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ABSTRACT

ESPRESSO is a European project aiming at contributing to the definition of a new strategic vision for disaster risk reduction. It shall enable a better adaptation to climate change by opening new perspectives for research and the elaboration of public policies. ESPRESSO builds on stakeholder feedback to increase coherence among national and European approaches, find common solutions to scientific and legislative challenges and optimize crossborder crisis management.

To achieve this goal, WP4 aims at identifying best practice solutions and projects in response to the diverse challenges raised by natural hazards in terms of the organization of a territory. In this context, the ESPRESSO **Action DataBase** (ADB) has been developed by BRGM in order to solicit the support of stakeholders to share their experience and help constituting a reference database of existing practices.

To ensure accessibility, facilitate team work and encourage external inputs, a website format was chosen which can be accessed at <http://adb-espresso.brgm.fr> or via <http://www.espressoproject.eu/action-database/introduction.html>.

The final version of the ADB presented in this deliverable provides a generic structure to collect and evaluate different kind of actions arisen from the stakeholder forums, the Think Tanks, the progressive questionnaire dissemination, etc.

Keywords: action, indicators, criteria, questionnaire, database, web portal



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1 INTRODUCTION

1.1 GENERAL CONTEXT

The ESPRESSO Action Database, or ESPRESSO-ADB, is a database of initiatives and projects addressing disaster risk reduction (DRR) and climate change adaptation (CCA) created as part of the EU Horizon 2020 ESPRESSO project.

The word “action” is meant to serve as a generic term to encompass a wide variety of activities, from legislation to research projects. Actions are input into the database (accessible at <http://adb-espresso.brgm.fr> or <http://www.espressoproject.eu/action-database/introduction.html>) via a questionnaire asking the user to evaluate the effectiveness of an action of his/her professional experience. Effectiveness is approached from an angle that closely aligns with accomplishing the goals of the Sendai Framework. Hence, the questionnaire is divided into five sections, four of which correspond to the four Sendai priorities. The fifth and final section further asks the user to evaluate the action in terms of its potential for transformative change, a concept currently championed by the UN and the Belmont Forum that seeks to create lasting, sustainable change and political will.

The ESPRESSO-ADB website and database have been developed using the Drupal open-source content management system. Analysis of the ESPRESSO-ADB entries contribute to furthering DRR in the European Union and thus address the three barriers that ESPRESSO aims to overcome: What works across different territorial boundaries? How can we bring different fields of research together, particularly the DRR and CCA communities? How can we improve science-policy interfaces? The ESPRESSO-ADB is intended to be a repository of good ideas and case-studies to help answer these questions and capitalize on previous experiences to propose new solutions.

The final version of the ADB presented in this deliverable provides a generic structure to collect and evaluate different types of actions that arose from the stakeholder forums, the Think Tanks, ESPRESSO’s deliverables and literature.

1.2 CONCEPTION OF THE TOOL

The main objective of WP4 is to identify best practice solutions and projects in response to the diverse challenges raised by natural hazards in terms of the organization of a territory.

To achieve this goal, BRGM has declined the ADB following four principles:

- **SHARE:** The ADB wants to encourage stakeholders to make their professional experience available to colleagues and future risk managers. Stakeholders are invited to contribute to ESPRESSO by sharing their own experiences in managing disaster risks and adapting to climate change. Via the questionnaire developed by

BRGM, stakeholders are able to evaluate actions in terms of effectiveness and overcoming barriers.

- **DISCOVER:** The solution to a particular risk reduction or climate change adaptation challenge may already have been implemented elsewhere. The ADB enables stakeholders to search for and find out about initiatives they may not have heard of yet and learn about how others achieved their goals and created lasting change.
- **TRANSPPOSE:** The ADB proposes an evaluation of actions in terms of transferability. That means stakeholders may use the ADB to find effective and transposable solutions to their own social, cultural and geographical context and thus build a disaster risk reduction or climate change adaptation action that works for their specific region or context.
- **HARMONIZE:** In sharing their experience via the ADB, stakeholders contribute to working towards a European Union without boundaries for Disaster Risk Reduction and Climate Change Adaptation by participating in the discussion about how to reduce incoherencies and build a common approach for coordinated action.

During the first phase of the project, a preliminary structure of the database has been pre-established based on the analysis of existing knowledge from bibliography exchanges with ESPRESSO project partners.

This first prototype was provided for the Stakeholder Forum in May 2017. During and following the Forum and the Think Tank meetings, statements of stakeholders or actions discussed were detailed in the database and associated with at least one of the three ESPRESSO challenges.

1.3 OBJECTIVES OF THE ADB

The general objectives of the Action Database are to

- contribute and provide the opportunity to formalize discussions during workshops and to store relevant content in a synthetic format
- help to identify the impacts of different actions and their evolution in time once the entered information is classified using the different criteria, including some meta-data like the date of recording
- contribute to collect actions in response to sticking points identified in WPs 1 to 3.
- help to identify future research activities for the topics not mature enough to be proposed as operational solutions
- contribute to the identification of ways to mainstream and integrate these actions in laws, regulations and decision making processes.

These general objectives of the ADB demand a global database concept fulfilling certain requirements:

- The structure has to be exhaustive enough to describe, characterize, evaluate an action proposed by a stakeholder
- The criteria used in the evaluation need to be general enough to allow comprehensive situations and not too detailed to avoid a large number of cases referring to each criteria; the compromise found by the Consortium was to use criteria describing situations at national and regional level
- Each action needs to be characterized by a set of parameters (metadata) allowing quick searching and filtering (title, date of entry, author that proposes the action, thematic context, ...).
- Each action needs to be described according to its respective framework (legal, scientific,...), the thematic context (prevention, crisis, mitigation, preparedness), and its impact at the respective scale of implementation, etc.
- Each action is evaluated by indicators referring to different criteria, so that it is easy to rank the actions according to specific interest concerning one or more indicators. As detail in section 3, two different systems of evaluation have been put in place in order to fit the Sendai framework which has been adopted for the Vision Paper and to fit the SHIELD model used for the Guidelines (see §3.1).

In this way, the ADB attempts to measure an action's beneficial impact in terms of (i) its desirable outcomes for risk reduction following the Sendai framework of action 2015-2030, (ii) existing difficulties between DRR and CCA communities and topics (cf. Birkmann & von Teichmann, 2010) and (iii) the transformative change in the spirit of UNDP/UNESCAP directives.

2 DESIGN AND ARCHITECTURE

2.1 INFORMATION TECHNOLOGY: DRUPAL 7

After some discussions with IT services in BRGM, it was decided to choose Drupal 7 as the technical solution to implement the ADB. Indeed, Drupal is open-source content management software which is very flexible and modular. It allowed easy modification to the structure of the ADB to adapt the needs of the ESPRESSO project all along its duration. This aspect is important because the database was and still is to be used during different activities (forum, scenario study, think tank discussions and so on...) planned from M12 to M30. In addition, Drupal has a performant search module which is useful to navigate within the ADB entries.

The Drupal content (text fields) is supported by a database that manages the structure of the information system.

2.2 ACCESSIBILITY

To ensure accessibility and to avoid simultaneous multiple versions of the ADB, it was chosen to implement it as a web service accessible via the following links <http://adb-espresso.brgm.fr> (Fig. 1) or <http://www.espressoproject.eu/action-database/introduction.html>. Access to the website is restricted by password identification in order to check who can create new entries.

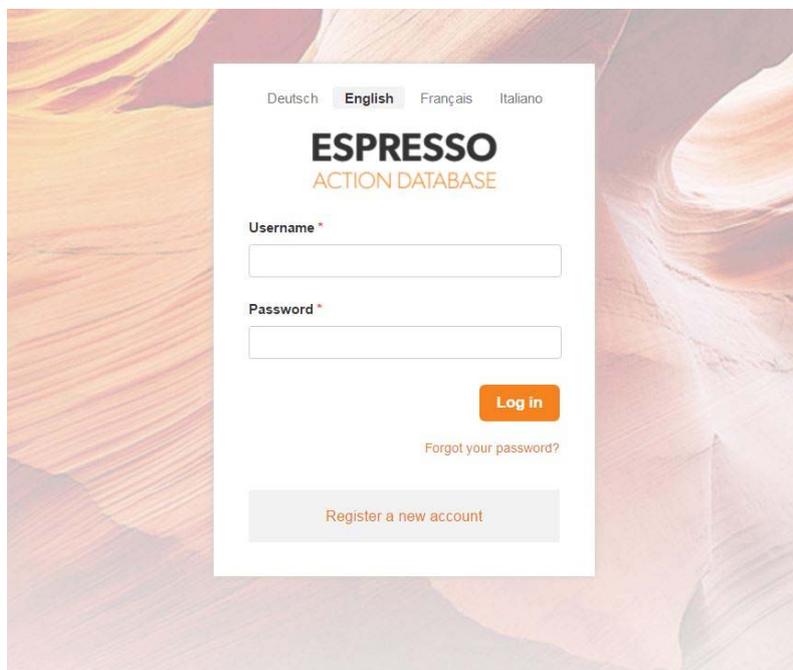
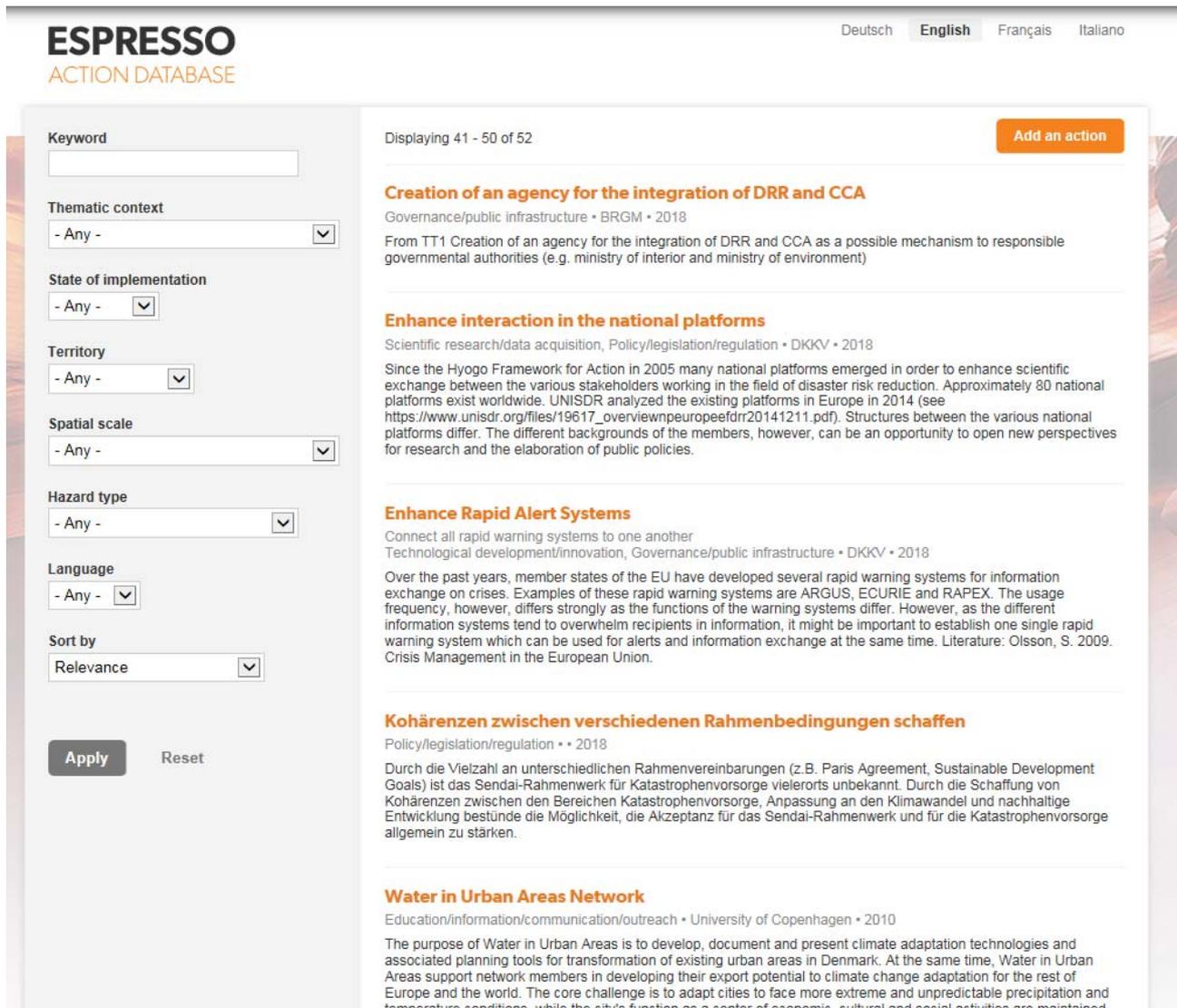


Figure 1: Access page of the ADB (<http://adb-espresso.brgm.fr>)

2.3 THE ADB WEBPORTAL

When logged in to the ADB portal (*Fig. 1*), three actions are possible: “add an action”, “consult last actions entered” and “browse through the ADB” (*Fig. 2*).



ESPRESSO
ACTION DATABASE

Deutsch **English** Français Italiano

Displaying 41 - 50 of 52 **Add an action**

Creation of an agency for the integration of DRR and CCA
Governance/public infrastructure • BRGM • 2018
From TT1 Creation of an agency for the integration of DRR and CCA as a possible mechanism to responsible governmental authorities (e.g. ministry of interior and ministry of environment)

Enhance interaction in the national platforms
Scientific research/data acquisition, Policy/legislation/regulation • DKKV • 2018
Since the Hyogo Framework for Action in 2005 many national platforms emerged in order to enhance scientific exchange between the various stakeholders working in the field of disaster risk reduction. Approximately 80 national platforms exist worldwide. UNISDR analyzed the existing platforms in Europe in 2014 (see https://www.unisdr.org/files/19617_overviewnpeuropeefdr20141211.pdf). Structures between the various national platforms differ. The different backgrounds of the members, however, can be an opportunity to open new perspectives for research and the elaboration of public policies.

Enhance Rapid Alert Systems
Connect all rapid warning systems to one another
Technological development/innovation, Governance/public infrastructure • DKKV • 2018
Over the past years, member states of the EU have developed several rapid warning systems for information exchange on crises. Examples of these rapid warning systems are ARGUS, ECURIE and RAPEX. The usage frequency, however, differs strongly as the functions of the warning systems differ. However, as the different information systems tend to overwhelm recipients in information, it might be important to establish one single rapid warning system which can be used for alerts and information exchange at the same time. Literature: Olsson, S. 2009. Crisis Management in the European Union.

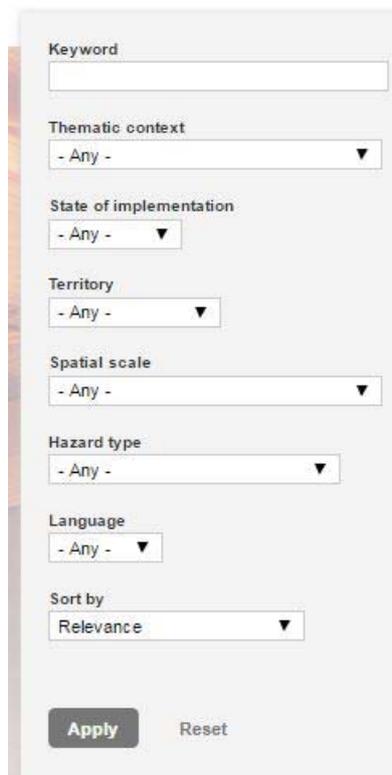
Kohärenzen zwischen verschiedenen Rahmenbedingungen schaffen
Policy/legislation/regulation • • 2018
Durch die Vielzahl an unterschiedlichen Rahmenvereinbarungen (z.B. Paris Agreement, Sustainable Development Goals) ist das Sendai-Rahmenwerk für Katastrophenvorsorge vielerorts unbekannt. Durch die Schaffung von Kohärenzen zwischen den Bereichen Katastrophenvorsorge, Anpassung an den Klimawandel und nachhaltige Entwicklung bestünde die Möglichkeit, die Akzeptanz für das Sendai-Rahmenwerk und für die Katastrophenvorsorge allgemein zu stärken.

Water in Urban Areas Network
Education/information/communication/outreach • University of Copenhagen • 2010
The purpose of Water in Urban Areas is to develop, document and present climate adaptation technologies and associated planning tools for transformation of existing urban areas in Denmark. At the same time, Water in Urban Areas support network members in developing their export potential to climate change adaptation for the rest of Europe and the world. The core challenge is to adapt cities to face more extreme and unpredictable precipitation and temperature conditions, while the city's function as a center of economic, cultural and social activities are maintained

Figure 2: Home page of the ADB portal

2.3.1 Search Module

The search module of the ADB (*Fig. 3*) allows browsing through entered actions selecting different search criteria such as the scale or the administrative level of the action, the hazard related to the action, etc.



The search module interface includes the following elements:

- Keyword:** A text input field.
- Thematic context:** A dropdown menu with the selected option "- Any -".
- State of implementation:** A dropdown menu with the selected option "- Any -".
- Territory:** A dropdown menu with the selected option "- Any -".
- Spatial scale:** A dropdown menu with the selected option "- Any -".
- Hazard type:** A dropdown menu with the selected option "- Any -".
- Language:** A dropdown menu with the selected option "- Any -".
- Sort by:** A dropdown menu with the selected option "Relevance".
- Buttons:** "Apply" and "Reset" buttons at the bottom.

Figure 3: Search module of the ADB

2.3.2 Add an action

The “Add an action” button is situation on the top right of your page (*Fig. 4*) and leads you to the action page.

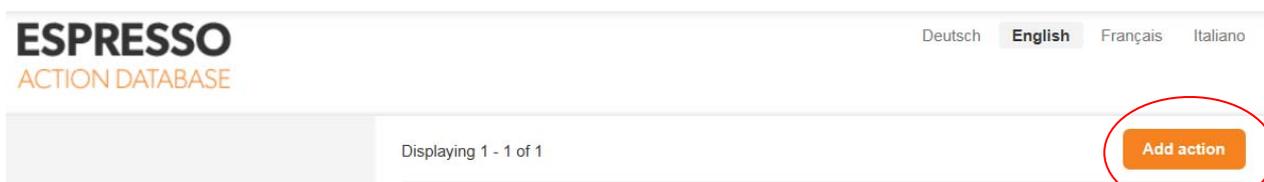


Figure 4: "Add action" button location

On the action page, the ADB fields have been divided into two main categories: the general information (following section) on the action and the evaluation.

3 THE CHOICE OF INDICATORS

The definition of an action is a broad one: any programme, project or initiative dealing with disaster risk reduction and climate change adaptation can be considered. The actions we are interested in relate to (i) a variety of types (scientific research projects, codes, legislation, financial instruments, land use plans...), (ii) a variety of scales (from municipal to European) and (3) a variety of challenges (DRR, CCA, transboundary issues, science-policy interface...).

This large range of possible actions was guiding the choice of criteria describing and evaluating an action. BRGM wanted to ensure that a maximum number of stakeholders could identify themselves with the criteria and respond to a majority of them during the evaluation process. From the three challenge reports of the ESPRESSO project and from informal exchanges with stakeholders during the preparatory phase of the ADB it became clear that many criteria useful for the evaluation of an action were directly linked to guidelines formulated in the Sendai framework of action 2015-2030.

Synthesizing gaps and existing challenges from an extensive literature review and return or experience reports, BRGM has combined these results with the Sendai guidelines to develop a questionnaire around 7 content sections. Detailed content can be found in the appendix to this document. This questionnaire is aimed at collecting the stakeholder's experience on particular actions.

3.1 THE QUESTIONNAIRE STRUCTURE

The first section "Participant's information" collects basic data about the person filling in the questionnaire, such as the host institution during the project, the area of expertise, the level of involvement in the project, ...

The second section collects basic information about the action. It includes title and acronym of the action as well as its thematic context, a short description, countries involved, spatial scale, ...

Sections 3 to 7 relate to criteria outlined in the Sendai framework of action and are entitled, respectively as "Risk evaluation and understanding", "Optimizing governance", "Investment for increasing resilience", "Improvement of response", and "Potential for transformative change". And criteria can also illustrate the SHIELD model which depicts recommendations for optimizing risk capabilities in terms of disaster risk governance (see §3.3 for more details). It includes recommendations for **S**haring knowledge, **H**armonizing capacities, **I**nstitutionalizing coordination, **E**ngaging stakeholders, **L**everaging political commitment and **D**eveloping communication.

The general information refers to the meta-data context blocks of the conceptual structure. This part integrates fields of information concerning the participating person entering information into the ADB. The second part relates to the action itself.

The “Participant’s information” section asks for:

- Language of submission
- Family name / first name
- Email address
- Host institution during the project
- Area of expertise / professional role / SIM code
 - o Communication (Media, Weather Forecast, Scientific communication, transboundary platforms, disaster relief networks)
 - o Planning (Resilience / evacuation plan, Post-event survey, land use plan, risk assessment / hazard mapping)
 - o Transport (road and rail, airports)
 - o Science (Universities / research institutes, consultancies)
 - o Government (European, National, Regional, Local)
 - o Military / law and order (Police / law enforcement, military)
 - o Finance (Insurance / reinsurance, banks, research funds (international and national))
- Level of involvement in the action
 - o Direct involvement
 - o End-user
 - o Sponsor / client
 - o External observer
- Date of the questionnaire entry in the ADB
- Source of the information entered into the ADB
 - o Professional experience
 - o Project report or other deliverable
 - o Scientific publication
 - o Literature
 - o Forum
 - o Think tank

The “basic information about the action” – section demands the following details:

- Title of the action
- Acronym of the action
- Indicate whether the action is considered in its entirety or only a specific part of it
- Starting date and end date (real or provisional)
- Thematic context of the action
 - o Funding scheme/financial instrument
 - o Technological development/innovation
 - o Education/information/communication/outreach
 - o Governance/public infrastructure
 - o Scientific research/data acquisition
 - o Policy/legislation/regulation
 - o Other
- Description of the action
- State of progress of the action (proposal, ongoing, completed, aborted)
- Territories concerned by the action (France, Germany, United Kingdom, Italy, Denmark, Switzerland, Other)
- Spatial scale of the action (Local, municipal, departmental, regional, national, plurinational, European, Pan-European, World)
- Type of hazards concerned by the action (Riverine flood, storm surge/coastal inundation, groundwater flooding, storm, earthquake, volcanic eruption, ground instability, tsunami, forest fire, drought, cascading effects, other)
- Language in which documents concerning the action have been published (English, French, Italian, German, Danish, Other)

For a detailed presentation of the structure and the web implementation of the ESPRESSO-ADB please refer to deliverable D4.1 “Technical note: The Action Database in English”, D4.3 “Technical note: The Action Database in French, German and Italian” or D4.2 “Final version of the ADB”.

The following table summarizes in more detail the content of sections 3 to 7 and provides main references used to determining the relevant criteria for each section that are presented in form of questions.

Table 1: The ESPRESSO-ADB questionnaire structure and major references

SECTION 3:	Major references considered for the choice of criteria (non exhaustive)
RISK EVALUATION AND UNDERSTANDING	
<p>1. Does the action have an impact on the fundamental scientific understanding of natural risks and/or climate change?</p> <p>2. Please evaluate the action's influence on transparency and public access to non-sensitive natural risk and/or climate change data</p> <p>3. Is the action able to federate different fields of expertise?</p> <p>4. Does the action contribute to create, enrich or improve data contents?</p> <p>5. Does the action have an impact on local risk culture or risk memory among the population?</p> <p>6. Does the action integrate local and indigenous knowledge?</p>	<ul style="list-style-type: none"> • Brasseur, G. P., & Gallardo, L., 2016. Climate services: Lessons learned and future prospects. <i>Earth's Future</i>, 4(3), 79-89 • Gattuso, J. P., Magnan, A., Billé, R., Cheung, W. W., Howes, E. L., Joos, F., ... & Hoegh-Guldberg, O., 2015. Contrasting futures for ocean and society from different anthropogenic CO2 emissions scenarios. <i>Science</i>, 349(6243), aac4722 • Hinkel, J., Jaeger, C., Nicholls, R. J., Lowe, J., Renn, O., & Peijun, S., 2015. Sea-level rise scenarios and coastal risk management. <i>Nature Climate Change</i>, 5(3): 188-190 • Le Cozannet, G., Ait-Kaci, A., Colas, S., De Lacaze, X., Lecacheux, S., Mirgon, C., ... & Oliveros, C., 2013. Recent GIS based national assessments of climate change consequences in France: methods, results and lessons learnt. <i>Journal of Coastal Research</i>, 65(sp2): 1421-1426 • Le Cozannet, G., Garcin, M., Bulteau, T., Mirgon, C., Yates, M. L., Méndez, M., ... & Oliveros, C., 2013. An AHP-derived method for mapping the physical vulnerability of coastal areas at regional scales. <i>Natural Hazards and Earth System Sciences</i>, 13(5), 1209 • Mercer, J., I. Kelman, L. Taranis, and S. Suchet-Pearson., 2010. Framework for integrating Indigenous and scientific Knowledge for Disaster Risk Reduction. <i>Disasters</i> 34: 214–239 • Weichselgartner, J., and P. Pigeon, 2015. The role of knowledge in disaster risk reduction. <i>International Journal of Disaster Risk Science</i> 6:107–116. DOI 10.1007/s13753-015-0052-7 • White, G., Kates, R. W. and Burton, I., 2001. Knowing Better and Losing Even More: the Use of Knowledge in Hazards Management. <i>Global Environmental Change, Part B: Environmental Hazards</i> 3 (3–4): 81–92.

SECTION 4:

OPTIMISING GOVERNANCE

<p>7. Does the action contribute to integrating scientific research into public policy or decision making process?</p>	<ul style="list-style-type: none"> • CCD, 2008c. Links between disaster risk reduction, development and climate change. CCD, Geneva, Stockholm.
<p>8. Please evaluate the action's impact on improving the coordinated cooperation between various institutions/organizations from DRR and CCA?</p>	<ul style="list-style-type: none"> • Dandoulaki, M., Karymbalis, T., Melissourgou, G. and Skordili, S., 2014. From decision to implementation: Barriers and bridges for implementing mitigation and adaptation measures and strategies in times of financial, institutional and political crisis. Know-4-DRR Deliverable 2.4. [online] www.know4drr.polimi.it
<p>9. Does the action contribute to improving the quality control of norms and standards relating to disaster risk reduction and/or climate change adaptation?</p>	<ul style="list-style-type: none"> • Dandoulaki, M., Karymbalis, T., Melissourgou, G., Skordili, S. and Valkanou, K., 2014. Analysis of main fragmentation issues within different stakeholder groups – Part 4. Knowledge in the private sector and the civil society. Know-4-DRR Deliverable 1.2. [online] www.know4drr.polimi.it
<p>10. Please evaluate the action's contribution in reducing incoherence between existing legal, normative and contractual references in the field of disaster risk reduction and/or climate change adaptation, including between different countries.</p>	<ul style="list-style-type: none"> • Gaillard, J. C., and Mercer, J., 2012. From Knowledge to Action: Bridging Gaps in Disaster Risk Reduction. Progress in Human Geography. doi. 10.1177/0309132512446717
<p>11. What is the action's contribution towards reducing incoherencies in the management of different natural hazards in view of an evolution towards a multi-hazard approach?</p>	<ul style="list-style-type: none"> • Menoni, S., Weichselgartner, J., Dandoulaki, M., Valkanou, N., Jimenez, M. J., Garcia Fernandez, M., Kienberger, S., Spiekermann, R., Pigeon, P., Briones, F., Norton, J. and Nussbaum, R., 2014. Enabling knowledge for disaster risk reduction and its integration into climate change adaptation. Input paper prepared for the Global Assessment Report on Disaster Risk Reduction 2015.
<p>12. How does the action contribute towards integrating civil society and local business/private sector in decision making processes?</p>	<ul style="list-style-type: none"> • O'Brien, K., Sygna L., Leichenko, R., Adger, W.N., Barnett, J., Mitchell, T., Schipper, L., Thanner, T., Vogel, C., Mortreux, C., 2008. Disaster risk reduction, climate change and human security—a study for the Foreign Ministry of Norway. GECHS (Global Environmental change and human security) Project. http://www.gechs.org/downloads/GECHS_Report_3-08.pdf
<p>13. Does the action contribute to building or maintaining the expertise, knowledge and/or skills among public bodies?</p>	<ul style="list-style-type: none"> • Spiekermann, R., Kienberger, S., Norton, J., Briones F. and Weichselgartner J., 2015. The Disaster-Knowledge Matrix – Reframing and evaluating the knowledge challenges in disaster risk reduction. International Journal of Disaster Risk Reduction 13: 96-108

SECTION 5:

INVESTMENT FOR INCREASING RESILIENCE

<p>14. What is the action's contribution to ensure the funding of new initiatives and equipment (retrofit of critical infrastructure, building of laboratories, implementation of outreach programmes...)?</p> <p>15. How would you describe the action's impact on promoting public and private actors' self-investment in preventing and reducing disaster risk or adapting to climate change?</p> <p>16. Please evaluate the action's contribution to risk sharing/transfer via appropriate financial instruments (insurance, etc.)</p> <p>17. How does the action contribute to economic development (innovation, new markets, job creation)?</p> <p>18. Please evaluate the action's contribution to reducing social vulnerability by decreasing poverty and developing social safety nets?</p> <p>19. Disadvantaged and/or socially isolated groups (children/senior citizens/people with disabilities, racial/sexual/religious minorities) have specific needs in terms of risk prevention. Does the action account for these needs?</p>	<ul style="list-style-type: none"> • ASca, Ledoux Consultants, 2012. L'agence de l'eau Seine-Normandie et la gestion du risque inondation : Quelle stratégie de positionnement ? Synthèse stratégique, Agence de l'eau Seine Normandie, Nanterre, France • Blaikie, P., Cannon, T., Davis, I. and Wisner, B., 2014. At Risk: Natural Hazards, People's Vulnerability and Disasters. Routledge, 2014, 496 p. • CCD, 2008a. Incentives and constraints to climate change adaptation and disaster risk reduction—a local perspective. Commission on Climate Change and Development (CCD), Stockholm • Clark, P. U., Shakun, J. D., Marcott, S. A., Mix, A. C., Eby, M., Kulp, S., ... & Schrag, D. P., 2016. Consequences of twenty-first-century policy for multi-millennial climate and sea-level change. Nature Climate Change • Chantry, J., G., 2015. The "Living Lab" experience: knowledge transfer between stakeholders in central Vietnam faced with regular typhoons and floods. KNOW-4-DRR Task 3.2 Final report. [online] www.know4drd.polimi.it • Jha, A.K., 2010. Safer Homes, Stronger Communities: A Handbook for Reconstructing after Natural Disasters. World Bank Training Series, World Bank Publications 2010, 404 p. • Kreimer, A., Arnold, M. and Carlin, A., 2003. Building safer cities: the future of disaster risk, available at: http://www.preventionweb.net/files/638_8681.pdf • Negre, E., C. Rosenthal-Sabroux, and M. Gasco (2015). A knowledge- based conceptual; vision of smart city. IEEE, 48th Hawaii International Conference on System Sciences. DOI 10.1109/HICSS.2015.279; Norton • Sendai Framework of Action
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SECTION 6:

IMPROVEMENT OF RESPONSE

<p>20. Does the action contribute to establishing or improving early warning systems, including via the implementation of crisis simulation exercises?</p> <p>21. Does the action contribute to better identifying and quantifying the impacts of natural disasters, particularly long term effects?</p> <p>22. Does the action contribute to creating opportunities for reducing vulnerability during the post-disaster reconstruction phase? (Build Back Better)</p> <p>23. Please evaluate the action's contribution to facilitating emergency response and population evacuation in the event of a crisis</p> <p>24. Please evaluate the action's impact on the timespan needed for the restoration of critical facilities and services (transportation, healthcare, energy...)</p>	<ul style="list-style-type: none"> • Baker, D., Refsgaard, K., 2007. Institutional development and scale matching in disaster response management, <i>Ecological Economics</i>, 63(2–3): 331-343 • Chakravarty, A.K., 2011. A contingent plan for disaster response, <i>International Journal of Production Economics</i> 134(1): 3-15 • Hill, B., 2010. Diagnosing co-ordination problems in the emergency management response to disasters, <i>Interacting with Computers</i>, Volume 22(1): 43-55 • Kunz, N., Reiner, G. and Gold, S., 2014. Investing in disaster management capabilities versus pre-positioning inventory: A new approach to disaster preparedness, <i>International Journal of Production Economics</i> 157: 261-272 • Rawls, C.G. and Turnquist, M.A., 2010. Pre-positioning of emergency supplies for disaster response, <i>Transportation Research Part B: Methodological</i> 44(4): 521-534 • Scott DM, Novak DC, Aultman-Hall L, Guo F. Network robustness index: A new method for identifying critical links and evaluating the performance of transportation networks. <i>Journal of Transport Geography</i> 2006; 14(3): 215-227. • Taniguchi, E., Ferreira, F., Nicholson, A., 2012. A Conceptual Road Network Emergency Model to Aid Emergency Preparedness and Response Decision-Making in the Context of Humanitarian Logistics, <i>Procedia - Social and Behavioral Sciences</i> 39: 307-320 • Wex, F., Schryen, G., Feuerriegel, S., and Neumann, D., 2014. Emergency response in natural disaster management: Allocation and scheduling of rescue units, <i>European Journal of Operational Research</i> 235(3): 697-708 • Yan, S. and Shih, Y.-L., 2009. Optimal scheduling of emergency roadway repair and subsequent relief distribution, <i>Computers & Operations Research</i> 36(6): 2049-2065
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SECTION 7:

POTENTIAL FOR TRANSFORMATIVE CHANGE

<p>25. Does the action enhance political will to act on disaster risk reduction and/or climate change adaptation?</p> <p>26. Please evaluate the action's contribution to promote local population's involvement in disaster risk reduction and/or climate change adaptation activities</p> <p>27. Is the action supported and approved by the concerned public?</p> <p>28. Is the action sustainable from an economic point of view (e.g. maintenance cost)?</p> <p>29. Does the action account for environmental sustainability (respect and preservation of natural landscape, biodiversity, ecosystems, soil and water quality...)?</p> <p>30. Does the action explicitly take into account climate change issues?</p>	<ul style="list-style-type: none"> • CCD, 2008b. Overview of adaptation mainstreaming initiatives. CCD, Stockholm • Collier, W.M., Jacobs, K.R., Saxena, A., Baker-Gallegos, J., Carroll, M., and Yohe, G.W., 2009. Strengthening socio-ecological resilience through disaster risk reduction and climate change adaptation: Identifying gaps in an uncertain world. <i>Environmental Hazards</i> 8(3): 171-186. • Cutter, S, Gall, M. 2008. Hurrikan Katrina: Gescheitertes Planen oder geplantes Scheitern? In: Felgentreff C, Glade T (eds) <i>Naturrisiken und Sozialkatastrophen</i>. Spektrum, Berlin • German Adaptation Strategy to Climate Change, 2008. The German Government. http://www.bmu.de/files/pdfs/allgemein/application/pdf/das_gesamt_bf.pdf • Greater London Authority, 2008. The London climate change adaptation strategy. Draft report. Greater London Authority, London • Handmer, J., 2009. Adaptive capacity: what does it mean in the context of natural hazards. In: Schipper ELF, Burton I (eds) <i>Adaptation to climate change—the Earthscan Reader</i>. Earthscan, London, pp 213–227 • Jones, L., Jaspars, S., Pavanello, S., Ludi, E., Slater, R., Arnall, A., Grist, N., and Mtisi, S., 2010. Responding to a changing climate: How disaster risk reduction, social protection and livelihoods approaches promote features of adaptive capacity. <i>Overseas Development Institute Working Paper 319, ODI Working Papers (Online) ISSN 1759 2917</i>, 27 p. • Le Masurier, J., 2006. International reconstruction experience: Study tours to USA and Japan. <i>Resilient Organisations Research Report</i>, 2006. http://www.resorgs.org.nz/pubs.shtml • Le Masurier, J., Wilkinson, S., 2006. Barriers to post disaster reconstruction: Report on workshop. <i>Resilient Organisations Research Report</i>, 2006. http://www.resorgs.org.nz/pubs.shtml • Moench, M., 2009. Adapting to climate change and the risks associated with other natural hazards: methods for moving from concepts to
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<p>31. Is the action transferable to a different territorial, national or cultural context?</p> <p>32. Is the action transferable to a different spatial or temporal scale?</p>	<p>action. In: Schipper, E.L.F., Burton, I. (eds), <i>Adaptation to climate change—the Earthscan Reader</i>. Earthscan, London, pp 249–280</p> <ul style="list-style-type: none"> • Myburgh, D., Wilkinson, S., Seville, E., 2008. <i>Post disaster reconstruction research: An industry update</i>. Resilient Organisations Research Report, 2008. http://www.resorgs.org.nz/pubs.shtml • Rotterdam Climate Initiative, 2009. <i>Rotterdam climate proof—the Rotterdam challenge on water and climate adaptation</i>. http://www.rotterdamclimateinitiative.nl/documents/RCP/English/RCP_adaptatie_eng.pdf • Smith, J.B., Klein, R.J.T. and Huq, S., 2003. <i>Climate Change, Adaptive Capacity and Development</i>. London: Imperial College Press. • Smithers, J. and Smit, B., 1997. <i>Human Adaptation to Climate Variability and Change</i>. <i>Global Environmental Change</i> 7(2): 129-146. • UKCIP (Climate Impacts Programme), 2009. <i>Adapting to climate change in England: a framework for action</i>. http://www.ukcip.org.uk/index.php
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This structure organizes the content of each action proposed by the stakeholders during the ESPRESSO networking activities.

3.2 EVALUATION OF THE ACTION

Actions are input into the database via a questionnaire asking the user to evaluate the effectiveness of an action of his/her professional experience. Effectiveness is approached from an angle that closely aligns with accomplishing the goals of the Sendai Framework and of the SHIELD model. Hence, the questionnaire is divided into five sections, four of which correspond to the four Sendai priorities. The fifth and final section further asks the user to evaluate the action in terms of its potential for transformative change, a concept currently championed by the UN and the Belmont Forum that seeks to create lasting, sustainable change and political will.

The questionnaire proposes a range of possible answers to each question. For most questions the user can evaluate the action’s beneficial impact on a scale of 7 levels (very strong impact, strong impact, moderate impact, weak impact, very weak impact, no particular impact, negative impact) plus an option “I don’t know / I don’t wish to answer”.

Database entries were exported mid-April 2018 into data analysis software for mathematical and statistical data processing.

3.3 SCORING OF THE ACTION

Actions are scored according to the five categories of the assessment questionnaire and also according to seven categories related to the SHIELD model adopted for the ESPRESSO guidelines structure. To create this new categories, 25 out of the 32 criteria were used and rearranged (Table 2).

Table 2: Criteria used for the SHIELD model categories

SHIELD model categories	Criteria used
From Disaster Risk Management to Disaster Risk Governance	<ul style="list-style-type: none"> • Please evaluate the action's contribution in reducing incoherence between existing legal, normative and contractual references in the field of disaster risk reduction and/or climate change adaptation, including between different countries • Does the action contribute to integrating scientific research into public policy or decision making process? • Does the action contribute to creating opportunities for reducing vulnerability during the post-disaster reconstruction phase? (Build Back Better)
Sharing Knowledge	<ul style="list-style-type: none"> • Is the action able to federate different fields of expertise? • Does the action contribute to integrating scientific research into public policy or decision making process? • Does the action integrate local and indigenous knowledge? • Does the action have an impact on the fundamental scientific understanding of natural risks and/or climate change? • Does the action contribute to create, enrich or improve data contents? • Does the action contribute to better identifying and quantifying the impacts of natural disasters, particularly long term effects?
Harmonizing Capacities	<ul style="list-style-type: none"> • Does the action contribute to building or maintaining the expertise, knowledge and/or

	<p>skills among public bodies?</p> <ul style="list-style-type: none"> • Does the action contribute to improving the quality control of norms and standards relating to disaster risk reduction and/or climate change adaptation? • Does the action contribute to establishing or improving early warning systems, including via the implementation of crisis simulation exercises?
<p>Institutionalizing Coordination</p>	<ul style="list-style-type: none"> • Please evaluate the action's impact on improving the coordinated cooperation between various institutions/organizations from DRR and CCA? • What is the action's contribution towards reducing incoherencies in the management of different natural hazards in view of an evolution towards a multi-hazard approach?
<p>Engaging Stakeholders</p>	<ul style="list-style-type: none"> • How does the action contribute towards integrating civil society and local business/private sector in decision-making processes? • Does the action integrate local and indigenous knowledge? • How would you describe the action's impact on promoting public and private actors' self-investment in preventing and reducing disaster risk or adapting to climate change? • Please evaluate the action's contribution to promote local population's involvement in disaster risk reduction and/or climate change adaptation activities • Is the action transferable to a different territorial, national or cultural context? • Is the action transferable to a different spatial or temporal scale?
<p>Leveraging Political Commitment</p>	<ul style="list-style-type: none"> • Does the action enhance political will to act on disaster risk reduction and/or climate change adaptation? • What is the action's contribution to ensure the funding of new initiatives and equipment (retrofit of critical infrastructure, building of laboratories, implementation of outreach programmes...)? • Please evaluate the action's contribution to risk sharing/transfer via appropriate financial

	<p>instruments (insurance, etc.)</p> <ul style="list-style-type: none"> Is the action sustainable from an economic point of view (e.g. maintenance costs)?
Developing Communication	<ul style="list-style-type: none"> Please evaluate the action's influence on transparency and public access to non-sensitive natural risk and/or climate change data - Does the action have an impact on local risk culture or risk memory among the population? Is the action supported and approved by the concerned public?

Each action of the ADB is scored over the 12 categories (Extended Sendai and SHIELD model framework). For each category, the score is the mean of scores obtained for each criterion.

When a criteria is not answered or answered with the “I don’t know / I don’t wish to answer”, the mean is calculated on the other criteria of the category (Table 3).

Table 3: Example of score calculation for the action “Have greater coherency and efficiency of funding mechanism” and for the “Risk evaluation and understanding” category.

Criteria of the “Risk evaluation and understanding” category					
Does the action have an impact on the fundamental scientific understanding of natural hazards and/or climate change?	Please evaluate the action's influence on transparency and public access to natural risk and/or climate change data?	Is the action able to federate different disciplines (physical/engineering/social science, jurisdiction, politics...)?	Does the action contribute to create, enrich or improve data content?	Does the action have an impact on local risk culture or population's risk memory?	Does the action integrate local and indigenous knowledge?
5	2	5	2	2	Don't know
Score calculation : $(5+2+5+2+2)/5 = 3,2$					

For each action the scores are presented on 2 radar charts (Figure 5, Figure 6).

Extended Sendai framework

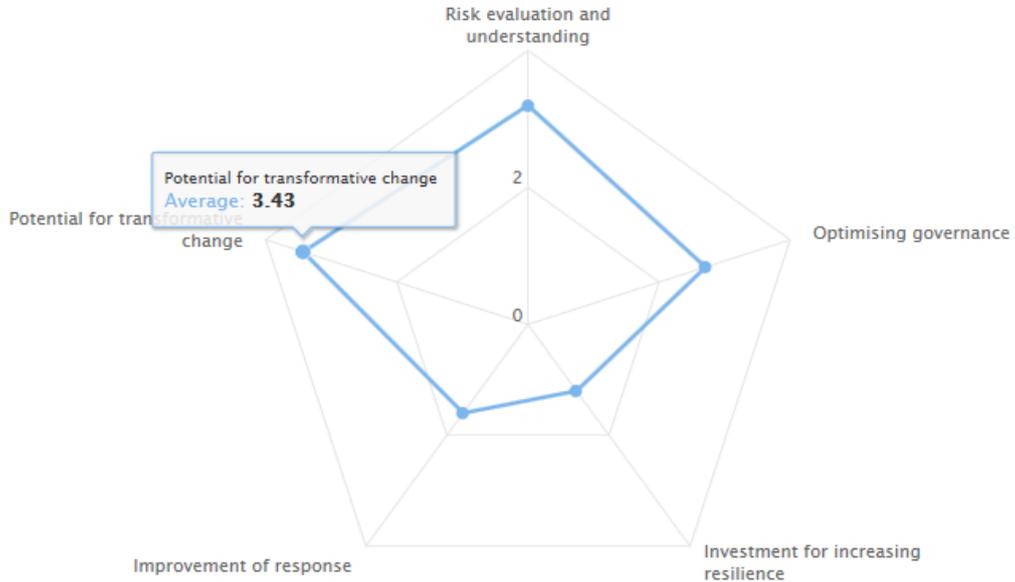


Figure 5: Radar chart with scores of action for the Extended Sendai Framework criteria

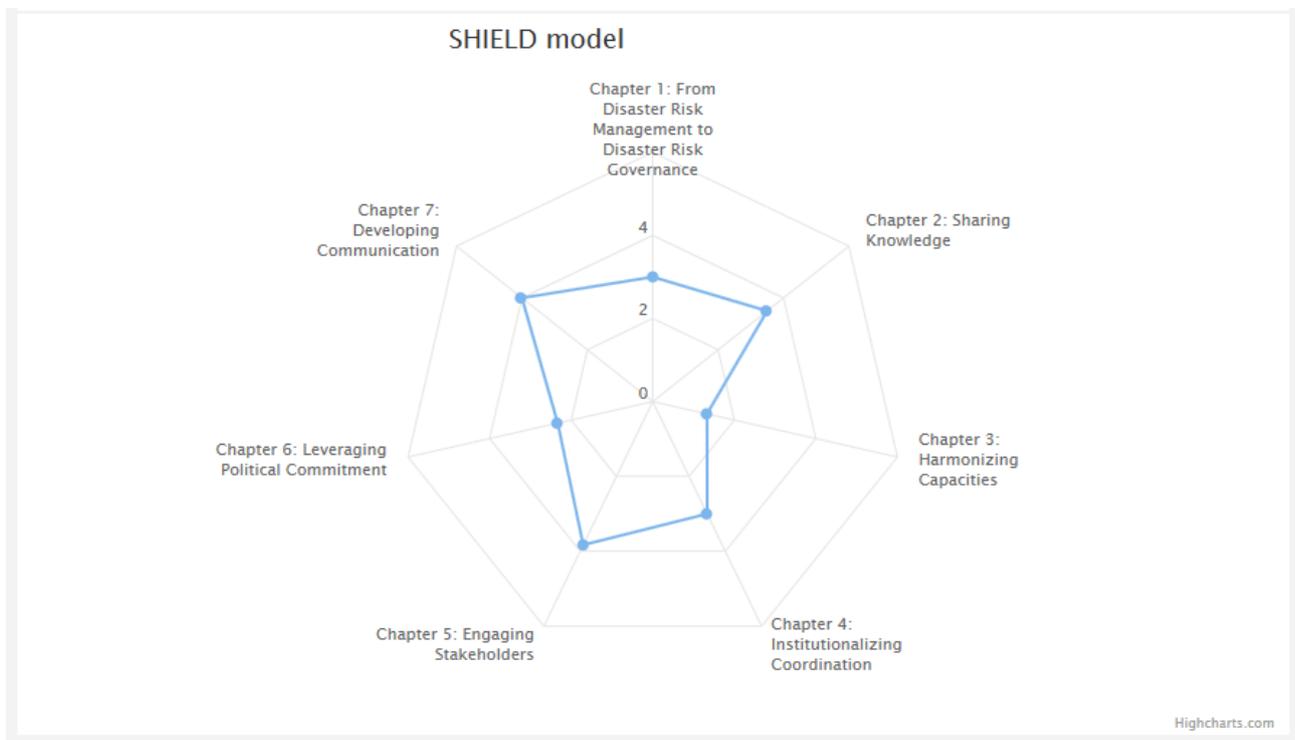


Figure 6: Radar chart with scores of action for the SHIELD model criteria

4 ADB CONTENT

88 actions have already been implemented in the ADB. This number is to increase with upcoming ESPRESSO results (Think Tank 3, questionnaire results, etc.). To now, the actions concerns mainly ESPRESSO Challenge 1 (Figure 7) and very few actions address Challenge 2. This is partly due to the calendar of project as Think Tank 3 addressing Challenge 2 was organized almost at the due date of this deliverable. Because ADB will be used to support recommendations sections of the Espresso's Guidelines and Vision paper, a final version will be used, completed by Think Tank 3 inputs and additional reports review.

The actions come from different thematic contexts even if Policy/Regulation and Scientific Research are the most represented (Figure 8). Most of the actions are still driven from literature in general (Litterature + Scientific publication + Project report), but the part of actions driven from Think Tanks and Professional Experiences is growing and non-negligible (Figure 9).

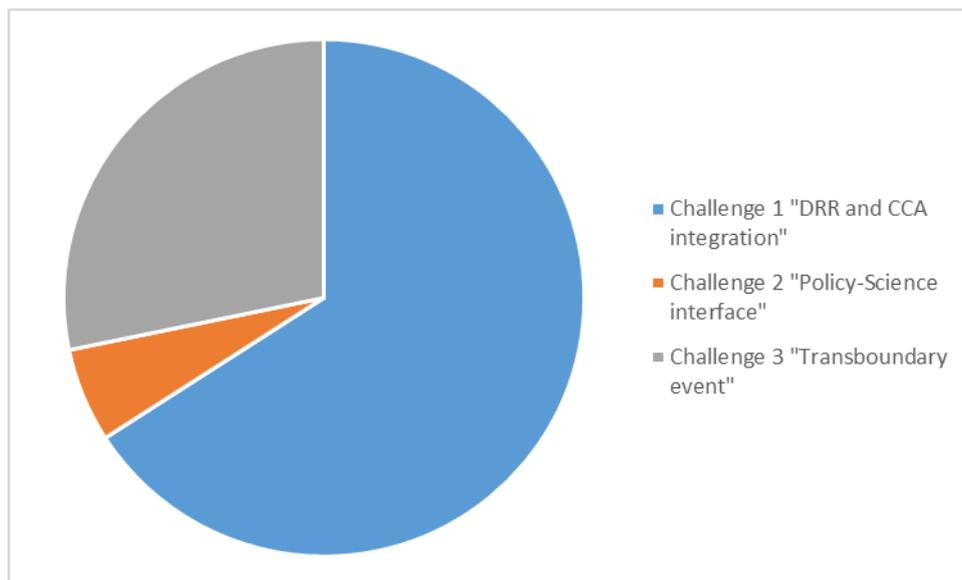


Figure 7: Proportion of ESPRESSO Challenges concerned by actions of the ADB

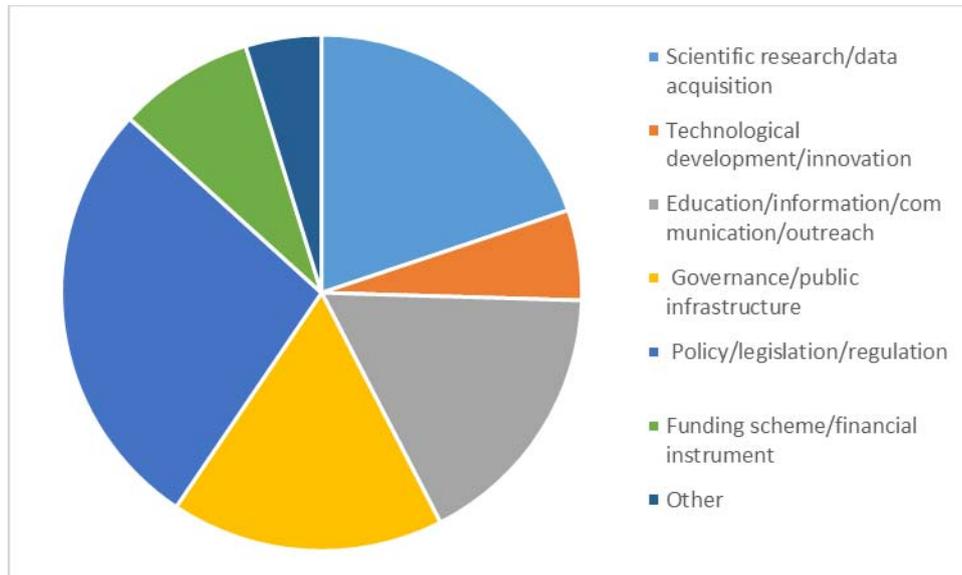


Figure 8: Thematic contexts of the ADB's actions

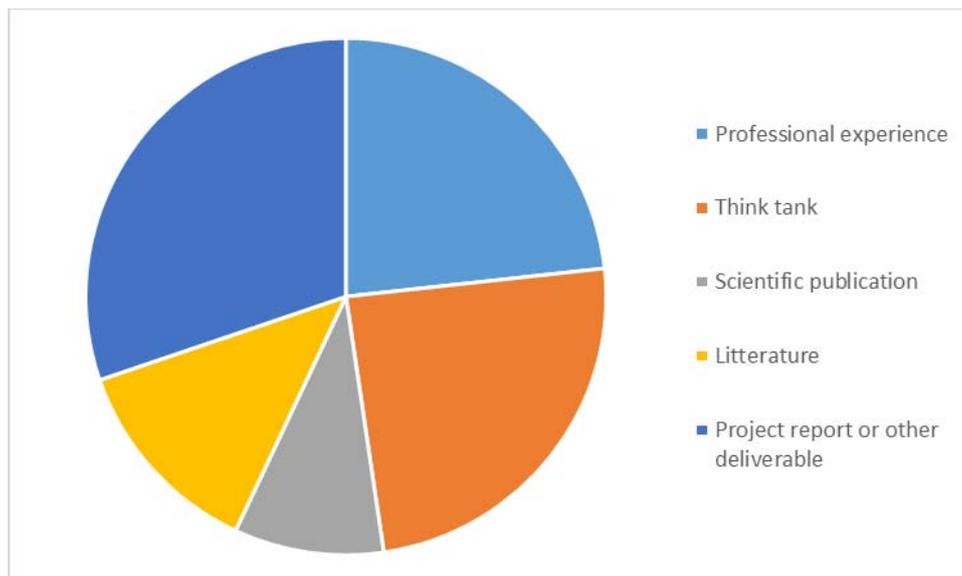


Figure 9: Sources of the actions

General analysis of the scores highlights that ADB content is in general more efficient for risk evaluation and understanding than for increasing investment for resilience (Figure 10). Regarding the SHIELD model criteria, actions are globally more efficient for institutionalising coordination and sharing knowledge than for harmonizing capacities and leveraging political commitment (Figure 11)

Score repartition according to each guidelines category

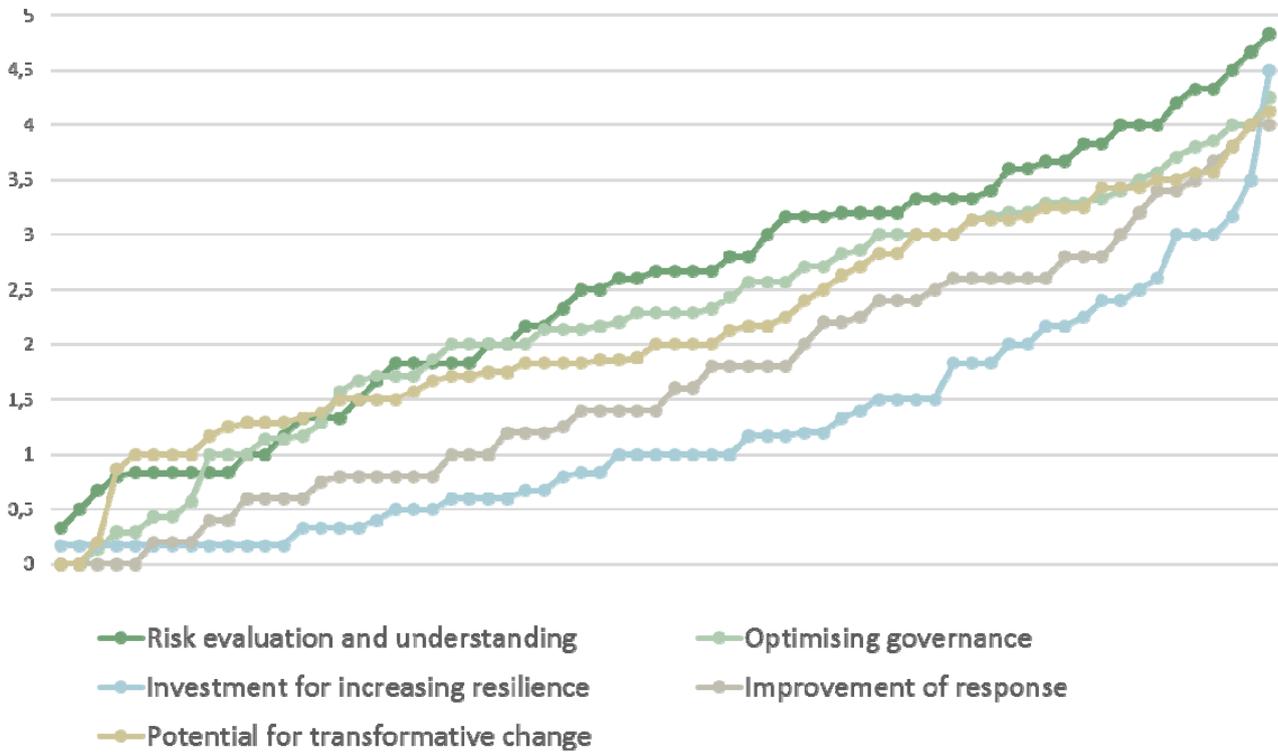


Figure 10: Cumulative score repartition according to each extended Sendai framework category

Score repartition according to each guidelines category

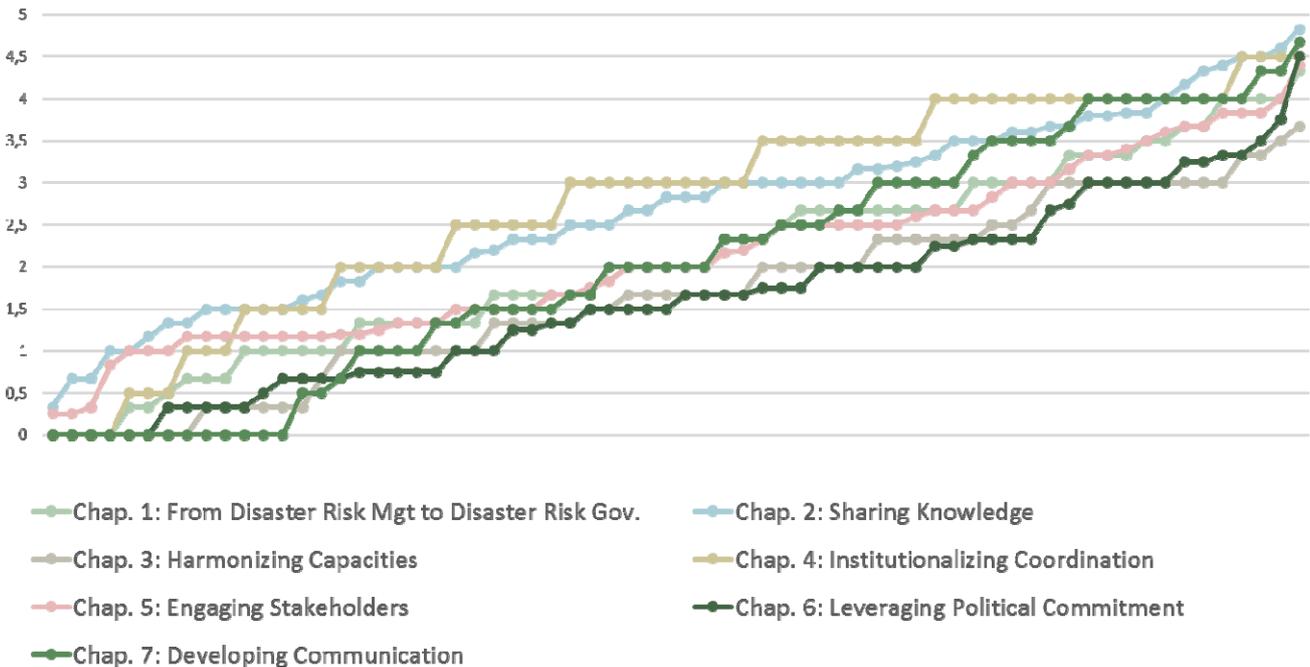


Figure 11: Cumulative score repartition according to each SHIELD model category



The deliverable will be updated with more in-depth analysis of actions scores as soon as all products of the ESPRESSO project will be integrated in the ADB.

5 CONCLUSION

This final version of the ADB provides a generic structure to collect and evaluate different kind of actions that arise from the stakeholder forums, the Think Tanks, ESPRESSO's deliverables and the literature. Up to now, 88 different actions have been added to the ADB and, within the next months, partners will continue feeding the ADB to get more representative insight of the domains and score analysis will be detailed.