the relationships of dominance entailed in the hegemonic scientific knowledge process, even in seemingly consensual aspects such as author recognition, co-authors, collaborators or mentions of interviewees. New configurations are emerging, highlighting the urgency of reexamining so-called 'Western' research approaches. This discussion must also be placed within the context of recent transformations at universities that are embracing affirmative action policies (the Quota Law 12.711/2012 and others) which have problematised ethnic and racial inequality as well as socioeconomic disparities in access to and retention at higher education institutions. As of 2021, about 50% of university posts are allocated to quota holders, and roughly 30% of those positions go to black, mixed-race (*pardos*), and indigenous individuals. These policies enable a relationship that acknowledges the diversity of epistemologies of knowledge production and reproduction. In everyday disciplinary practice, faculty members are questioned on bibliographies that struggle to view the world from the Global South's perspective. Innovations in teaching and research are plentiful. One of the most emblematic and pioneering examples of intercultural research is Davi Kopenawa and Bruce Albert's *The Falling Sky* (2015), which offers much food for thought and makes explicit the exercise of recognising others, long timescales, and socioenvironmental political solidarity.

TAKEAWAYS

This short text demonstrates that multicultural research cannot be reduced to mere content, even when thoroughly discussed by the parties involved, and that it is essential to preserve options for the form of interaction preferred by local communities. What might be read as a preliminary step to research actually constitutes part of that research itself.

Reconciling Critical and Engaged Approaches

Environmental Justice at the Heart of Floodplain Management

Jean-Philippe Venot, IRD, UMR G-EAU, Montpellier, France

Background

Phnom Penh lies at the junction of four rivers and marks the beginning of the Mekong delta. The Cambodian delta plains are characterised by earthen canals that result from both hydrological processes and human interventions dating back to the mid-nineteenth century. These *preks* shape the landscape and serve a variety of purposes: communication routes, irrigation for agriculture, fishing areas, etc. For about two decades now, the Cambodian government together with its technical and financial partners has viewed *preks* as a means of intensifying regional agricultural systems. Ambitious programmes aimed at greater control of water flows have been implemented and are characterised by a low level of attention to environmental justice issues.

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Description of the Research and System

The research, launched in 2016, is carried out independently alongside development programmes financed by AFD for the sustainable intensification of irrigated agriculture in Cambodia, and the research seeks to influence those programmes. In addition to researchers from IRD and CIRAD, it involves academics from the Royal University of Agriculture (URA) and members of a Cambodian NGO, the Irrigation Service Centre (ISC), which specialises in supporting groups of farmers, including irrigation specialists. The research activities have three main objectives: 1) to better understand the socioenvironmental dynamics within Cambodia's delta plains and the role of preks; 2) to create multi-stakeholder consultation arenas that give greater weight to the knowledge and priorities of communities living along the preks; 3) to propose floodplain management approaches that do not rely solely on building water-resource control infrastructure and agricultural intensification, but instead take into account the floodplains' multidimensionality.

The Participatory Research Tools Mobilised

The research combines the analytical frameworks of development anthropology and studies of science and technology with a companion modelling approach that aims to enable heterogeneous actor groups to identify natural resource management issues and respond collectively. It adopts

Participatory workshops in which the serious game 'Dai Prek' facilitates exploring different management scenarios for Cambodia's floodplains.

an approach that is both engaged and reflective: the researcher's non-neutrality is assumed, and an analysis is made of how their values, interests and objectives shape and constrain the participatory research process—not to disqualify it, but to better appreciate its potential scope. The approach relies on intermediary objects such as serious games or agent-based models, which are used in participatory workshops that include debates about the problems to solve and

the collective responses. Companion modelling is characterised by an iterative process during which the tools (initially designed by a subgroup of actors, here IRD and CIRAD researchers) are gradually modified. An interdisciplinary diagnosis (hydrology, agricultural practices and rural economics, natural resource management, demographic dynamics and sociopolitical relations) was carried out through interviews with various stakeholders (decision makers, development agents, local elected officials, users of natural resources). We then developed a serious game called 'Dai Prek', whose play materials consisted of a series of plywood tiles that participants could assemble or a simplified map of Cambodia's delta plains to represent their living environment. Participants took on the role of farmers or decision-makers with the shared objective of reaching a certain level of agricultural production while protecting the environment from any degradation. They could choose from a list of possible actions whose agricultural and environmental impacts vary depending on the uncertain hydrology. Thus, the collected data reflected each participant's priorities and visions; observation of the game sessions also helped to clarify actor relationships. The game was not intended to generate the 'best' trajectory but to spark a discussion about different possible development paths for Cambodia's delta plains and their implications in terms of agricultural practices, flood dynamics, as well as the distribution of potential social and economic costs and benefits.

The Results and Effects Achieved Through the Research

The participatory research aimed to identify alternatives to building hydraulic infrastructure for agricultural intensification in Cambodia's delta plains, ideally proposed by local communities themselves, and then have those options implemented. The research opened up a debate, but development projects continue to prioritise infrastructure. This is because it is difficult to reverse construction objectives that had already been set during the projects' design as well as due to professional practices and cultures firmly rooted in engineering that still dominate the agricultural water sector. While on-the-ground practices have not changed much, the way they are planned has shifted dramatically: participatory research activities contributed to the emergence of territorial planning for interventions that takes into account the region's complex hydrology. This territorial approach complements a cost-benefit assessment that had tended to evaluate hydraulic infrastructure independently of its environment. The research was thus embedded in particular territorial trajectories, which were later completely overturned by the Cambodian government's decision to build a canal several hundred kilometres long linking Phnom Penh with the Gulf of Thailand. In another vein, the partner NGO has appropriated the methods used, adapted them to local needs and now employs them autonomously to support irrigation groups in other parts of Cambodia.

TAKEAWAYS

Reconciling the methods of participatory research and critical analytical frameworks, such as development anthropology and science and technology studies, provides fertile ground for understanding the stakes of development while also shaping a collaborative research agenda committed to environmental justice.

Challenges and Issues of Knowledge Co-Production Under Climate Change

Valeria Hernández, IRD, UMR CESSMA, Paris, France

Background

Southeastern South America, home to more than 200 million people, is one of the world's major agricultural markets and hosts the second-largest hydropower plant on the planet. Ensuring food sovereignty and energy production requires a deeper understanding of regional climate variability and an ability to allow local stakeholders to take ownership over climate information. The international project 'CLIMAX' (Climate Services Through Knowledge Co-Production) focuses on co-producing climate services centred on climate predictability in Argentina's agricultural sector and Brazil's hydropower sector.

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Description of the Research and System

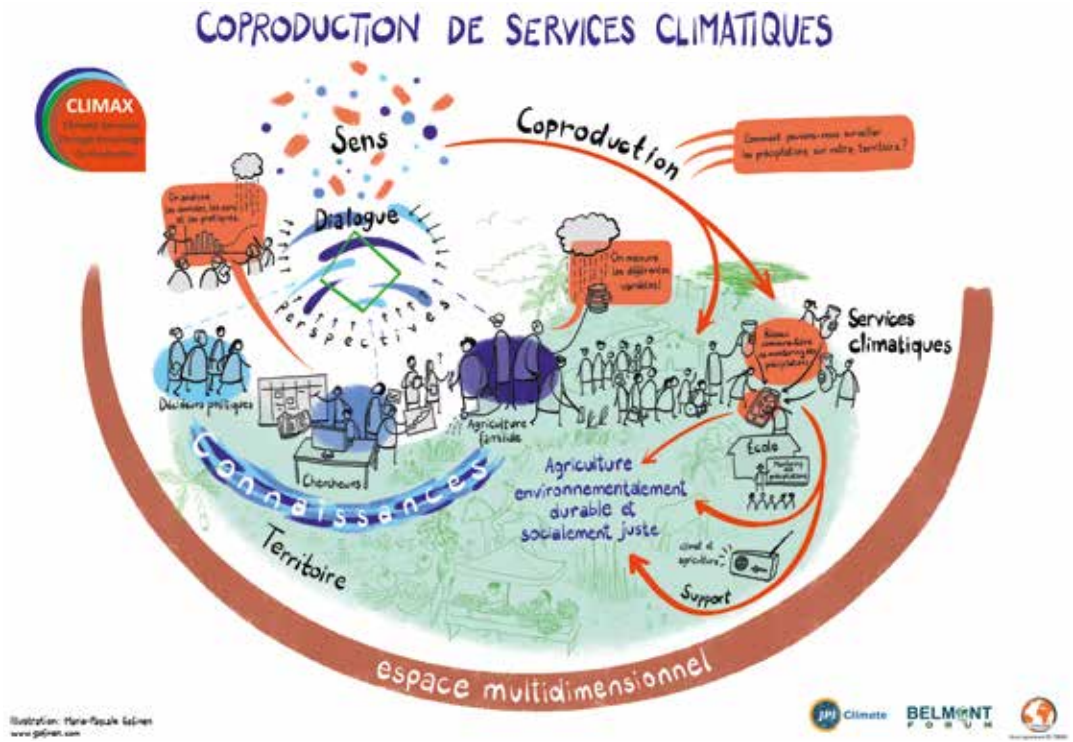
To co-produce climate services for Argentina's agricultural sector with weekly forecasts, weather and hydrological alert systems, training of local reference officers in integrated risk management and so on, the 'CLIMAX'[1] project established an interdisciplinary, intersectoral working space in the Chaco province. This space brought together academic stakeholders (climatologists, anthropologists, ecologists, economists, hydrologists) and non-academic participants (indigenous farmers and rural residents, policy makers, teachers at local agrotechnical schools, the national weather service, the National Institute of Agricultural Technology, etc.). This socially heterogeneous group worked together to establish a common interest in understanding how climate conditions relate to family-based agroecological production systems in order to co-create climate information essential for developing both individual and collective adaptation strategies.

From a conceptual standpoint, the climate services co-production framework used here is based on three premises: 1) openness to otherness, so that participants can express different viewpoints; 2) symmetrical recognition of the various knowledge systems involved, to make room for the diversity of participants' cognitive skills; and 3) analysis of the power structure to account for the conditions of the different sectors' participation (and non-participation) in the co-production process. From this perspective, co-production focuses on the complementarity of knowledge systems and on the ability to engage them in a dialogue aimed at producing socially meaningful outcomes.

The Participatory Research Tools Mobilised

The dialogue process began by establishing an ethnographic framework that ensured a strong territorial presence for academic stakeholders and enabled the analysis of social conditions (political and cultural organisation of local communities, socio-technical and productive trajectories, use of common goods, etc.) as well as climate and environmental factors (predictability, wetland regimes, influence of El Niño/La Niña, etc.), in which the various agroproductive systems operate. During this initial phase a collaborative working practice was also built, with regular visits to producers on their farms, the co-organisation of interdisciplinary workshops around jointly chosen themes, a joint evaluation of experiences and proposals for adjustments to forthcoming activities, and more. An interdisciplinary and intersectorial space named 'Dialogue Bermejo' was created. It allowed different components (academic and non-academic) to contribute through iterative work cycles focused on a jointly defined service, advancing the co-production process of the climate information required to implement adaptation strategies. For example, in setting up an early

1 • http://www.climax-sa.org/



In December 2021, the 'CLIMAX' project received the JPI Climate Social Impact Excellence Award.
Source : V. Hernández

warning system, 'Dialogue Bermejo' co-constructed a rainfall monitoring network, a network for monitoring flow in secondary rivers, a weekly probabilistic rain forecast, and an application that provides access to all this data as well as other information stakeholders deem useful. In the spirit of open science, various communication tools (via the Internet, smartphones, radio) and climate information sharing mechanisms were developed with the entire Bermejo community alongside provincial risk-management agencies. Moreover, the epistemological and methodological formalisation of the knowledge co-production approach in the 'CLIMAX' project led to training workshops for the academic community as part of IRD's 'Climate Change' Community of Knowledge (CoSav) initiatives and other academic and non-academic arenas.

The Results and Effects Achieved Through the Research

This experience helped to quantify, produce and maintain a sociotechnical early-warning system that provides hydroclimatic information (daily rainfall totals, spatial distribution of rain across Bermejo, river and stream water levels, weekly rainfall forecasts, warnings issued by Argentina's national weather service, data from the provincial network of automatic stations in Chaco, etc.) allowing family farmers and indigenous communities to refine their adaptation strategies to weather events. In addition, a movement to institutionalise co-production was undertaken so that the virtuous effects of intersectoral and interdisciplinary dialogue could continue beyond the 'CLIMAX' project (2016-2020). Socially oriented initiatives addressing non-agricultural sectors were established, turning the co-produced knowledge into a common good. These included a local radio programme dedicated to debate on climate and its impacts, the development of educational content and training activities for the curricula of local agrotechnical schools, the co-production of reports intended for decision-makers, the installation of an automatic weather station managed by 'Dialogue Bermejo' and integrated into the provincial network of weather stations, among others.

TAKEAWAYS

The process of co-producing socially significant knowledge unfolds over a long timeframe and requires a solid epistemological framework and strong commitment at both the individual and collective levels. Co-produced knowledge has added value because of its social robustness and the innovative interinstitutional dynamics fostered by dialogue. Support from political and scientific institutions is essential for implementing this approach.

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SUSTAINABILITY SCIENCE
PARTICIPATORY RESEARCH

Volume 4

This fourth volume, devoted to sustainability science, continues to further the collective thinking on interdisciplinarity and the development of locally integrated research activities in the Global South. In this book, focusing on participatory research and presenting an overview of the current situation along with feedback, IRD shares this bountiful research with the entire scientific community, while addressing the epistemological, ethical, value-oriented and institutional issues that it raises.

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