TransformAr

Accelerating and upscaling transformational adaptation in Europe: demonstration of water-related innovation packages

Assessment method for solutions' replication potential

Deliverable 4.6

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EXECUTIVE SUMMARY

The TransformAr project aims to accelerate and upscale transformational adaptation to climate change across Europe by developing and demonstrating seventeen innovative solutions [1] across seven demonstrators in different EU regions. A key component of this effort is the Replicability Assessment Tool, designed to evaluate the potential for replicating these solutions in different contexts while maintaining, to the extent possible, their impact and feasibility.

The Replicability Assessment Tool, developed by Technopolis Group and commissioned by the French Agency for Ecological Transition (ADEME), was created between November 2024 and April 2025 as part of Work Package 4: Actionable Adaptive Solutions Implementation. The tool is intended to support regions and organisations in assessing the feasibility of replicating the climate adaptation solutions implemented during the TransformAr project. While specifically designed for TransformAr solutions, the tool can also be expanded to include other climate adaptation initiatives, provided conditions and weightings for replicability are defined.

The tool provides a structured and quantitative approach to assess potential replicability in a given territory. By evaluating potential replicators on the extent to which they meet key technical, financial, institutional, and environmental conditions required for replication, the tool enables decision-makers and project developers to identify the most viable solutions for replication. The tool integrates a set of defined conditions for replicability, organized across twelve replicability categories. To enhance precision, solution-specific weightings are applied to reflect the distinct characteristics and requirements of each solution. This tailored approach ensures a more precise assessment by accounting for the unique conditions that influence replicability. Since each condition is tailored to the specific solution, weightings vary between solutions. The tool allows users to assess their alignment with these conditions by scoring themselves using a five-point Likert scale. The resulting scores are combined with condition weightings to produce a replicability score on a scale of 1 to 5, which reflects the overall potential for replicability of this solution within the given territory.

To support users in identifying focus areas for improvement, the tool identifies priority conditions and categories requiring further attention, which highlights performance at the category level. Additionally, conditions are classified by level of priority based on their weighting and user score. Conditions with high weighting and low scores are categorized as High Priority, while those with low weighting or higher scores are designated as Low Priority. The tool also features visual outputs that support users in interpreting results and identifying key areas for improvement

The development of the tool followed a methodology involving a literature review, stakeholder interviews, site visits, and validation meetings with demonstrators. The literature review informed the definition of replicability and the categories and conditions of replicability. Stakeholder interviews and site visits provided critical insights into the practical challenges and enablers of replicability, while validation meetings ensured the conditions and weightings accurately reflected on-the-ground realities.

The tool's functionality is delivered through Microsoft Excel to ensure accessibility and ease of use. Users are guided through the process of selecting a solution, providing scores, and reviewing their results. The automated calculations ensure transparency and consistency, while clear visual outputs facilitate informed decision-making.

[1] Three of the solutions originally planned for the TransformAr project were either not implemented (Green Bonds not implemented in West Country Region, UK), replaced by another solution (Integrated Constructed Wetlands Monitoring replaced by Nature-based solutions in West Country Region, UK) or incorporated into another solution (Stormwater Modular System and Storm Water Monitoring integrated as one solution in Lappeenranta, Finland and Gjovik, Norway). A final solution (Insurance scheme, all demonstrators) was not included as it is not applicable to a replicability exercise since it corresponds to a strategic foresight.

While the tool provides valuable insights into the replicability potential of climate adaptation solutions, it is important to note its limitations. Certain conditions influencing replicability may be qualitative or context-specific, requiring further assessment through detailed feasibility studies. Additionally, the tool provides specific conditions for each solution, which supports a detailed and tailored assessment but may limit broader generalization of the same replicability conditions to other climate change adaptation solutions within the same category (e.g. replicability conditions cannot be generalised across all nature-based solutions).

Further, the Replicability Assessment Tool remains theoretical at this stage as it has not yet been used by a potential replicator who has successfully replicated a climate change adaptation solution, they evaluated themselves against. The results generated by the tool should therefore be interpreted as an indication of replicability potential rather than a definitive prediction of success.

The tool's reliance on self-assessment highlights the importance of clear communication and coordination among stakeholders involved in the replication process of the solution to ensure accurate scoring.

The definition of replicability criteria indicate that Stakeholder & Community Engagement and Financial & Economic conditions are particularly significant for enhancing potential replicability. These conditions play a crucial role in ensuring that solutions are both adaptable and sustainable across various contexts. Users are encouraged to prioritize these aspects to maximize their replicability potential.

The Replicability Assessment Tool offers a structured approach to assessing the feasibility of replicating TransformAr solutions or similar climate adaptation initiatives, supporting decision-makers in enhancing replicability outcomes.

LIST OF ABBREVIATIONS

ADEME	Agence de la Transition écologique
AF	Adaptation Fund
AWAR	Awareness-raising modules
CAE	Citizen App Engagement
CAF	Crowdsourcing Citizen app
CEI	Choice experiment
CIH	Climate Innovation Hub
COAST	Coastal contract
DSI	Demand analysis for social services / infrastructure
GB	Green Bonds
ICW	Integrated Constructed Wetlands
ICWM	Integrated Constructed Wetlands Monitoring
INSUR	Insurance Scheme
INTERM	Intertidal monitoring
MRM	Mussel-Raft Monitoring
NUDG	Nudging
RI	Resilience Index
SCS	Smart climate stations
SG	Smart Grid and gates
SWM	Storm water modular system
SWMM	Storm water monitoring
URB	Urban runoff system

1.0 INTRODUCTION

1.1 About TransformAr

The TransformAr project is an EU-funded project which seeks to develop and demonstrate **solutions and pathways to achieve transformational adaptation to climate change across the EU**. The project started on the 21st October 2021 and will continue until the 30th September 2025.

This deliverable was developed as part of Work Package 4 – Actionable Adaptative solutions implementation, which aims to implement and test a portfolio of , **17 solutions** spanning five categories across **seven EU regions**, representing diverse geographic and socio-economic context. The solutions have had a particular focus on water-related climate risks. Three of the solutions originally planned for the TransformAr project were either not implemented (Green Bonds not implemented in West Country Region, UK), replaced by another solution (Integrated Constructed Wetlands Monitoring replaced by Nature-based solutions in West Country Region, UK) or incorporated into another solution (Stormwater Modular System and Storm Water Monitoring integrated as one solution in Lappeenranta, Finland and Gjovik, Norway). A final solution (Insurance scheme, all demonstrators) was not included as it is not applicable to a replicability exercise due to its nature. The solutions demonstrated are detailed in Section 2.0.

The experimentation phase lasted two years (from September 2022 to September 2024), during which five learning stories (D4.1–D4.5) were developed. These stories document the design, implementation, challenges, and key learnings associated with each solution. Following the evaluation of these solutions, the objective of this deliverable (D4.6) is now to assess the replication potential of each solution in different contexts.

1.2 About the Replicability Assessment Tool

The impact of the TransformAr project can be exponential where the solutions demonstrated during the project are replicated in other contexts. The Replicability Assessment Tool has been developed by Technopolis Group during the period from November 2024 to April 2025, commissioned by the French Agency for Ecological Transition– ADEME.

The Replicability Assessment Tool is an Excel tool which supports regions or organisations who wish to replicate one of the solutions implemented during TransformAr to assess replicability, where replicability is defined as the ability of a solution to be duplicated in another location or time.[2] Potential replicators can qualitatively score themselves against the replicability conditions for the solution which they are interested in, and will gain insight into the conditions where they need to improve in order to replicate the solution, or if the solution is simply not suited to their environment. The replicability conditions were defined with the TransformAr demonstrator regions who, having implemented the solutions themselves, had insight into the optimal conditions for replicability based on what did and did not work in their specific context.

It is important to note that this report is intended to serve as a guide to the Replicability Assessment Tool in Excel format and should not be interpreted as an assessment of the solutions themselves. The insights provided are intended to support users in applying the tool effectively rather than providing definitive conclusions about individual solutions.

The Replicability Assessment Tool is explained in detail in Section 3.0.

[2] (Rodriguez-Calvo et al. 2018)

The Replicability Assessment Tool is available on the TransformAr website under the "Tools" menu. It can also be downloaded directly at the following link:

https://transformar.eu/storage/2025/03/Replicability_Tool_TransformAr.xlsx

2.0 OVERVIEW OF SOLUTIONS

2.1 Awareness Raising & Behavioural Change Solutions

Awareness raising and behavioural change solutions aim to promote **climate awareness**, **sustainable practices**, and **community resilience**. Four behavioural change solutions were implemented during the TransformAr project.

Table 1: Awareness Raising & Behavioural Change Solutions

Solution name	Acronym	Description	Demonstrator
Nudging	NUDG	A nudging experiment targeting tourists on the archipelago to reduce their water consumption in the shower.	Guadeloupe, France
Citizen App Engagement	CAE	Citizen app displaying data from weather stations in the region	Egaleo, Greece
Awareness-raising modules	AWAR	Awareness-raising programme targeting 16–18-year-old children to increase climate change awareness and its impact on the environment	Egaleo, Greece
Crowdsourcing Citizen App	CAF	Citizen app displaying stormwater information and enabling citizens to input data on stormwater	Lappeenranta, Finland and Gjovik, Norway

2.2 Governance Schemes

In order to accelerate action to adapt to the consequences of climate change at regional and local level, novel governance solutions are essential. The TransformAr project has demonstrated four governance solutions for adaptation, each aiming to resolve multiple governance challenges.

Table 2: Governance Schemes Solutions

Solution name	Acronym	Description	Demonstrator
Demand analysis for social services / infrastructure	DSI	Demand analysis for social services and infrastructure to understand how demand for social services may shift as the impacts of climate change are felt	Egaleo, Greece
Climate Innovation Hub	CIH	Physical meeting space exhibiting solutions to climate change adaptation and offering a space for collaboration, raising awareness and events such as hackathons and Green Open Days	Egaleo, Greece
Resilience Index	RI	Comprehensive assessment of climate adaptation needs for the mussel aquaculture sector, using modelling to input information about risks, climate change scenarios, etc., to give valuable insights helping decision makers in both the productive and	Galicia, Spain

		political sectors to make informed decisions about governance and policy formulation	
Coastal Contracts	COAST	Managing coastal wetlands more effectively by overcoming the fragmentation of local governance through collaborative decision-making and centralised climate data monitoring	Oristano, Italy

2.3 Nature-Based Solutions

Nature-based solutions **harness the natural processes of ecosystems** to address environmental, social, and economic challenges. The TransformAr project demonstrated the effectiveness of several nature-based solutions.

Table 3: Nature-Based Solutions

Solution name	Acronym	Description	Demonstrator
Smart Grid and Gates	SG	Installing of Smart Gates that can open and close to establish the right conditions in the wetlands	Oristano, Italy
Nature-based solutions	NBS	Use of nature-based solutions such as leaky dams, ponds, scrapes, bunds and check dams	West-Country Region, UK
Urban runoff system	URB	Installation of biofiltration areas designed to filter stormwater runoff	Lappeenranta, Finland

2.4 Digital & Technological Solutions

Accelerating and scaling transformational adaptation can be achieved in part through innovative technological and digital solutions. Several digital solutions were demonstrated during the TransformAr project.

Table 4: Digital & Technological Solutions

Solution name	Acronym	Description	Demonstrator
Smart Climate Stations	SCS	Installation of 21 smart climate stations on public buildings to monitor the microclimate and identify heat hotspots and heat islands	Egaleo, Greece
Mussel-Raft Monitoring	MRM	Sensorising mussel rafts to provide real-time data on mussel health and environmental conditions	Galicia, Spain
Intertidal Monitoring	INTERM	Monitoring system tracking sediment dynamics and environmental conditions in real-time, using predictive models to foresee risks and protect shellfish habitats	Galicia, Spain
Stormwater Monitoring / Modular System	SWMM / SWM	Installation of sensors in the water pipe and drainage system to monitor stormwater quality, flow and volume in real time	Lappeenranta, Finland and Gjovik, Norway
Integrated Constructed Wetlands Monitoring	ICWM	*This solution was replaced by Nature-Based Solutions.*	West Country Region, UK

2.5 Insurance Schemes and Financial Solutions

In order to accelerate climate change adaptation actions at regional and local level, novel financial and insurance solutions are essential. In TransformAr, different financing mechanisms were tested for adopting and scaling up climate adaptation investments.

Table 5: Insurance Schemes and Financial Solutions

Solution name	Acronym	Description	Demonstrator
Adaptation Fund	AF	Local fund for adaptation, constituting a one stop shop for funding	Guadeloupe, France
Choice experiment	CEI	Discrete choice experiment to understand citizens' willingness to pay for and act on stormwater management on their own properties, providing insight to the segments of the population who are willing to pay for nature-based solutions and the trade-offs they are willing to make	Lappeenranta, Finland and Gjovik, Norway
Green Bonds	GB	*This solution has not been included in the Replicability Assessment Tool as it was not implemented.*	West Country Region, UK
Insurance scheme	INSUR	*This solution has not been included in the Replicability Assessment Tool as it is not applicable. A learning story on 'insurance & climate change adaptation' was developed as strategic foresight, rather than the actual implementation of an insurance scheme.*	All demonstrators

3.0 THE REPLICABILITY ASSESSMENT TOOL

3.1 Objectives and purpose

The TransformAr Replicability Assessment Tool is designed to evaluate the ability to replicate the solutions in different contexts whilst maintaining their impact and feasibility. It can be used by those who are interested in replicating the solutions in their own region and / or place of interest.

The Tool provides a structured and quantitative approach to assess whether adaptation solutions can be effectively transferred to different contexts. It facilitates the evaluation of key technical, financial, institutional, and environmental factors that influence the replicability of solutions. Through a structured set of statements and weighted scoring system, the tool enables an objective and transparent assessment, supporting decision-makers and project developers in identifying the most viable solutions for transformational adaptation.

A key feature of the tool is the use of solution-specific weightings, which are tailored to reflect the unique characteristics of each solution. As outlined below in Section 3.2.2, this approach leverages insights from the extensive knowledge gained by TransformAr demonstrators and a detailed review of solution-specific information. By avoiding overgeneralization across solutions, this method enhances the tool's accuracy in identifying the conditions that are most critical to successful replication.

The tool also offers a visual scoring overview, allowing stakeholders to identify key strengths and also areas of improvement to refine strategies based on assessment results. Ultimately, this tool contributes to TransformAr's mission of accelerating and scaling up transformative climate adaptation, fostering resilience and sustainable development across diverse regions. While the tool provides valuable insights into the replicability potential of climate adaptation solutions implemented during TransformAr, it is limited in its ability to generalise the same replicability conditions to other climate change adaptation solutions within the same category (e.g. replicability conditions cannot be generalised across all nature-based solutions). By combining solution-specific weightings with a structured set of replicability categories, the tool ensures both flexibility and coherence in its assessments. The tool can however be expanded to include other climate adaptation initiatives, provided conditions for replicability are defined.

3.2 Methodology behind the tool

3.2.1 Conducting a literature review

The Replicability Assessment Tool was developed following a literature review on state-of-the-art evaluation of replicational potential. The aim of the literature review was to refine our definition of replicability in the context of climate change adaptation solutions, inform the categories of conditions for replicability (e.g. financial, technical, environment, etc.), and to inform the functionality of the Tool in terms of weightings, scorings, and the aesthetic and ease-of-use of the tool for users.

The literature review spanned academic papers, white papers, and "grey" literature. Our results found few papers addressing replicability assessments of climate change adaptation solutions such as nature-based solutions or awareness-raising and behavioural change solutions, whilst several papers addressed replicability and scalability of smart-grid related projects.[3] Further, a White Paper from the Alliance for IoT and Edge Computing Innovation on a replicability and scalability assessment tool informed the approach for the digital and technological solutions of TransformAr.[4]

[3] (European Commission: Directorate-General for Energy, 2023; Sigrist, et al., 2016)

[4] (Alliance for IoT and Edge Computing Innovation, 2023)

Despite the lack of papers directly addressing replicability assessments of climate change adaptation solutions, the literature studied enabled us to achieve our objective of refining our definition of replicability, informing the replicability conditions and categories, and informing the functionality of the tool.

The key papers studied in the literature review are detailed in APPENDIX 1.

3.2.2 Rationale for solution-specific weightings

The Replicability Assessment Tool is based on a methodology that applies unique weightings specific to each solution. This approach was deliberately chosen to reflect the distinct characteristics and requirements of each solution. By assigning tailored weightings, the tool draws on a comprehensive review of information produced for each solution, combined with insights gained from the extensive knowledge acquired by the TransformAr demonstrators throughout the project's implementation.

The weightings were defined collaboratively with the demonstrators, who, drawing on their practical experience, assessed the relative importance of each condition based on its role in the implementation of their solution. This ensured that the tool reflects context-specific priorities grounded in real-world experimentation (see Section 3.2.3 for more details).

This solution-specific weighting approach offers several advantages. First, it allows for a precise assessment that considers the specificities of each solution, avoiding the risks of oversimplification. In addition to reviewing solution-specific information, demonstrators provided valuable insights into the conditions that most significantly influenced the experimentation of each solution in their respective contexts. By tapping into this detailed understanding, the tool ensures that assessments are informed by real-world experience rather than generic assumptions.

Furthermore, this tailored approach helps to prevent overgeneralization across solutions. Since different solutions may face varying technical, environmental, financial, or institutional challenges, a one-size-fits-all model would risk overlooking key factors that are critical to successful replication. Adopting a solution-specific weighting model enhances the tool's accuracy in guiding replicators toward effective adaptation strategies.

Despite the flexibility offered by solution-specific weightings, the inclusion of a set of replicability categories ensures coherence and structure across all solutions. This structured framework enables replicators to maintain a comprehensive assessment while benefiting from tailored insights into solution-specific priorities.

3.2.3 Defining replicability categories and conditions

The foundation of the Replicability Assessment Tool is a set of replicability conditions per solution, spanning **twelve categories of conditions**. These were defined following interviews with stakeholders from each of the seven demonstrators, and site visits to two of the demonstrators, and extensive document analysis of project documents such as feasibility studies. These methods are detailed in the box to the right.

Key method – Interviews & Site Visits

We conducted **eight interviews**, between January and February 2025, with stakeholders across the demonstrators, each lasting between 1 and 2 hours. Six interviews were conducted virtually, and two were conducted in-person during site visits. Interviewees were asked nine questions regarding the replicability of the solutions implemented, including the conditions that need to be considered before taking the decision to replicate the solution, assessing the feasibility of the solution, and resources or expertise required.

We conducted **two site visits** to West Country Region, UK, and Lappeenranta, Finland, during January 2025, where we observed the solutions implemented.

The data gathered from interviews and document analysis enabled to define twelve categories of replicability conditions, and a **set of replicability conditions unique to each solution** within each of these categories. Additionally, **weightings were assigned to each condition** based on the importance of that condition for the specific solution, in collaboration with the demonstrators through a co-constructive process. This process involved direct engagement with the demonstrators via interviews, site visits, and subsequent meetings. Drawing on their practical experience, demonstrators identified the key conditions that had influenced the experimentation of each solution in their local context. They were then invited to assess the relative importance of each condition — distinguishing those that were essential for successful replication from those that were desirable but less critical. This process ensured that the resulting weightings reflect grounded, context-sensitive judgements rather than theoretical assumptions.[5]

Table 6 below outlines the twelve categories of replicability conditions, and Table 7 provides an example for the *Resilience Index* solution of the replicability conditions and weightings unique to that solution. It is clear from the latter table that for a given solution, not all of the replicability categories will be relevant.

Table 6: Replicability Categories

Category	Description
Data & Analytics	This category determines whether a solution is replicable through the availability, quality, and utilization of data and analytics to support decision-making.
Environmental & Climatic	This category determines whether a solution is replicable considering environmental sustainability, climate resilience, and ecological impact.
Financial & Economic	This category assesses whether a solution is replicable from a financial and economic perspective, considering cost-effectiveness, funding sources, and financial sustainability.
Governance & Policy	This category evaluates the extent to which a solution is replicable within different governance structures and policy frameworks, ensuring regulatory alignment.
Monitoring & Evaluation	This category examines whether a solution is replicable by assessing its monitoring and evaluation frameworks, performance measurement, and impact assessment.
Operational	This category examines whether a solution is replicable based on its operational feasibility, efficiency, and ease of implementation across different contexts.
Planning & Risk Management	This category determines if a solution is replicable while managing risks effectively, including contingency planning, risk mitigation, and long-term resilience.
Political & Institutional Support	This category examines whether a solution is replicable given the level of political will, institutional support, and alignment with government priorities.
Scientific & Research Expertise	This category assesses whether a solution is replicable based on scientific validity, research backing, and the availability of expertise in the field.
Social & Behavioural	This category evaluates whether a solution is replicable considering cultural, behavioural, and societal factors that influence adoption and implementation.

[5] The tool is based on the assumption that the solutions implemented in the TransformAr demonstrator sites represent the most effective configuration and does not account for the possibility of alternative approaches that could yield better results.

Stakeholder & Community Engagement	This category evaluates the extent to which a solution is replicable through effective stakeholder involvement, community participation, and social acceptance.
Technical & Infrastructure Readiness	This category assesses whether a solution is replicable based on technological requirements, infrastructure availability, and technical feasibility.

As mentioned above, the following table presents the conditions influencing the replicability of the RI solution, grouped by thematic category. Each condition is described along with its weighting, which reflects the relative importance of that condition for successful replication of the RI in a new context. The user of the tool (i.e., the organisation or region interested in replicating the RI solution) can use this information to assess their own context: high-weighted conditions should be prioritised when assessing the areas for improvement and strengthening of the replicability (more details can be found in Section 4.0). For example, if "Local Stakeholder Buy-in and Collaboration " is highly weighted but currently weak in the user's context, targeted actions may be needed to improve engagement before replication.

Table 7: Example replicability conditions and weightings for the Resilience Index

Category	Replicability Condition	Description	Weighting
Stakeholder & Community Engagement	Local Stakeholder Buy-in and Collaboration	Local industry stakeholders (e.g. mussel farmers) and experts in the mussel sector, resilience, and climate change must be available and willing to participate in the 2 Delphi dynamics and in the co-creation of a roadmap for adaptation.	22%
Data & Analytics	Access to Climate Data	Access to relevant data and information on the value chain, climatic variables and projections, and resilience factors for adaptation.	22%
Governance & Policy	Communication and Decision-Making Structure	The solution is most effective where the insights arising from the Resilience Index guide stakeholders' behavioural change and inform policymakers and value chain actors. This requires effective communication channels across actors and the ability for data insights to reach decision-makers.	18%
Scientific & Research Expertise	Participatory Methods Experience	Experience with conducting consultations under the Delphi method is necessary to effectively engage the expert panel in the process and avoid stakeholder fatigue.	14%
Scientific & Research Expertise	Mathematical Modelling	The Resilience Index requires expertise in advanced mathematical modelling, and the capacity of 1-2 researchers to lead the methodology for developing the Resilience Index.	14%
Financial & Economic	Financial Availability	This solution requires adequate funding to develop and manage the Resilience Index, varying dependant on existing in-house expertise, personnel, and capacity.	10%

Following the definition of replicability conditions and weightings for each solution, we conducted validation meetings with each demonstrator. During the meetings, stakeholders from each demonstrator provided feedback on the replicability conditions and weightings, following which adjustments were made to reflect their feedback. Details of validation meetings are in the box below.

Key method – Validation meetings

We conducted **five validation meetings** with stakeholders across the demonstrators during March 2025, combining the validation meeting for Lappeenranta and Gjovik who implemented the same solutions. Each validation meeting lasted between 30 minutes to 1 hour, and all were conducted virtually. Written feedback was provided by the West-Country Region (UK) demonstrator.

Interviewees were asked to provide feedback on the replicability conditions and weightings for each of the solutions implemented in their region, resulting in adjustments being made to the weightings and replicability conditions.

3.2.3.1 Overview by TransformAr sectors

TransformAr solutions are organized into five thematic sectors: Awareness Raising & Behavioural Change; Governance Schemes; Nature-Based Solutions; Digital & Technological; and Insurance Schemes and Financial. As outlined above, the Replicability Assessment Tool comprises a set of replicability conditions spanning twelve categories of conditions, which vary depending on each solution. The table below highlights the categories that account for the majority of conditions within each TransformAr thematic sector. Notably, the Stakeholder & Community Engagement and Financial & Economic categories are among the most significant when assessing the potential replicability of TransformAr solutions. Identifying the most significant categories for each thematic sector helps users prioritize focus areas during their assessment process, ensuring that key replicability conditions are addressed effectively.

Table 8: Most important categories per sector

Sector	Category
Awareness Raising & Behavioural Change Solutions	Stakeholder & Community Engagement
	Governance & Policy
	Financial & Economic
Digital & Technological Solutions	Technical & Infrastructure Readiness
	Financial & Economic
	Data & Analytics
	Stakeholder & Community Engagement
Governance Schemes	Governance & Policy
	Stakeholder & Community Engagement
	Financial & Economic
	Scientific & Research Expertise
Insurance Schemes And Financial Solutions	Stakeholder & Community Engagement
	Financial & Economic
	Planning & Risk Management
Nature-Based Solutions	Stakeholder & Community Engagement
	Planning & Risk Management
	Governance & Policy
	Technical & Infrastructure Readiness

APPENDIX 3 details the importance of each category based on the number of conditions per thematic sector.

3.2.4 Scoring criteria

Having defined the key conditions for successful replication of each solution, the next stage in the methodology was to determine how potential replicators could score themselves against the criteria. Based on the replicability conditions, it was determined that conditions would be framed as Statements (e.g. "I have experience conducting consultations under the Delphi method") and that potential replicators would score themselves using a Likert Scale Response Option, to indicate alignment with the condition.[6] The scoring criteria are detailed below.

1 – Untrue of my institution / organisation / region

2 – Somewhat untrue of my institution / organisation / region

3 – Neutral

4 – Somewhat true of my institution / organisation / region

5 – True of my institution / organisation / region

An example of the scoring criteria applied to a replicability condition from the Resilience Index is given and interpreted in the table below.

Table 9: Example of a scoring criteria applied to the Resilience Index solution

Replicability Condition	Statement	Score	Interpretation
Local Stakeholder Buy-in and Collaboration	Local industry stakeholders (e.g. mussel farmers) and experts in the mussel sector, resilience, and climate change will be available and willing to participate in the 2 Delphi dynamics and in the co-creation of a roadmap for adaptation.	1	Industry stakeholders and experts in the mussel sector, resilience, and climate change will not be available or willing to participate.
		2	Most industry stakeholders and experts in the mussel sector, resilience, and climate change will not be available or willing to participate.
		3	Some industry stakeholders and experts in the mussel sector, resilience, and climate change will be available or willing to participate.
		4	Most industry stakeholders and experts in the mussel sector, resilience and climate change will be available and willing to participate
		5	Industry stakeholders and experts in the mussel sector, resilience, and climate change will be available and willing to participate.

[6] (Vagias, 2006)

3.2.5 Combining conditions, weightings & scoring to assess replicability

The TransformAr Replicability Assessment Tool is designed to provide potential replicators with a *replicability score* for a given solution based on their scoring against the set of weighted conditions relevant for that solution. The replicability score is calculated as follows:

$$Replicability\_Score = \sum(Condition\ Weighting\ \times Condition\ Score)$$

The replicability score is out of 5, where:

5	**Highly replicable** – the solution is fully replicable in your region / context with no significant barriers
4	**Easily replicable** – the solution is straightforward to replicate and will require minimal improvements in the scoring against replicability conditions
3	**Moderately replicable** – the solution can be replicated, but requires some improvements in the scoring against replicability conditions
2	**Difficult to replicate** – the solution can be replicated, but it would require significant effort to improve your scoring against the relevant conditions
1	**Not replicable** – the conditions required to replicate this solution are not met in your region / context and you would therefore struggle to replicate it without significant effort

Additionally, the tool provides a weighted average score by category and on a scale from 1 to 5. It provides an overview of user alignment within each category by combining condition scores with their respective weightings. This approach ensures that categories with higher-weighted conditions have a stronger influence on the final score, offering a balanced reflection of performance. It enables users to easily identify categories with strong alignment as well as those that may require further attention. The weighted average score by category is calculated as follows:

$$Category\_Score = \frac{\sum(Condition\ Score\ \times Weighting)}{\sum Weighting}$$

4.0 HOW TO USE THE REPLICABILITY ASSESSMENT TOOL

4.1 Introduction

The Replicability Assessment Tool is designed to be used by potential replicators of the climate change adaptation solutions implemented during the TransformAr project. While tailored to TransformAr solutions, the tool can also be applied to assess similar climate adaptation solutions seeking to replicate their impact in different contexts.

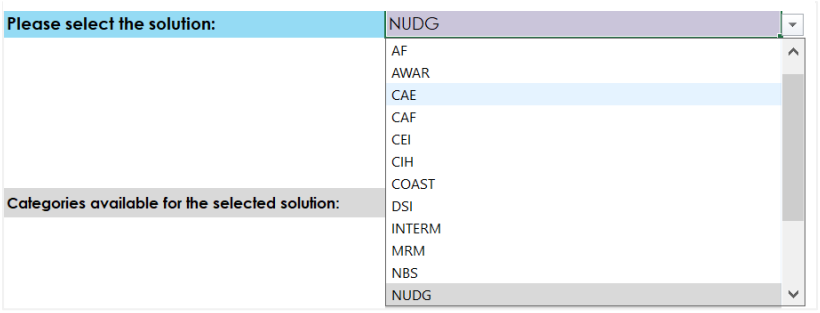
Upon opening the tool, users should save a copy of this file and rename it to include the name of their project. This will help distinguish assessments across different solutions, as each solution must be evaluated separately.

Having read the introduction and relevant information in the "Introduction" and "Relevant Information" tabs, users can then begin the assessment in the "Assessment" tab.

4.2 "Assessment" tab

The first step for users is to select the appropriate solution from the dropdown menu, which will automatically generate the relevant set of categories and conditions for the chosen solution.

Step 1 Select the solution which you are interested in replicating



Scrolling further down the sheet, users will see a box per relevant category within which the replicability conditions for this solution will be detailed. Each condition has a description and a statement. Users should read each statement and provide a score in the purple box between 1 and 5, where, as detailed in Section 3.0:

1 – Untrue of my institution / organisation / region

2 – Somewhat untrue of my institution / organisation / region

3 – Neutral

4 – Somewhat true of my institution / organisation / region

5 – True of my institution / organisation / region

Only values within this range are accepted, and scores should be assigned based on a thorough understanding of the solution's context and feasibility. All editable cells are shaded in light purple in the questionnaire to guide user input.

As in the example below, this user has scored themselves 4 against the statement, "My region has access to expertise in data and analytics to analyse the real-time data and results of the nudging experiment". This means that the user believes that the statement is somewhat true of their region, suggesting that the region has access to some expertise in data and analytics, but that further expertise may be required.

Step 2 Assigning a score per replicability condition

Category:	Data & Analytics			
This category determines whether a solution is replicable through the availability, quality, and utilization of data and analytics to support decision-making.				
Condition	**Description**	**Statement**	**Weighting**	**User Score (1 to 5)**
Data Collection & Analysis Capability	Data literacy and analytical capabilities will be required in the project team to analyse the real-time data and results of the nudging experiment.	My region has access to expertise in data and analytics to analyse the real-time data and results of the nudging experiment.	7%	4

4.3 "Replicability Results" tab

Having scored themselves against all of the conditions, users can go to the "Replicability Results" tab. This tab compiles the weighted scoring data, breaking down the assessment by category and condition. *We ask that users please refrain from modifying this tab or any automated calculations, as they are essential for ensuring the integrity of the results.*

On this tab, users can see their score for each condition with the respective weighting, user score, and weighted score[7].

In addition, the level of priority for each condition is also presented. It highlights conditions that require greater attention based on their weighting and user score. Conditions are categorized as High priority if they have a high weighting (within the top 50% of weightings) and a low score (≤ 3), indicating areas that are both important and underperforming. Conversely, conditions are classified as Low priority if they have a low weighting or a high score (> 3), representing areas of less concern or stronger alignment. To help users visually identify these distinctions, High priority conditions are shaded in green, while Low priority conditions are shaded in yellow. This classification supports users in identifying key focus areas conditions where they can make the most room for improvement given weightings and scores, to enhance replicability. The following table presents the replicability results from a fictitious assessment of the Adaptation Fund solution.

Table 10: Fictitious replicability results of AF

Solution selected:	AF

Category	**Condition**	**Weighting**	**User Score**	**Weighted Score**	**Level of priority to maximise replication potential***
Stakeholder & Community Engagement	Communication & Outreach	13%	5	0,65	Low priority
Political & Institutional Support	Political Backing	13%	4	0,52	Low priority
Scientific & Research Expertise	Organizational Capacity	12%	3	0,36	High priority
Stakeholder & Community Engagement	Fostering participation of beneficiaries	12%	2	0,24	High priority
Financial & Economic	Financial Availability	12%	1	0,12	High priority
Governance & Policy	Local Institutional Support	11%	4	0,44	Low priority
Planning & Risk Management	Feasibility Study	11%	3	0,33	Low priority
Political & Institutional Support	Political Support	11%	2	0,22	Low priority
Financial & Economic	Openness to public-private partnerships	5%	5	0,25	Low priority

In the previous fictitious example, users should focus on improving the conditions "Fostering participation of beneficiaries", "Financial Availability" and "Organizational Capacity" as they represent some of the highest-weighted conditions for this solution (12% each) and received the lowest scores. Addressing

[7] Weighted Score is calculated: Weighting × User Score

these areas would enhance the replicability potential of the AF solution in the specific context where it is assessed.

Finally, an overall replicability score (out of 5) is presented, calculated by summing the weighted scores across all conditions, as outlined in Section 3.2.5.

Table 11: Fictitious replicability score of AF

Replicability Score (out of 5):	**3,13**

As is detailed in Section 3.0, users can interpret their replicability score as follows:

5	**Highly replicable** – the solution is fully replicable in your region / context with no significant barriers
4	**Easily replicable** – the solution is straightforward to replicate and will require minimal improvements in the scoring against replicability conditions
3	**Moderately replicable** – the solution can be replicated, but requires some improvements in the scoring against replicability conditions
2	**Difficult to replicate** – the solution can be replicated, but it would require significant effort to improve your scoring against the relevant conditions
1	**Not replicable** – the conditions required to replicate this solution are not met in your region / context and you would therefore struggle to replicate it without significant effort

Finally, a bubble chart is presented that illustrates the conditions by plotting user scores against weightings, with bubble size representing the corresponding weighted score. Users will find that larger bubbles highlight conditions with a greater influence on the overall replicability score. Particular attention should be given to large bubbles positioned in the lower-right quadrant, as these represent conditions that are both highly weighted and underperforming, indicating key areas for improvement. Conversely, conditions in the upper-right quadrant are both highly weighted and well-aligned with replicability criteria. To support visual identification, High priority conditions are shown in green, while Low priority conditions are shown in yellow.

Figure 1: Fictitious bubble chart for AF

4.4 "Scoring Overview" tab

Users can then click onto the "Scoring Overview" tab. The tab presents the weighted average score by category, which provides an overview of user alignment within each category by combining condition scores with their respective weightings. This approach ensures that categories with higher-weighted conditions have a stronger influence on the final score, offering a balanced reflection of performance. The score is presented on a scale of 1 to 5, enabling users to easily identify categories with strong alignment as well as those that may require further attention. Section 3.2.5 presents the details of the calculation.

In addition to the weighted average score, the tab also presents the weighting per category, which reflects the combined weightings of all conditions within that category. This provides insight into the relative significance of each category in the overall assessment. Users should consider both the weighted average score and the weighting per category to fully understand the contribution of each category to the replicability assessment. Categories with lower weightings may still display strong or weak alignment, but their influence on the overall outcome is limited.

The tab also includes the Importance of the Category, which identifies whether each category is classified as high or low importance based on the presence of high priority conditions. Categories are marked as High Importance if they include at least one condition designated as High Priority in the Replicability Results tab. Conversely, categories that do not contain any High Priority conditions are classified as Low Importance. This classification system helps users quickly identify which categories should be prioritized to enhance the replication potential of solutions. The results are dynamic and automatically adjust as data changes.

The following table presents the scoring overview from a fictitious assessment of the urban runoff system solution.

Table 12: Fictitious scoring overview of URB

Solution selected:	URB

Category	**Weighted Average Category Score**	**Weighting**	**Importance of category**
Planning & Risk Management	**1,88**	24%	High
Stakeholder & Community Engagement	**4,00**	14%	Low
Environmental & Climatic	**3,00**	14%	High
Governance & Policy	**2,00**	14%	High
Technical & Infrastructure Readiness	**2,00**	14%	Low
Financial & Economic	**4,00**	10%	Low
Operational	**4,00**	10%	Low

The Scoring Overview consolidates scoring at category-level and details the categories which require the most improvement. Users can also see on the radar graph the categories where their efforts of improvement would be most impactful.

4.5 "Inputs" tab

The "Inputs" tab serves as the foundational dataset for the replicability assessment tool, containing essential information required for the assessment process. It includes the list of solutions, along with their corresponding acronyms and descriptions. The tab also defines the replicability categories and presents a detailed list of conditions organized by solution and category, with corresponding weightings

that reflect their relative importance in the replicability assessment. To ensure accuracy in the scoring process, this tab features a check table that verifies whether the total weighting for each solution equals 100%. If discrepancies are identified, a check message is displayed to prompt corrective action.

Users are advised not to edit the "Inputs" tab to maintain data integrity and ensure the tool functions as intended. However, if the **tool administrator** wishes to modify assessment parameters (i.e., weightings), update descriptions, add new conditions, or remove solutions, these changes should be made directly in this tab. This structured approach ensures consistency across the tool and supports accurate and reliable assessment outcomes.

Once the assessment has been finalized, review all entries for completeness and consistency. If necessary, revisit scores with key personnel to refine the evaluation. The final version should be saved.

5.0 CONCLUSIONS

The Replicability Assessment Tool seeks to provide a quantitative approach to assess whether the adaptation solutions implemented during the TransformAr project can be effectively transferred to different contexts. By integrating replicability conditions and assigning weightings to reflect their relative importance, the tool provides clear insights into which conditions require the most attention to improve replicability outcomes. The structured methodology ensures transparency and supports informed decision-making. However, the tool's success relies heavily on the accuracy of the scoring provided by potential replicators, emphasizing the need for robust self-assessment practices.

It is important to note that this report is intended to serve as a guide to the Replicability Assessment Tool in Excel format and should not be interpreted as an assessment of the solutions themselves. The insights provided are intended to support users in applying the tool effectively rather than providing definitive conclusions about individual solutions.

The following sections outline key considerations for the implementation of the tool and supporting an effective replication of TransformAr solutions.

5.1 Information availability and stakeholder coordination

The effectiveness of the Replicability Assessment Tool depends on the availability and ownership of relevant data. Access to detailed information on climate risks, technical specifications, governance frameworks, and community engagement strategies is critical. The tool's reliance on self-assessment highlights the importance of clear communication and coordination among stakeholders involved in the replication process of the solution to ensure accurate scoring.

5.2 Key steps for effective use of the tool

To support the effective use of the Replicability Assessment Tool, this section outlines key steps that can guide users before and after using the tool. These include preparatory actions to ensure meaningful engagement, as well as follow-up steps to interpret results and support successful replication planning. The sequence of steps presented here is a suggested approach; users are encouraged to adapt, reorder, or expand them based on their specific context, needs, and stage in the replication process.

5.2.1 Preparatory steps for meaningful tool application

Consult TransformAr resources

To support the adaptation of replicability conditions to broader climate adaptation initiatives and to inform the successful implementation of TransformAr solutions, users are encouraged to consult the reports produced under the TransformAr Project. The specific deliverables and their use are detailed in the table below.

Table 13: TransformAr reports for potential replicators

Deliverable	Title	Description and use for potential replicators ***This deliverable can be used by potential replicators to…***
D2.6	Prioritisation of the most vulnerable regions and key community systems (KCS)[8]	Understand the analysis that was done prior to choosing appropriate solutions in each demonstrator region.

[8] (Charalampidis & Vrontisi, 2021)

Deliverable	Title	Description and use for potential replicators *This deliverable can be used by potential replicators to…*
		Potential replicators may wish to carry out similar analysis on the most vulnerable systems in their own regions to inform their transformational adaptation strategies.
D3.3	Set of adaptation transformation pathways per demo[9]	See the vision, timelines and preferred combination of transformative adaptation pathways selected for each demonstrator, thereby informing their own vision-setting of a transformational adaptation pathway comprising actions which are selected and sequenced according to critical vulnerability thresholds and tipping points of key community systems in their region.
D3.10	Dedicated toolkit and web service for Adaptive pathway transformation Playbook[10]	Guide them in the use of the adaptive pathway transformation methodology, with guidance, tools, methods, timelines, processes, and critical questions to be answered.
D4.1 – D4.5	Learning stories[11]	Benefit from the learnings of each demonstrator regarding the implementation of the solutions, and the best practices or recommendations they have perceived during implementation.
D5.1	**Final monitoring reports (not yet available)**	See the environmental impacts of tested solutions and the effectiveness of the application in the specific context of each demonstrator.
D6.3	**Catalogue of solutions (not yet available)**	See all solutions including their costs and benefits, applicability and acceptance of solutions.
D6.4	**Guidance document on transformational adaptation (not yet available)**	Understand how transformational adaptation can be achieved for their region, which steps need to be taken, what data and knowledge is needed and how that knowledge and data can be used as part of an innovation and transformation process.

Map existing capacities and gaps

Users may map existing capacities and gaps in relation to the assessed conditions. This helps identify where internal capabilities are sufficient, and where external support, partnerships, or targeted interventions are needed to improve readiness.

Engage relevant stakeholders

Users are encouraged to engage with relevant stakeholders at an early stage to assess their interest in the solution and their willingness to participate in a potential replication process. This engagement is crucial not only for gauging feasibility but also for initiating a co-development approach, which can foster local ownership, strengthen partnerships, and enhance the overall relevance of the project in its new context.

[9] (Rakotonirina & Eymard, 2023)

[10] (ACTERRA, Verhaert, et al., 2023)

[11] (Michaux, 2024; Vincent, et al., 2024; Hnátková & Hradilek, 2024; Álvarez-Cid, 2024; Vincent, et al., 2024)

Peer learning with TransformAr demonstrators

Where possible, users are encouraged to engage with TransformAr demonstrator sites to learn from their implementation experience. Peer exchanges can provide practical insights into overcoming challenges, adapting methods, and fostering local buy-in.

5.2.2 Next steps following tool application

Prioritise low-scoring, high-weighted conditions

Users should refer to the results of their replicability assessment to identify conditions where their context received low scores — particularly those that were assigned high weightings. These areas indicate potential barriers for effective replication[12] and should be prioritised for further attention, such as capacity-building, policy dialogue, or resource mobilisation. Addressing these weaker areas can substantially improve the likelihood of a successful and sustainable replication process.

Conduct a feasibility study

Conducting a feasibility study specific to the local context and the solution being assessed is strongly recommended. This study should explore technical, institutional, financial, and social factors that may affect replication. It will also help identify key enablers and barriers, supporting the design of realistic and locally grounded replication plans. The results generated by the Replicability Assessment Tool can serve as a pre-feasibility assessment, helping to structure and prioritise areas of focus for a more comprehensive feasibility study.

Develop a phased implementation strategy

The assessment results can also be used to design a phased implementation plan. Users might begin with components of the solution that align well with their current strengths, while planning to address weaker areas over time. This approach allows for early progress while building the necessary foundations for long-term success.

Integrate findings into funding proposals and planning

Users can incorporate replicability assessment results into funding applications and project design documents. Demonstrating an evidence-based understanding of contextual strengths and challenges can enhance the credibility and attractiveness of replication initiatives to funders and stakeholders.

Align with national and regional adaptation strategies

Cross-referencing the assessment results with existing national or regional climate adaptation strategies can ensure coherence with broader policy frameworks and may open up opportunities for funding and institutional support.

5.3 Recommendations for improvement of the tool

Future efforts should focus on validating the tool's performance through real-world implementation by applying it in regions interested in replicating TransformAr solutions. Pilot testing in varied contexts will be crucial in refining the tool's scoring mechanisms and ensuring its practical utility for replicators. This process will provide valuable insights that can improve the tool's accuracy and reliability.

[12] The tool is based on the assumption that the solutions implemented in the TransformAr demonstrator sites represent the most effective configuration and does not account for the possibility of alternative approaches that could yield better results.

Additionally, research should explore how replicability conditions can be adapted to broader climate adaptation initiatives to expand the tool's applicability. This would ensure that its criteria remain flexible and relevant across diverse contexts.

5.4 Limitations of the replicability assessment tool

In practice, the conditions under which a solution can be replicated are not always tangible or easily quantified. Indeed, conditions include both variable that can be quantitatively measured (e.g. financing) and those which are more qualitative, and difficult to measure (e.g. leadership capabilities, economic and political context). As a result, the Replicability Assessment Tool uses “Statements” and a likert scale against which potential replicators can assess the extent to which the statement is “true” for them.

In addition, the tool defines specific conditions for each solution, providing a detailed and tailored assessment that reflects the unique requirements and characteristics of each solution. While this enhances the precision and relevance of the assessment, it may also limit the tool’s applicability in generating broad insights across multiple solutions or contexts.

Further, the Replicability Assessment Tool remains theoretical at this stage as it has not yet been used by a potential replicator who has successfully replicated a climate change adaptation solution, they evaluated themselves against.

Results should thus be seen as an indication of potential replicability with consideration for the unique characteristics of each solution and should be supported by detailed feasibility studies in the unique local context of the potential replicator.

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APPENDIX 1

Literature review on evaluation of potential replicability

Year	Title	Author	Type
2022	Building climate resilience through nature-based solutions in Europe: A review of enabling knowledge, finance and governance frameworks	Calliari et al.	Academic
2023	White Paper A Replicability and Scalability Assessment tool Release 1.0	AIOTI	White Paper
2019	Assessing the feasibility of adaptation options: methodological advancements and directions for climate adaptation research and practice	Singh et al.	Academic
2016	On Scalability and Replicability of Smart Grid Projects—A Case Study	Sigrist et al.	Academic
2022	Guidelines for implementing Scalability and Replicability Assessment (SRA) methodology	European Commission	Guidelines
2021	Evaluating the impact of nature-based solutions	European Commission	Handbook
2021	Taking Nature-Based Solutions Programs to Scale	Salafsky et al.	Research
2014	Scaling up and Replicating Effective Climate Finance Interventions	Kato et al.	Paper

APPENDIX 2

Interview guideline used during the meetings (virtual and on-site) with stakeholders across the demonstrators conducted between January and February 2025.

1.1. Introduction

Technopolis France was commissioned to complete a retrospective of lessons learned from the TransformAr project, as well as to design a methodology to assess the replicability of the 21 climate change adaptation solutions which comprise the TransformAr project. These activities will take place between November 2024 and March 2025.

As part of the retrospective of lessons learned and to support the design of a methodology to evaluate the replicability of solutions, we are currently conducting interviews with the project owners of several TransformAr solutions. The purpose of these interviews is to have a better understanding of the solution demonstrated, the success factors and challenges during solution demonstration, and importantly the lessons learned throughout the design and implementation of the solution.

Name of respondent	
Organisation	
Role	
Interviewer	
Interview date	

1.2. Pre-interview steps

A **pre-interview communication** via email will help us identify any documents we may wish to read in advance, and to gain consent to record the interview. This will include:

- Requesting any documentation which may support in our understanding of the context prior to the interview (project plans, workshop documents etc.).
- Requesting written consent via email to record interviews to allow for accurate references to specific points. Interviewers will explain that the recording will be handled in full compliance with GDPR and will be deleted immediately upon completion of the contract.

1.3. Interview guideline

1.3.1. Introduction and Presentation

- Brief introduction of Technopolis Group and what we are trying to achieve.
- Can you introduce yourself, your organisation, and your role in the (*e.g. Egaleo*) demonstrator?

1.3.2. About the solution(s)

- Could you confirm that the following solutions were implemented in the (*e.g. Egaleo*) demonstrator?
    - *List of solutions of the demonstrators*
- Our understanding of the (*name of solution*) is… Are there any other elements or details of the solution we should be aware of? Were any changes made to the solutions compared to the original plans? If so, what were the reasons behind them? What was the impact?
- What specific climate or environmental challenges does the (*name of solution*) address?
- What factors contribute to the success of the solution in addressing those challenges?

- Could you walk me through the process of implementing your solution(s) from inception to the current stage?
- What were the key milestones in the development and implementation of your solution(s)?
- Who were the key stakeholders involved in the development and implementation of your solution?
- How did you engage with local communities?
- What is the projected timeline for the solution, and how long is it expected to remain operational? Are there plans for the solution's continuation or expansion beyond the TransformAr?

1.3.3.Lessons learned

- What went well with the solutions implemented in the (*e.g. Egaleo*) demonstrator? If possible, could you please describe this per solution.
    - *Solution 1*
    - *Solution 2*
    - …
- What did not go well with the solutions implemented in the (*name of demonstrator*)? Were there any surprises?
- What aspects of your solution do you consider innovative? Alternatively, does it build on or adapt an existing approach? Could it be considered for replicating?
- What measurable impacts or changes have been observed as a result of your solution? Are these short- or long-term impacts?
- How do you evaluate the success of your solution in achieving its goals?
- What financial or institutional mechanisms are in place to support the solution during the experimental phase and, if applicable, its implementation beyond TransformAr?
- Were there any unintended or unexpected consequences/impacts (positive or negative)?
- Did you establish any partnerships or collaborations that were critical to success? What made them effective?
    - How did you identify and engage key stakeholders during implementation?
    - What strategies were most effective in maintaining stakeholder commitment and collaboration?
    - How did you address resistance or scepticism from stakeholders?
- If you had to do the project all over again, what would you do differently?

1.3.4.Assessing the replicability of solutions

- Have you developed guidelines or frameworks to replicate the solution(s) applied in your demonstrator?
- What conditions/factors/elements need to be considered to take the decision to replicate the solution(s)?
    - What should be considered when evaluating if a solution is relevant to a specific context?
    - How did you initially assess the feasibility of implementing this solution in your context? Why did you choose to implement this solution?
    - What types of data or evidence (e.g., case studies, pilot results, impact assessments) were critical to help you test/set up the solution? (e.g., stakeholders' interest, etc.). Are there specific stakeholders (government, community groups, private sector) who must be involved at this stage? Why?
- What type of resources are needed to replicate the solution? Could you please specify them by type?

    - What types of expertise or technical knowledge are required to ensure successful implementation?
    - What are the human resource needs in terms of personnel and workload?
    - How did you ensure access to necessary funding or resources? What recommendations would you make for others seeking to do the same? Any funding sources after TransformAr?
    - What are the estimated financial costs involved in adapting and implementing this solution?
- Once the decision to replicate has been made, what factors/elements need to be considered in the preparatory phase?
    - What are the key steps in preparing to implement this solution in a new territory?
    - What baseline conditions (e.g., infrastructure, regulatory environment, community readiness) are necessary before implementation can begin?
    - What specific tools, technologies, or frameworks did you use during the preparatory phase?
    - How should potential implementers engage with local stakeholders to ensure buy-in and alignment with local needs?
- What organisational changes would it entail within the demonstrator?
- Based on your experience as a demonstrator, what are the key mistakes to avoid in order to successfully replicate the solution(s)?
- For each of your solutions, could you rate from 1 to 5 their overall replicability potential (1 being not replicable and 5 being highly replicable)? Please explain.
    - *Solution 1*
    - *Solution 2*
    - …
- What have been the key success factors that have contributed to the implementation and potential replicability of your solution(s)? Please describe these factors under the following categories:
    - Political: (e.g., stability, alignment with political priorities, support from government actors)
    - Financial: (e.g., availability of funding, cost-efficiency)
    - Governance: (e.g., policy support, institutional alignment)
    - Technical: (e.g., access to expertise, resource availability)
    - Organizational: (e.g., internal team structure, project management effectiveness)
    - Communication: (e.g., clarity of messaging, stakeholder outreach strategies)
    - Social: (e.g., stakeholder collaboration, community acceptance)
    - Environmental: (e.g., sustainability, ecological fit)
    - Other?
- What have been the key hindering factors or challenges that have affected the implementation and potential replicability of your adaptation solution? Please describe these challenges under the following categories:
    - Political: (e.g., conflicting political agendas, lack of government backing)
    - Financial: (e.g., funding constraints, high costs)
    - Governance: (e.g., lack of policy support, institutional barriers)
    - Technical: (e.g., complexity, resource limitations)
    - Organizational: (e.g., poor internal coordination, unclear roles or responsibilities)
    - Communication: (e.g., ineffective stakeholder engagement, unclear messaging)
    - Social: (e.g., resistance from stakeholders, lack of community buy-in)
    - Environmental: (e.g., ecological constraints, difficulties in adapting to local conditions)

- Other?

1.3.5.For demonstrators not planning on continuing with the solution

- What are the primary reasons for this decision?
- What resources or conditions are missing to enable the continuation of these solutions beyond the TransformAr project?

1.3.6.Further information

- What recommendations would you make to others looking to replicate this solution?
- If you were to replicate a solution—whether experimented within TransformAr or not—what information would you need to assess its replicability in your territory?
- Are there any other documents about this solution / demonstrator that may support us in identifying lessons learned and designing a methodology to assess the replicability of the solutions tested?

APPENDIX 3

Below is presented the importance of each category per thematic sectors based on the number of conditions assigned to the sector's solutions.

Awareness Raising & Behavioural Change Solutions	Number of Conditions	Percentage
Stakeholder & Community Engagement	7	18,9%
Governance & Policy	7	18,9%
Financial & Economic	5	13,5%
Technical & Infrastructure Readiness	5	13,5%
Operational	4	10,8%
Scientific & Research Expertise	3	8,1%
Social & Behavioural	2	5,4%
Environmental & Climatic	2	5,4%
Data & Analytics	1	2,7%
Monitoring & Evaluation	1	2,7%
Total	**37**	**100%**

Digital & Technological Solutions	Number of Conditions	Percentage
Technical & Infrastructure Readiness	7	18,9%
Financial & Economic	6	16,2%
Data & Analytics	4	10,8%
Stakeholder & Community Engagement	4	10,8%
Governance & Policy	4	10,8%
Scientific & Research Expertise	3	8,1%
Environmental & Climatic	2	5,4%
Planning & Risk Management	2	5,4%
Monitoring & Evaluation	2	5,4%
Operational	2	5,4%
Political & Institutional Support	1	2,7%
Total	**37**	**100%**

Governance Schemes	Number of Conditions	Percentage
Governance & Policy	4	15,4%
Stakeholder & Community Engagement	4	15,4%
Financial & Economic	4	15,4%
Scientific & Research Expertise	3	11,5%
Data & Analytics	3	11,5%
Social & Behavioural	2	7,7%
Political & Institutional Support	2	7,7%
Operational	2	7,7%
Planning & Risk Management	1	3,8%

Governance Schemes	Number of Conditions	Percentage
Environmental & Climatic	1	3,8%
Total	**26**	**100%**

Insurance Schemes And Financial Solutions	Number of Conditions	Percentage
Stakeholder & Community Engagement	4	21,1%
Financial & Economic	4	21,1%
Planning & Risk Management	2	10,5%
Scientific & Research Expertise	2	10,5%
Governance & Policy	2	10,5%
Political & Institutional Support	2	10,5%
Social & Behavioural	1	5,3%
Technical & Infrastructure Readiness	1	5,3%
Data & Analytics	1	5,3%
Total	**19**	**100%**

Nature-Based Solutions	Number of Conditions	Percentage
Stakeholder & Community Engagement	5	17,2%
Planning & Risk Management	4	13,8%
Governance & Policy	4	13,8%
Technical & Infrastructure Readiness	4	13,8%
Financial & Economic	3	10,3%
Political & Institutional Support	2	6,9%
Data & Analytics	2	6,9%
Environmental & Climatic	2	6,9%
Scientific & Research Expertise	1	3,4%
Monitoring & Evaluation	1	3,4%
Operational	1	3,4%
Total	**29**	**100%**

Climate change impacts are here and now. The impacts on people, prosperity and planet are already pervasive but unevenly distributed, as stated in the new EU Blueprint strategy (European Commission-EC, 2019). To reduce climate-related risks, the EC and the IPCC agree that transformational adaptation is essential. The TranformAr project aims to develop and demonstrate products and services to launch and accelerate large-scale and disruptive adaptive process for transformational adaptation in vulnerable regions and communities across Europe.

The 6 TransformAr lighthouse demonstrators face a common challenge: water-related risks and impacts of climate change. Based on existing successful initiatives, the project will develop, test and demonstrate solutions and pathways, integrated in Innovation Packages, in 6 territories.

Transformational pathways, including an integrated risk assessment approach are co-developed by means of 9 Transformational Adaptive Blocks. A set of 22 tested actionable adaptive solutions are tested and demonstrated, ranging from nature-based solutions, innovative technologies, financing, insurance and governance models, awareness and behavioral change solutions.

TransformAr

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