



HAL
open science

An explorative opinion paper: ‘why do we need stakeholders’ engagement in knowledge production: terranova’s vision on landscape transformation’

Catherine Fayet, Leen Felix, Laura Catalina Quintero Uribe, Roberta Rigo,
Thomas Houet, Lindholm Karl-Johan, Sjoerd Kluiving

► **To cite this version:**

Catherine Fayet, Leen Felix, Laura Catalina Quintero Uribe, Roberta Rigo, Thomas Houet, et al..
An explorative opinion paper: ‘why do we need stakeholders’ engagement in knowledge production:
terranova’s vision on landscape transformation’. 2021. hal-03254660

HAL Id: hal-03254660

<https://hal.science/hal-03254660>

Submitted on 13 Dec 2021

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L’archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d’enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

TERRA NOVA

**AN EXPLORATIVE OPINION PAPER:
'WHY DO WE NEED STAKEHOLDERS' ENGAGEMENT IN
KNOWLEDGE PRODUCTION: TERRANOVA'S VISION ON
LANDSCAPE TRANSFORMATION'**

WHITE PAPER 2 2021

TERRA NOVA





BENEFICIARIES



PARTNERS



TERRANOVA

AN EXPLORATIVE OPINION PAPER:
TERRANOVA'S VISION ON STAKEHOLDERS' ENGAGEMENT IN
LANDSCAPE TRANSFORMATION

WHITE PAPER 2, 2021

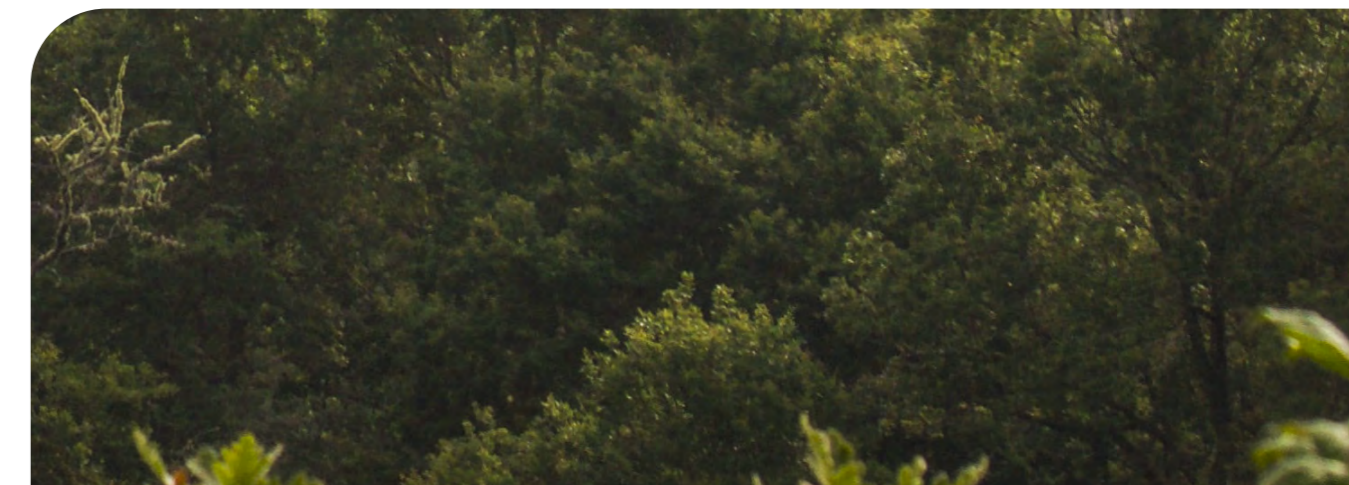


@ Thomas Houet - Vegetation survey made with a drone in the Mont-Saint-Michel bay (France - N 48.63 W 1.59).



CONTENTS

1 Executive summary	3
2 TERRANOVA the European Landscape Learning Initiative: a landscape-based response to the main challenges of our time	4
3 TERRANOVA's vision on landscape transformation and stakeholders' engagement	5
A) To produce a salient, credible and legitimate knowledge	5
B) To develop an interdisciplinary approach	5
C) Acknowledge values in science	6
D) Evaluate research outcomes	6
4 TERRANOVA's vision in practice	7
A) TerraNova's stakeholder event	7
B) Workshop event: engaging with stakeholders (methodology)	7
C) Results and outcomes of the workshop discussions	8
5 TERRANOVA's vision: a "learning" initiative	10
ANNEX	11
Endnotes	13
Acknowledgments	14



TERRANOVA: a landscape-based response to the challenges of our time

POLICY RECOMMENDATIONS FOR SUSTAINABLE LANDSCAPE MANAGEMENT STRATEGIES

This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 813904. The output reflects the views only of the authors, and the European Union cannot be held responsible for any use, which may be made of the information contained therein.

All authors have contributed equally.

Fayet, C. M. J.	International Union for Conservation of Nature (IUCN), European Regional Office, Belgium; Department of Environmental Geography, Institute of Environmental Studies (IVM), Vrije Universiteit (VU) Amsterdam, The Netherlands.
Felix, L.	Department of Environmental Geography, Institute of Environmental Studies (IVM), Vrije Universiteit (VU) Amsterdam, The Netherlands.
Quintero Uribe, L. C.	German Center for Integrative Biodiversity research (iDiv), and Institute of Biology Martin-Luther University Halle-Wittenberg, Germany.
Rigo, R.	CNRS UMR 6554 LETG, Université de Rennes 2, Place du recteur Henri le Moal, 35000 Rennes, France.
Houet, T.	CNRS UMR 6554 LETG, Université de Rennes 2, Place du recteur Henri le Moal, 35000 Rennes, France.
Lindholm, K-J.	Department of Archaeology and Ancient History, Uppsala University, Sweden
Kluiving, S.J.	Department of Arts and Culture, History, Ancient Studies and CLUE ⁺ , Faculty of Humanities, Vrije Universiteit (VU) Amsterdam, The Netherlands

1 EXECUTIVE SUMMARY

This is the second out of three white papers from the TERRANOVA project, The European Landscape Learning Initiative an Innovative Training Network consortium of the European Union's Marie Skłodowska-Curie Actions. Between 2019 and 2023, fifteen Early Stage Researchers (ESRs - ie. PhD students) are trained within this project to envision 'nature-based' landscape developments for Europe, relying on an integrated and multidisciplinary approach. TERRANOVA seeks to outline the necessity to promote good communication skills in research to transfer efficiently 'landscape knowledge' to policymakers and the public. This white paper presents TERRANOVA's vision on landscape transformation and stakeholders' engagement in knowledge production. First, we reflect on the relevance of engaging with stakeholders in research. Second, we present the outcomes of a workshop conducted with practitioners in nature conservation and reflect on the challenges they reported to integrate interdisciplinarity in their practice. We conclude that the inclusion of stakeholders and practitioners at every stage is key to ensure that research outcomes have a societal impact. Strengthening this approach will ensure that TERRANOVA ESRs' research outputs are understandable and useful for land managers and decision-makers.

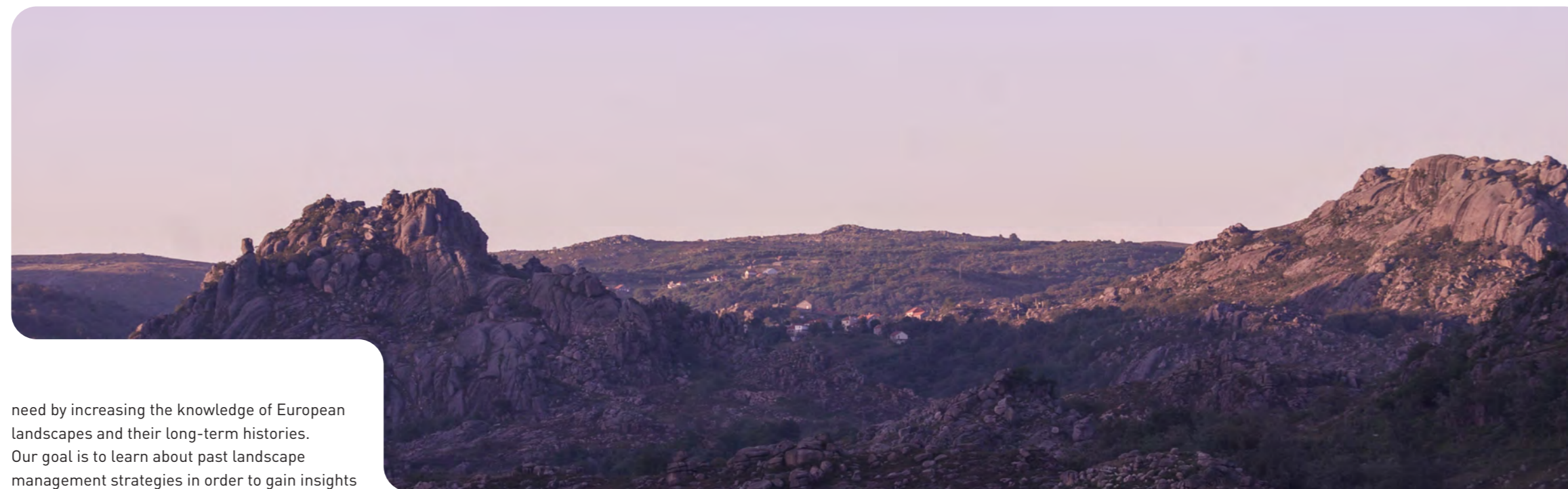
HIGHLIGHTS: RECOMMENDATIONS

- Establishing connections between TERRANOVA and stakeholders involved in landscape management is crucial to ensure relevancy and usefulness of ESRs' research.
- TERRANOVA researchers and stakeholders met to discuss how research can be tailored to stakeholders' needs during a workshop on Friday 26th February 2021.
- TERRANOVA's ESRs collected recommendations for their own research practices that reinforced their willingness to engage with stakeholders, connect with practitioners and rely on participatory methods for landscape management interventions.
- Stakeholders identified the engagement of different local stakeholders, the coexistence of diverging visions about conservation goals, the unexpected outcomes of top-down policy incentives, and the difficulty of setting conservation goals priority as main challenges in conservation practices.

2. TERRANOVA THE EUROPEAN LANDSCAPE LEARNING INITIATIVE: A LANDSCAPE-BASED RESPONSE TO THE MAIN CHALLENGES OF OUR TIME

Intensified human activities over the last centuries have resulted in climate change, the degradation of ecosystem functions, the reduction of biodiversity, as well as impoverished landscape heritage and diversity, which decreases the resilience of socio-ecological systems at multiple scales.² Unless these processes are mitigated and reversed, future human well-being and sustainable development are put at risk, calling for the urgent need to identify and assess effective solutions to the global environmental challenges. Current research highlights the importance of landscape based responses that also include recognition of archaeological and palaeoecological knowledge to guide environmental management and policies³, as well as the need to foster a new generation of landscape managers, planners and scientists. This new generation should be able to integrate the experimental and deductive lines of reasoning of the natural sciences with the holistic and critical perspectives of the humanities and social sciences.⁴ In addition, it is necessary to promote good communication skills to transfer 'landscape knowledge' to policymakers and the public.

TERRANOVA the European Landscape Learning Initiative⁵ is designed to fill the aforementioned



need by increasing the knowledge of European landscapes and their long-term histories. Our goal is to learn about past landscape management strategies in order to gain insights to how this knowledge can be used to promote sustainable land use and conservation of landscapes in the future. In order to envision a 'nature-based' landscape development, TERRANOVA adopts an integrated and multidisciplinary approach. In this approach, archaeology, ecology, economy, geography and sociology are coupled to reconstruct the European ecological landscape history, to analyze alternative low-intensity land uses and shifting in natural baselines and to estimate the ecological/biodiversity potential of different contexts. TERRANOVA is composed of 15 Early Stage Researchers and their supervisors divided over eight beneficiaries and sixteen

partner organisations. TERRANOVA undertakes research by three Work Packages, which will:

- **Reconstruct** the deep history of Europe's cultural landscapes and corresponding changes in coupled human-nature interactions.
- **Rethink** the outcomes of human environmental interactions on the present-day landscapes in Europe.
- **Inform** the future by designing sustainable landscape management strategies based on the principles of rewilding and sustainable landscape management.

▲ @ Laura C. Quintero
Uribe - Peneda-Gerês
national park.

3. TERRANOVA'S VISION ON LANDSCAPE TRANSFORMATION AND STAKEHOLDERS' ENGAGEMENT

This white paper will present TERRANOVA's vision on landscape transformation and stakeholders' engagement in knowledge production.

HOW OUR WORK CONNECTS WITH STAKEHOLDERS:

The desire to contribute positively to society and to the environment is what drives many of TERRANOVA ESRs' ambitions to become researchers. As TERRANOVA researchers, we have an extraordinary opportunity to focus our research efforts to also construct exploitable knowledge which will contribute to the transition to a sustainable low carbon society. This is a crucial task since policymakers and the general public are calling for greater academic responsibility to identify and assess effective solutions to global challenges and sustainable environmental policies for the future.⁶

Establishing connections between TERRANOVA and stakeholders involved in landscape management (e.g., land restoration, rewilding, forest management) is crucial to ensure our research is relevant, and useful.⁷ Therefore, we believe that engaging with stakeholders in the whole knowledge-production process of research will contribute to meet the following four goals:

A) TO PRODUCE A SALIENT, CREDIBLE AND LEGITIMATE KNOWLEDGE

The co-production of knowledge is becoming a common practice in academic research, especially when local dynamics and social context have an influence on the land use changes, on the landscape and the related ecosystems services it provides. To maximize chances of success, interventions in landscape management have to account for land use changes and trajectories, at various spatial and temporal scales. Involving local and regional

stakeholders in the early stage of a research is vital to deeply understand the complexity of the different case studies and adapt general knowledge to local realities making the research more salient, credible and legitimate.⁸ Moreover, involving larger-scale stakeholders on the national and European scales, helps to understand the interactions and telecoupling dynamics between landscape developments at different locations. The knowledge produced by researchers would thus be legitimized, adapted and useful to stakeholders if the former have an holistic understanding of land users' practices, objectives, interactions and dynamics. This improves the confidence managers could have in research outcomes.

B) TO DEVELOP AN INTERDISCIPLINARY APPROACH

Defining landscape management strategies requires a broad understanding of its complexity.⁹ An interdisciplinary approach therefore requires knowledge in several disciplines (e.g., sociology, economy, archaeology, ecology, geography, etc.). Including stakeholders' perspectives and expertise can contribute to increasing interdisciplinarity of research. Indeed, landscape managers are exposed to various types of land users' knowledge, and specific fields of expertise (e.g. farmers, technicians working in water management, ecosystem restoration, etc.). Landscape managers need to combine these different sorts of knowledge while considering the needs of all users in order to improve and restore healthy ecosystems, promote human well-being and



sustainable economic development. Therefore, stakeholder interactions are a fundamental part of multidisciplinary research and knowledge exchange. For example, stakeholder interaction and co-production of knowledge can become a tool to integrate different perspectives, knowledge, concerns, and values, to diffuse a more holistic understanding of the landscape complexity.¹⁰

C) TO ACKNOWLEDGE VALUES IN SCIENCE

When it comes to managing complex phenomena, we often rely on assumptions that are value dependent (e.g. intensive agriculture is always bad, native animals have higher value than introduced ones, etc.).¹¹ In TERRANOVA we are convinced that it is important to be aware of value dependency, and to ensure that landscape management decisions reflect the values of concerned stakeholders. This is a difficult task because, in a telecoupled world, local management decisions affect an almost indefinable range of stakeholders.¹² We promote researchers-stakeholders collaboration as a means of including such values and preferences in the analysis of landscape management strategies. Making values-assumptions explicit and visible is crucial to define management strategies that benefit all stakeholders, and not only the ones sharing the same values.

◀ @ Laura C. Quintero Uribe - Peneda-Gerês national park.

D) TO EVALUATE RESEARCH OUTCOMES

To produce exploitable knowledge for policymakers and the general public, it is crucial to take full advantage of past landscape management experiences and understand the factors that determine whether the scientific knowledge is successfully used to influence landscape management strategies. Stakeholders' expertise are, in this context, essential to: (1) understand which are the barriers limiting the flow of knowledge, competences, opinions between researchers and stakeholders, and (2) highlight the different impacts of the research (instrumental, political or cognitive impacts¹³) and possible ways of dealing with them.

▼ @ Thomas Houet
Small wetland in the
French Pyrenees - Bassiès
Valley (N 42.76 E 1.41)



4. TERRANOVA'S VISION "IN PRACTICE"

A) TERRANOVA'S STAKEHOLDER EVENT

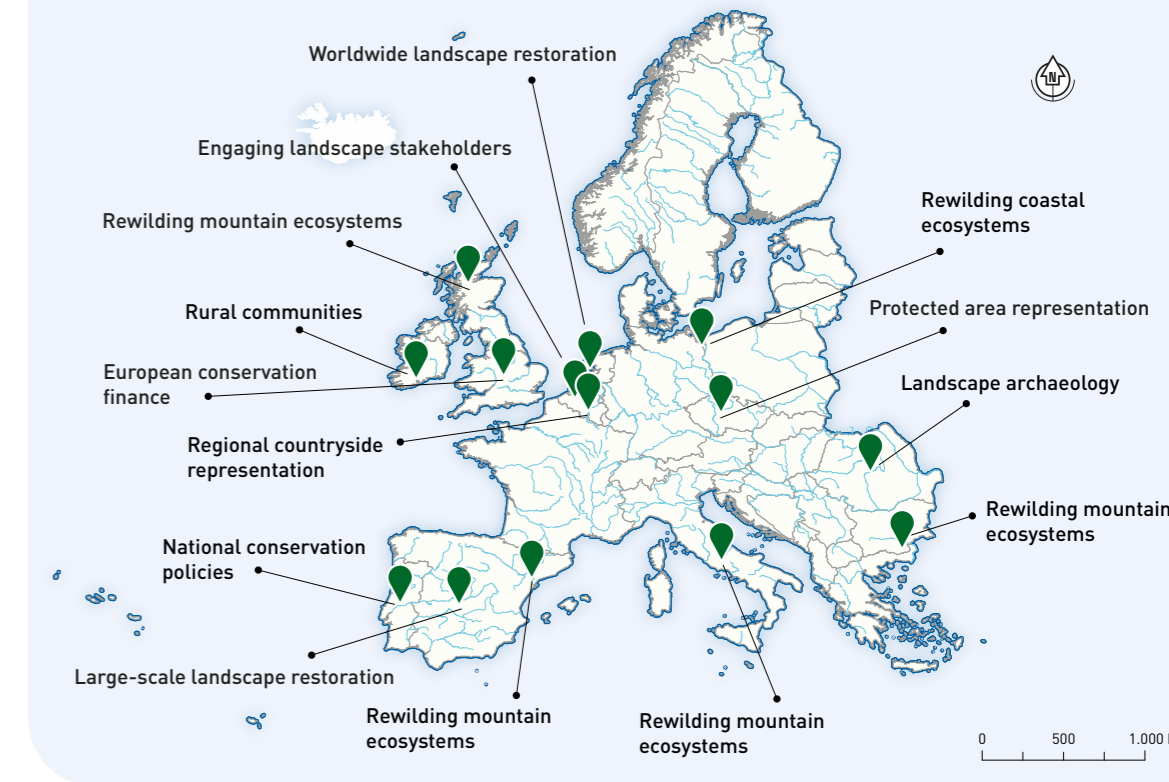
Based on these, TERRANOVA's researchers organized a workshop on Friday 26th February 2021 to understand how to tailor TERRANOVA research to the reality of practitioners' needs. Representatives of 11 organisations, working with stakeholders throughout Europe and at different organizational levels, were involved (Figure 1). During this event, we asked their perception on: (1) the different aspects of the science-management interactions, and (2) the types of knowledge required to tackle the challenges they face in the field.

This workshop allowed ESRs to gather information and reflect on the role that TERRANOVA can play in the production of exploitable knowledge and provision of landscape management policy recommendations that would not only reflect the values of the researchers, but also those of practitioners and stakeholders (in line with TERRANOVA's vision for multi- and interdisciplinarity of research).

B) WORKSHOP EVENT: ENGAGING WITH STAKEHOLDERS (METHODOLOGY)

To gain a better understanding of the challenges and benefits of engaging with stakeholders in environmental research, a group of TERRANOVA ESRs conducted a half-day workshop with different land managers across Europe. The

TerraNova stakeholder event participants on the map



▲ Fig. 1. Location map of the stakeholders who participated in the workshop indicated with general theme of expertise.

invited practitioners worked in various aspects of landscape management, thus supporting our aim to represent transdisciplinarity and its impacts on the co-production of knowledge. With the workshop, we wanted to learn from the practitioners' expertise, particularly in relation to two questions: (1) What are the main research gaps that need to be improved in future research?, and (2) how could the TERRANOVA consortium help to fill in these gaps and challenges?

To answer these questions, the workshop was

structured around three moments addressing: (1) Conservation challenges, (2) Tools and approaches for land management and (3) Research and practitioner interactions.

We randomly divided the participants into two working groups to allow interactions between the participants and in-depth discussions. For each moment, the participants were asked a



▲ @ Thomas Houet - Participatory meeting aiming at co-constructing narratives of the Couesnon watershed (France - N 48.41 W 1.36) for 2050.

set of three to four open questions to guide the discussions. We opted for open questions to encourage them to freely reflect on their own practices and to promote critical thinking. After the completion of the three moments, the main findings from each working group were shared with all the participants and they were invited to reflect on the results from their working groups.

C) RESULTS AND OUTCOMES OF THE

WORKSHOP DISCUSSIONS

The following subsections present the highlights from the discussions in the two breakout rooms. Figure 2 details the different elements raised in each room.



▲ Fig.2. Highlights of the discussions in each working group.

MAIN CHALLENGES IN CONSERVATION PRACTICE

- **Barriers to stakeholder engagement.** Complex socio-economic dynamics are associated with landscape management. A major challenge mentioned by the participants lies in engaging different local stakeholders and reflecting their needs when implementing practices that could potentially change their livelihoods.
- **Competition with top-down economic incentives.** Participants described a discrepancy between local landscape management plans and conflicting top-down policy incentives such as the EU Common Agricultural Policy and the EU Green Deal that are perceived to hamper the development of sustainable land use practices.
- **Practical challenges.** Participants reported that landscape managers sometimes find it difficult to decide what conservation actions to prioritise to meet their restoration goals.
- **Diverging conservation visions.** Many diverging visions about conservation goals and the concept of rewilding exist, particularly concerning the degree of human intervention and 'wildness'.

TOOLS AND APPROACHES FOR MANAGEMENT

- **Effects of land management practices.** Participants underlined the need to better inform the multiple stakeholders about

the positive or negative outcomes of land management practices. The development of labels that certifies land use practices promoting biodiversity conservation is suggested as an effective tool to address this need.

- **Formulation of visions of the future.** Participants working in conservation underlined how they base their management interventions on shared vision of the future and adaptive management, rather than seeking to recreate past conditions. They mentioned that increasing the use of decision-making tools (e.g., workshops, participatory scenarios, land restoration objective definitions...) to build a shared vision or diagnosis of the territory would support a better knowledge transfer.
- **Increased stakeholders' inclusion.** Participants outlined the need to develop further participatory approaches and tools to identify the key or most influential stakeholders in a determined area, thus ensuring to foster their engagement in landscape change interventions.
- **Improved (quantitative and qualitative) monitoring tools.** Participants reported that success of interventions can be derived from data acquisition (such as remote sensing), the definition of a set of indicators (e.g., soil conditions, social indicators) as well as assessed in terms of management effectiveness (e.g., How much was gained compared to how much was invested?).
- **Frameworks for ethics and adaptability.** Participants highlighted the importance of



developing good instruments that respect peoples' rights and values but also are flexible and can adapt through time.

RESEARCH AND PRACTITIONERS INTERACTIONS HIGHLIGHTS

- **Communication.** A key challenge in the interaction between research and application is communication. In both rooms, participants highlighted that more communication is needed between academia and practitioners. However, none identified whose responsibility this should be.
- **Dissemination.** The dissemination of scientific results can be challenging due to the technicality of the scientific language. Therefore, a more inclusive language is needed to translate research to a wider audience.
- **Interdisciplinarity.** Participants described research as still very compartmentalised. This lack of integrated interdisciplinarity makes it difficult for practical application.
- **Practical implementation.** Participants outlined also that more communication between researchers and needs "on the ground" is required to ensure more relevant production of knowledge. Providing practical and simple tools for progress monitoring and target definitions on different land use practices would also help to apply research outcomes.

5. TERRANOVA'S VISION: A "LEARNING" INITIATIVE

Overall, the workshop event and informative discussions with the participants allowed TERRANOVA's ESRs to collect advice for their own research. The collected information confirmed and reinforced the relevance of TERRANOVA's willingness to engage with stakeholders and TERRANOVA's current actions on participatory scenarios. Moreover, this White Paper is in line with the objective to improve communication and knowledge dissemination to a wider audience, beyond the publication of scientific papers (newsletter, blog posts, public events, webinars).

In practice, TERRANOVA ESRs will keep working on and increasing their efforts towards:

- actively engaging with stakeholders to ensure that TERRANOVA deliverables and research outputs are useful to land managers and decisions makers. This will notably be reflected in the TERRANOVA "Policy" work package 4 (<https://www.terrano-va-itn.eu/2-1-project-summary/>) deliverables (D) with for instance: Scenarios and social valuations of land management (D4.2), (Context-dependent) Guidelines on land management practices (D4.2 and D4.3), and Instruments, tools and protocols for decision-making (D4.4.).
- continuously engaging with stakeholders at different stages of research. For instance, Laura Quintero (ESR) is now developing local participatory scenarios for rewilding in collaboration with a focus group of

stakeholders from the Oder Delta, Germany. ESR Catherine Fayet discussed research outcomes with experts (Fayet et al., in review¹⁴) and is now working on interviews to explore stakeholder's perspectives on future policies for abandoned agricultural lands. ESR Roberta Rigo is working on evaluating the usefulness of participatory scenario planning (Rigo et al., submitted¹⁵).

In order to meet TERRANOVA's objective of conducting research with a societal impact, a key leverage is to improve the degree of stakeholders' involvement throughout the stages of the research process. This learning initiative will ensure that ESRs' research outputs are understandable and useful for land managers and decision-makers. This involvement starts with the identification and analysis of the problem, the design of the research question and definition of objectives. Stakeholders can be at the core of the methodology of academic paper development but also a key target group at the end of research for the effective dissemination of the results. Besides this stakeholder meeting we are reporting on in this White Paper, TERRANOVA is planning another international stakeholder meeting in Brussels with partners IUCN and ELO in the spring of 2022. In TERRANOVA, science is not only for scientists, but aims at helping land managers and politicians in their practices to reach the United Nations Sustainable Development Goals¹⁶.

▼ @ Catherine Fayet - Jura, France



ANNEX

Notes from the workshop event, summarising the discussions in each working group.

RESULTS FROM ROOM 1

CHALLENGES IN CONSERVATION PRACTICES

STAKEHOLDERS' ENGAGEMENT

Most of the participants expressed challenges associated with the complex socio-economical dynamics related to landscape management when it comes to reflect the different needs of different local stakeholders. Specifically, the main challenges arise when building up trust and engaging with stakeholders to implement practices that can potentially change their livelihoods. To address these issues, they suggest relying on bottom-up approaches. Several practitioners emphasized indeed that it is key to start any conservation or restoration project from the bottom level by building positive relations where people in order to understand the value of nature and the impact that their actions on the landscape have, not just on nature, but also on their economy and well-being.

COMPETING POLICIES

Several participants expressed concerns towards funding and policy schemes that compete with sustainable land use practices. They highlighted that current policy framework and policy schemes (i.e. European Common Agricultural Policy and the new European Green Deal)



▲ An example of shared landscape for biodiversity and various land uses, combining arable fields, areas with tall grasses and flowers (favorable to pollinators), forest patches and hiking trails. (@ Catherine Fayet - Cambridge Shire, England).

do not reflect local management goals towards a more sustainable use of natural resources. The practitioners reflected on the challenges of engaging with stakeholders to incentivise or encourage changing agricultural practices when there are higher economic benefits on maintaining past and intensive practices.

PRIORITIZING ACTIONS

Finally, some concerns were expressed towards defining what management actions should be prioritised when restoring an ecosystem. It is hard to decide which actions are more important as different habitats-landscape have different priorities

TOOLS AND APPROACHES FOR MANAGEMENT

PARTICIPATORY TOOLS

The group focused mainly on tools used for improving stakeholders' engagement rather

than scientific or technical tools such as GIS, trend analysis, and ecosystem services. The main concern was towards integrating tools that can improve and better inform the multiple stakeholders about the positive or negative outcomes of land management practices such as the development of a label that certifies good land use practices for biodiversity conservation. Furthermore, participatory approaches were the most used tool for stakeholders' engagement, with for instance tools helping to identify who are the key or most influential stakeholders in a given area. In addition, approaches to build shared visions or diagnosis of the territory with participatory processes (i.e. workshops) were defined as key for knowledge transfer. Practitioners also highlighted the importance to develop good instruments that respect peoples' rights but also are flexible and can adapt through time.

RESEARCH AND PRACTITIONERS INTERACTIONS

PROVIDING PRACTICAL AND ACCESSIBLE TOOLS

All participants referred to close collaborations with academia, specifically on research associated with monitoring biodiversity (e.g., model occupancy of species) as a means to evaluate what management actions have been successful in achieving different conservation and restoration goals over time. However, they also outlined that there is a mismatch between academics' expectations and practitioners' expectations. According to the participants, most of the academic research results are limited to the theory rather than the development of actual tools for practical applications on the ground. Therefore, they highlighted it is important to transform research results into relevant tools and actions that practitioners can use to quantify the results of landscape management actions. (For example: how much income is generated from a certain management intervention).

DISSEMINATING SYNTHESIZED KNOWLEDGE

In addition, participants acknowledged that there are many scientific research outcomes available but deplored the lack of synthesis of this knowledge. Such synthesis would be useful to support and assess impacts of land use management. Research is very compartmentalized and not in an integrated multidisciplinary way.

RESULTS FROM ROOM 2

CHALLENGES IN CONSERVATION PRACTICES

COMPETING POLICIES

Participants working in nature conservation expressed a general concern towards unsustainable agriculture practices and the pressures that the current Common Agricultural Policy places on biodiversity [CAP]. They expressed concerns towards negative impacts of current subsidy schemes as well as worries towards the CAP reform. Agriculture, but also forestry, are described as key sectors to deal with in nature conservation management. Participants expressed the desire to see radical changes in agriculture and forest policies for more coherent approaches to biodiversity. Related to policy definition, they expressed worries regarding the lack of clarity in current policy development, including the concept of rewilding.

DIVERGING DEFINITIONS

This brought the discussion to outline the many visions that one can have of the rewilding concept, and gave the opportunity to highlight that TERRANOVA supports a dynamic vision and does not claim for a strict protection of some "untouched" wilderness but rather a balance of intervention management adapted to the needs of the area. This statement can relate with the definition of rewilding within a continuum of scale, connectivity, and level of human influence, able to support well-functioning and self-sustaining ecosystems¹⁷.

TOOLS AND APPROACHES FOR MANAGEMENT:

BASELINE DEFINITION

According to the participants, working in nature conservation sometimes involves restoration, which, in turn, involves another challenge: How to define restoration baselines in a changing world? There seems to be an agreement within participants that restoration should be mostly future oriented to provide the necessary conditions to use landscapes sustainably and promote adaptive management. Success of interventions can be derived from data (such as remote sensing) and definition of sets of indicators (e.g., soil conditions, social indicators) and can be assessed in terms of management effectiveness.

RESEARCH AND PRACTITIONERS INTERACTIONS

DISSEMINATION AND ADAPTING SCIENCE TO PRACTITIONERS

All participants agreed on the existence of challenges in communication between research/academics and practitioners. They outlined the needs to translate and adapt scientific and technical language to a wider audience. Another important gap mentioned by participants was the disconnection between research practices/ outputs and needs "on the ground". Scientific research has the highest chances of being relevant, useful and accepted by local users if it corresponds to their needs, and fits local context characteristics.

ENDNOTES

- ¹ Marie Skłodowska-Curie actions <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/marie-sklodowska-curie-actions>
- ² Messerli, B., Grosjean, M., Hofer, T. & C. Pfister, 2000. From Nature-Dominated to Human-Dominated Environmental Changes. *Quaternary Science Reviews* 19(1): 459–479; Dearing, J.A., Battarbee, R.W., Dikau, R. et al. 2006. Human–environment interactions: towards synthesis and simulation. *Reg Environ Change* 6: 115–123. <https://doi.org/10.1007/s10113-005-0012-7>; Ellis, E. C., Kaplan, J. O., Fuller, D Q., Vavrus, S., Klein Goldewijk, K. & P. H. Verburg 2013. Used planet: A global history. *Proceedings of the National Academy of Sciences (PNAS)* 110(20): 7978–7985 <https://doi.org/10.1073/pnas.1217241110>;
- ³ e.g., Boivin, N., & Crowther, A. (2021). Mobilizing the past to shape a better Anthropocene. *Nature Ecology & Evolution*, 1-12 DOI: <https://www.nature.com/articles/s41559-020-01361-4>; Rick, T. C., & Sandweiss, D. H. (2020). Archaeology, climate, and global change in the Age of Humans. *Proceedings of the National Academy of Sciences*, 117(15), 8250-8253. DOI: <https://doi.org/10.1073/pnas.2003612117>.
- ⁴ Lindholm, K.J., Fernández, N., Svenning, J.-C., Pereira, H., & Kluiving, S. J. (2020). TERRANOVA White Paper 1: POLICY RECOMMENDATIONS FOR SUSTAINABLE LANDSCAPE MANAGEMENT STRATEGIES. *Zenodo*. DOI: <https://doi.org/10.5281/zenodo.4015031>
- ⁵ TERRANOVA is a Marie Skłodowska-Curie Innovative Training Network consortium looking at climate change, human-environment interactions and environmental policies in Europe. <https://www.terranova-itn.eu/>
- ⁶ Ripple, W. J., Wolf, C., Newsome, T. M., Galetti, M., Alamgir, M., Crist, E., ... & Laurance, W. F. 15,364 scientist signatories from 184 countries.(2017). *World scientists' warning to humanity: A second notice*. *BioScience*, 67(12), 1026-1028. DOI: <https://doi.org/10.1093/biosci/bix125>
- ⁷ e.g. Bürgi, M., Ali, P., Chowdhury, A., Heinimann, A., Hett, C., Kienast, F., ... & Verburg, P. H. (2017). Integrated landscape approach: closing the gap between theory and application. *Sustainability*, 9(8), 1371.
- ⁸ Clark, W. C., Mitchell, R. B., & Cash, D. W. (2006). Evaluating the Influence of Global Environmental Assessments. In MIT Press [Ed.], *Global Environmental Assessments: Information and Influence* (pp. 307–338). <https://doi.org/https://doi.org/10.7551/mitpress/3292.003.0014>
- ⁹ Parrott, L., & Meyer, W. S. (2012). Future landscapes: managing within complexity. *Frontiers in Ecology and the Environment*, 10(7), 382-389.
- ¹⁰ e.g., van der Zanden, E. H., Carvalho-ribeiro, S. M., & Verburg, P. H. (2018). Abandonment landscapes: user attitudes, alternative futures and land management in Castro Laboreiro, Portugal. *Regional Environmental Change*, 18, 1509-1520; Vila Subirós, J., Rodríguez-Carreras, R., Varga, D., Ribas, A., Úbeda, X., Asperó, F., Outeiro, L. (2016). Stakeholder Perceptions of Landscape Changes in the Mediterranean Mountains of the North-Eastern Iberian Peninsula. *Land Degradation and Development*, 27(5), 1354–1365. <https://doi.org/10.1002/ldr.2337>
- ¹¹ Díaz, S., Demissew, S., Carabias, J., Joly, C., Lonsdale, M., Ash, N., ... & Zlatanova, D. (2015). The IPBES Conceptual Framework-connecting nature and people. *Current opinion in environmental sustainability*, 14, 1-16 DOI: <https://doi.org/10.1016/j.cosust.2014.11.002>
- ¹² Liu, J., V. Hull, M. Batistella, R. DeFries, T. Dietz, F. Fu, T. W. Hertel, R. C. Izaurralde, E. F. Lambin, S. Li, L. A. Martinelli, W. J. McConnell, E. F. Moran, R. Naylor, Z. Ouyang, K. R. Polenske, A. Reenberg, G. de Miranda Rocha, C. S. Simmons, P. H. Verburg, P. M. Vitousek, F. Zhang, and C. Zhu. 2013. Framing sustainability in a telecoupled world. *Ecology and Society* 18(2): 26. <http://dx.doi.org/10.5751/ES-05873-180226>
- ¹³ Mckenzie, E., Posner, S., Tillmann, P., Bernhardt, J. R., Howard, K., & Rosenthal, A. (2014). Understanding the use of ecosystem service knowledge in decision making: Lessons from international experiences of spatial planning. *Environment and Planning C: Government and Policy*, 32(2), 320–340. <https://doi.org/10.1068/c12292j>
- ¹⁴ Fayet C.M.J., Reilly K. H., Van Ham C., & Verburg P. H. (in review). What is the future of abandoned agricultural lands? A systematic review of alternative trajectories in Europe. *Land Use Policy*.
- ¹⁵ Rigo R., Martin P., Verburg P., Houet T., (Submitted) Are spatially explicit scenarios useful for land management? Lessons from an ex-post evaluation of land use projections. *Futures*.
- ¹⁶ <https://sdgs.un.org/goals>
- ¹⁷ Carver, S., Convery, I., Hawkins, S., Beyers, R., Eagle, A., Kun, Z., ... & Souté, M. (2021). Guiding principles for rewilding. *Conservation Biology*.



ACKNOWLEDGEMENTS

Acknowledgments: We wish to warmly thank the participants of TERRANOVA's stakeholder workshop for their time, their active involvement and the valuable inputs they provided for the development of this White Paper."

COLOPHON

Amsterdam, June 2021

Editors:

Ruud van Ooijen (TERRANOVA),
Chantal van Ham (IUCN) and
Alice Budniok (ELO)

Brochure design and lay-out:
Bert Brouwenstijn, CLUE+

Photo cover:

© Laura C. Quintero Uribe -
Peneda-Gerês national park

► Photo: © Catherine Fayet -
New Forest, England

© All texts and images:

Terranova Project unless otherwise stated



Any thoughts, suggestions or questions about the White paper can be sent to Ruud van Ooijen; Project Manager TERRANOVA, r.van.ooijen@vu.nl

TERRANOVA Project website:
www.terrano-va-itn.eu

DOI: zenodo.org/badge/DOI/10.5281/zenodo.4896751.svg

This project has received funding from the European Union's Horizon 2020 research and innovation programme under the Marie Skłodowska-Curie grant agreement No 813904.

