



BRIGAID

BRIDGING THE GAP FOR INNOVATIONS
IN DISASTER RESILIENCE

Policy Brief

HOW TO ENHANCE INNOVATIONS FOR CLIMATE DISASTER RESILIENCE THROUGH BRIGAID

The Test and Implementation Framework (TIF) now available!

Key issues

- Innovations are key to increase resilience to disaster and climate change; BRIGAID can help them to reach the market.
- The TIF is a standard method to assess an innovation's technical and social readiness.
- It helps innovators to identify the route ahead, bridging the gap to end-users to avoid falling in the *valley of death*.
- It helps end users compare the performance of several innovations.
- The TIF is being tested and improved in BRIGAID from a selection out of more than 75 innovations throughout Europe.
- Find out more on brigaid.eu and have a look at the selected innovations on our platform climateinnovationwindow.eu.
- For more information please contact: J.R.Moll@tudelft.nl.

Europe is particularly prone to natural hazards and evidence is now ever stronger that damages will increase in the future. Yet, many innovations have difficulties in reaching the end users, and end users have limited insight in the performance of various innovations.

Currently there is no internationally accepted framework for assessing the readiness of innovations to reduce disaster risk. To fill this gap, the H2020 BRIGAID project (BRIDging the GAP for Innovations in Disaster resilience) has developed a standard, comprehensive Testing and Implementation Framework (TIF) to help assess the technical and societal readiness of innovations. The TIF provides innovators with comprehensive guidelines and tools to evaluate the performance of an innovation to reduce risks from floods, droughts, or extreme weather in a real operational environment on a set of criteria.

Our goal is that the TIF becomes the EU quality label that can in dialogue help innovators, investors and end users to assess the effectiveness of risk reduction innovations. This policy brief explains how the TIF helps bridge the adoption gap.

This policy brief is directed towards a broad range of stakeholders, and to local, regional and national policy and decision makers in particular, who can take advantage of the benefits of using this standard to assess the readiness of innovations to enhance disaster resilience.

Improving the readiness of innovations

Many innovations are being developed to reduce the risks associated with climate change, yet a large proportion fail to reach the market.

This failure is due to a number of reasons like a lack of rigorous testing, or because innovators cannot assess whether institutions (policy and decision makers) and societies are ready to implement an innovation.

BRIGAD supports the development of the technological readiness level (TRL) of innovations by simultaneously advancing its readiness based on **technical, societal and market dimensions**.

How does the Test and Implementation Framework work?

The TIF is designed to provide innovators, investors and end users with clear guidelines to assess an innovation's technical effectiveness, societal acceptance, and socioeconomic and environmental impact.

The tool comes readymade as a comprehensive package that includes a robust theoretical frame into a toolkit format as a set of guided questions that systematically evaluates the innovation's performance based on a set of variables/criteria, as well as guidance and advice to help interpret the results from the assessment.

The TIF provides key performance indicators on the impacts to various sectors (see figure below). Also, the TIF provides guidance on the types of tests that can be used to advance the technological readiness to a more mature stage. The TIF has the advantage that it can be run early on – and then iteratively throughout the innovation development – helping innovators to modify their designs to avoid getting locked into designs that are less likely to appeal to investors and end users.

- **Technical readiness** is the performance and effectiveness of an innovation to reduce climate-related risks, as shown in field tests and in real operational environments.
- **Societal readiness** is the extent to which the innovation complies with public and private end user priorities and needs, as well as the organizational and governance requirements.
- **Market readiness** is the potential of an innovation to develop a solid business case and help attract investors.

METHOD

Societal, technical and impact assessment. Detailed background on theory and method

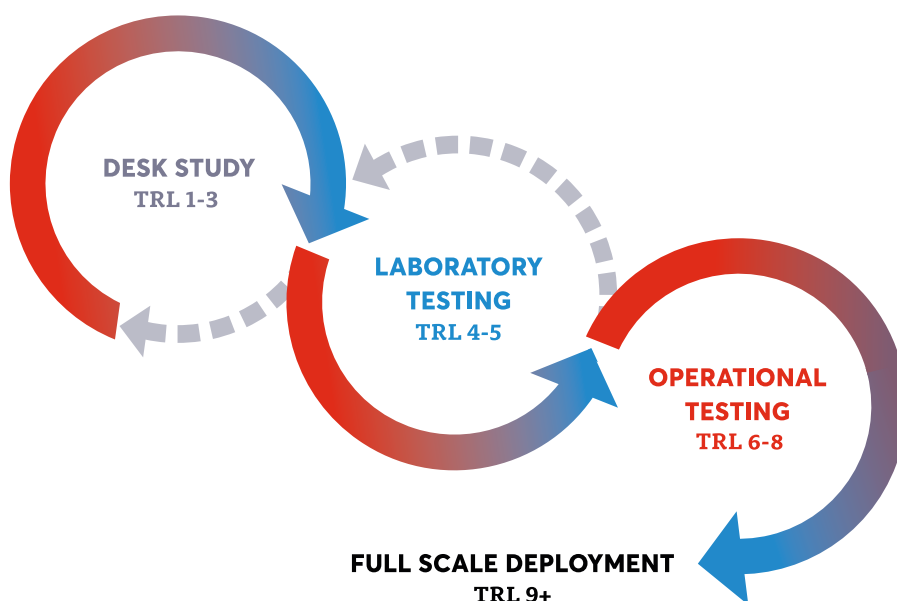
TOOLKIT

Simplified questions to evaluate overall performance and by issue

GUIDANCE

Guide to interpret the assessment results. Advice on testing and addressing concerns

Innovation's testing phases comprise desk study, laboratory testing and operational testing, where societal and technical readiness is iteratively tested

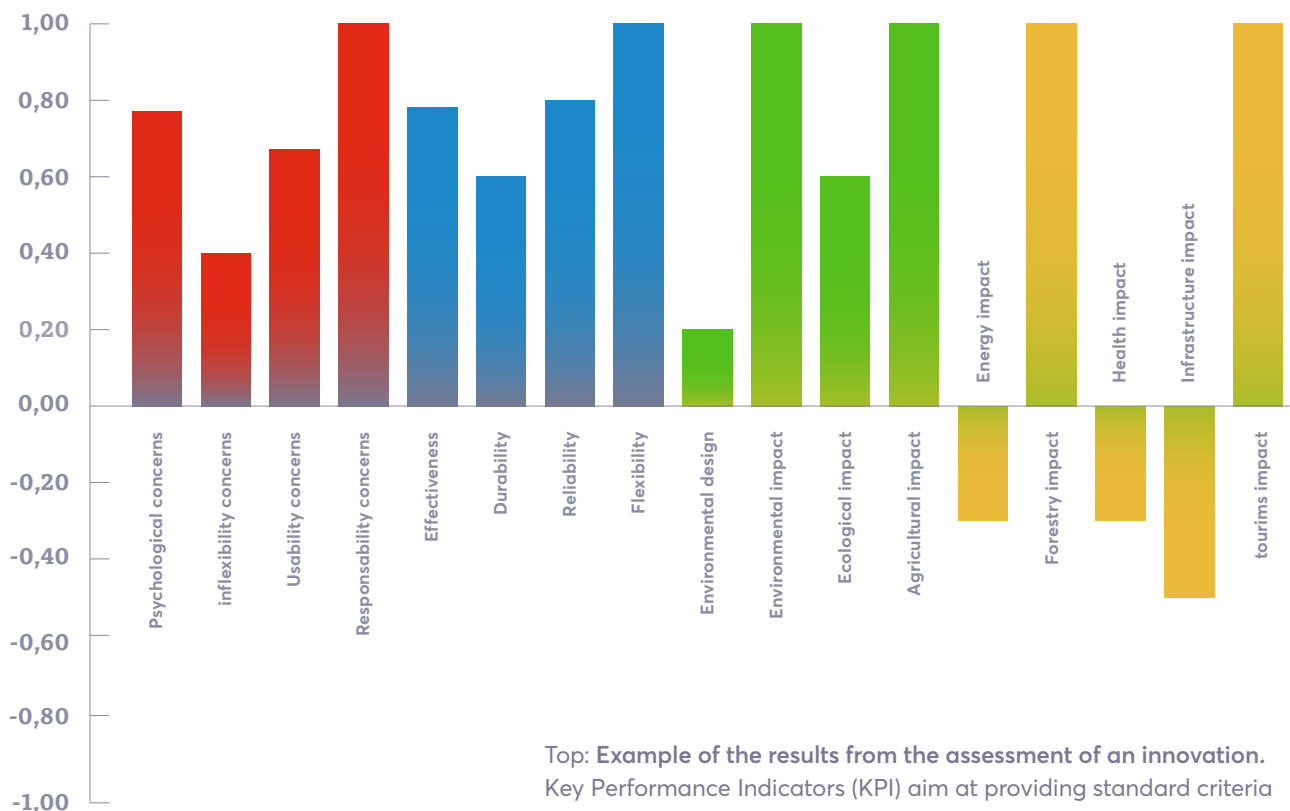
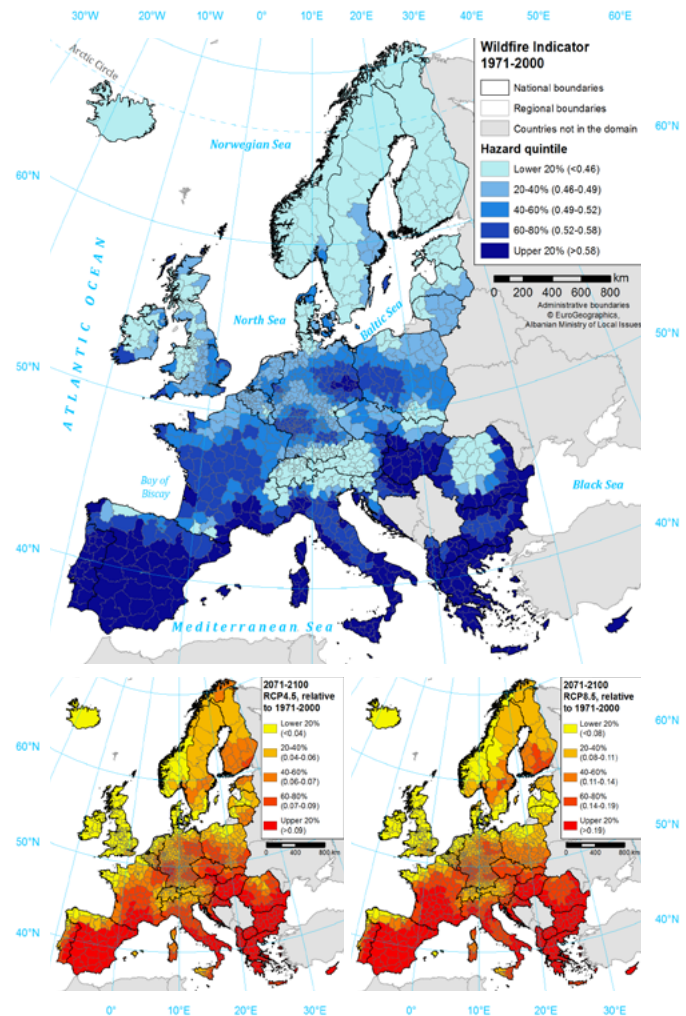


Assessing local conditions for innovations: Hazard maps

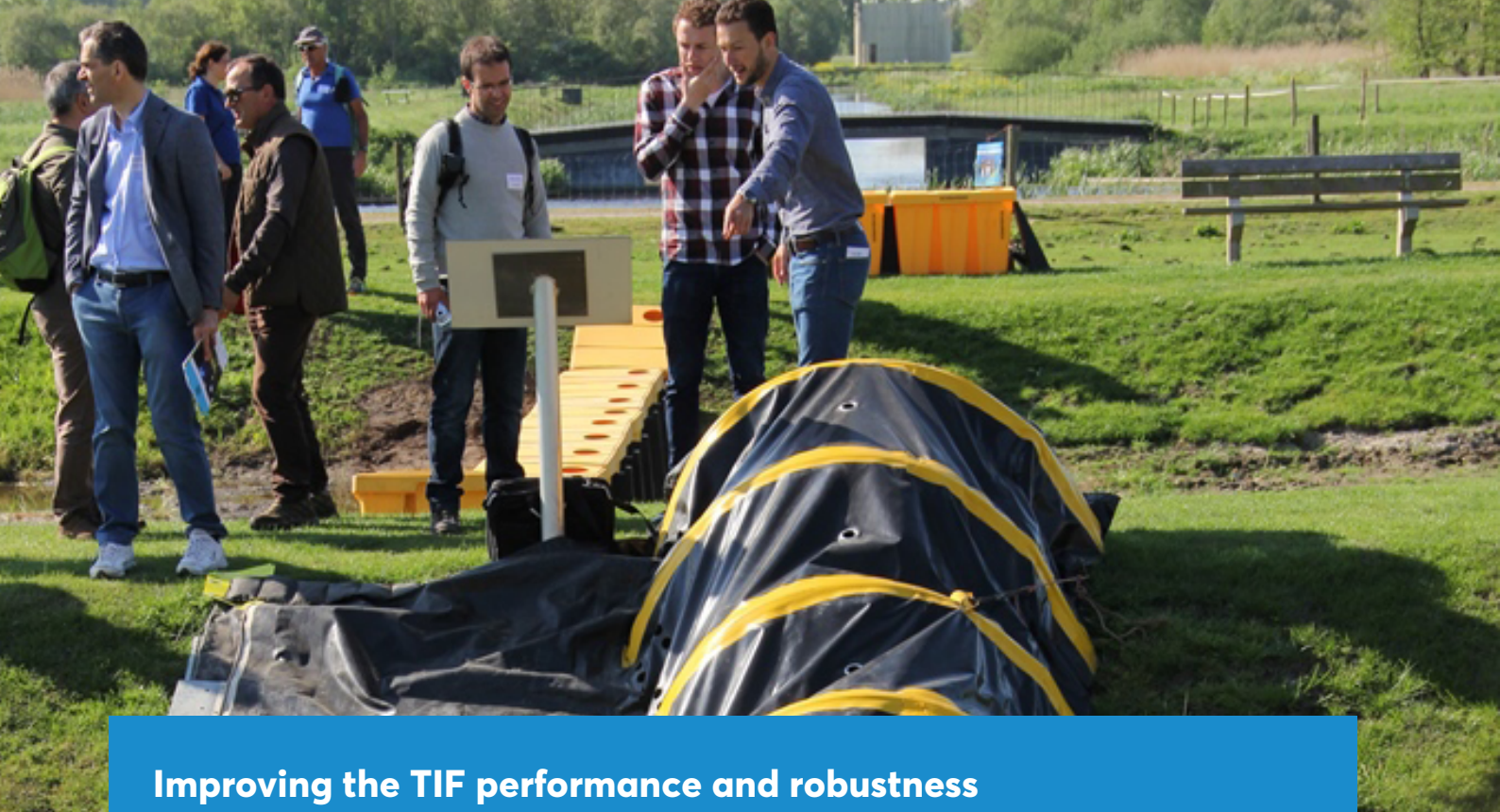
Innovations dealing with different hazards should be evaluated in a way that allows for a direct comparison on their utility. The Project has developed a set of European hazard maps (i.e. river floods, coastal floods, droughts, heavy rain, heatwaves, wind storms and wildfires) that helps innovators, investors and end users to assess regional hazard conditions.

These can be used to help identify the hazard conditions and their evolution in time and / or potential regions of interest for an innovation. Hazard Maps also provide the boundary conditions to test the innovations within the TIF.

Right: **European Hazard Map on wildfire**, which shows a strong north-south variation in the Forest Fire Danger Index with much higher wild fire hazard conditions in the drier countries of Southern Europe.



Top: Example of the results from the assessment of an innovation. Key Performance Indicators (KPI) aim at providing standard criteria to be used in assessing the social and technical readiness of each innovation.



Improving the TIF performance and robustness

The TIF approach in BRIGAIID is being applied to a broad number of innovations, including solutions against a number of hazards, i.e. floods, droughts and extreme weather.

The feedback collected from the TIF application is used to validate and fine-tune the tools.

* As an example, the picture shows the innovation *Tubebarrier*, a temporary flood defence in a real test event.

Why apply the TIF?

- Apply the TIF to assess the societal and technical readiness of innovations.
- Get an 360 view of the potential impact of the innovation- the Performance Indicators help anticipate which kind of environmental and socio-economic impacts may arise during the innovation development and implementation.
- Get feedback thanks to the TIF on the need to redesign the innovation, which may be a critical factor for an innovation's success.
- Get an easy cross-comparison of potential innovative solutions.
- Involve end-users in the co-creation of tailored solutions to their problems.
- Apply an academically rigorous TIF, which is simple enough for anyone, including those with limited technical background in the subject area.

What does the TIF package include?

- The current and future socio-technical boundary conditions across Europe
- Socio-technical Performance Indicators (PI)
- Testing protocols used to evaluate and/or quantify these Performance Indicators
- Guidelines to measure the impact of innovations on the environment and on various socio-economic sectors, including: agriculture, energy, forestry, nature/ecology/environment, health, infrastructure, and tourism
- Guidelines and tools (in the form of online questionnaires, testing templates, and spreadsheets) to create an innovation profile and assess its socio-technological readiness.



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