# HUMANITARIAN INNOVATION FUND
**Large Grant Full Application – Project Details**

*No longer than 12 pages (Arial, 12pts), excluding other uploaded documents*

**Grant cycle: Closes 12/13/2013 17:59:59 CST – 6 hours behind UTC / GMT – 0100h 13/12/13 Brussels.**

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| **Organisation Name** | European Water Partnership |

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| **Project Title** | *Post Disaster Needs Assessment (PDNA) WASH Data Collection and Analysis Tool* |
| **Location** | Europe-based, Southern Africa Trials |
| **Start Date** | |
| **Duration** | *18 months* |
| **Total Funding Requested (GBP)** | £139,180.00 |

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| **Partner(s)** | *European Water Partnership, Corporation Blue, Anbessa Environmental  Consulting* |
| **Total Funding** | Total: Include proposed HIF contribution plus all other contributions to this project |

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| **One sentence description of the innovation** | £147,830.00 |

**SECTION 1:    CONTEXT ANALYSIS AND RATIONALE**

- **Context Analysis**

Post Disaster Needs Assessment (PDNA) evolved from the Damage and Loss Assessment (DALA) Methodology developed by the Economic Commission for Latin America and the Caribbean (ECLAC) in early 1970s which was essentially:

- Sector-based analysis focused on infrastructure losses to ascertain the cumulative impact of a disaster.
- Damage represented total or partial destruction of physical assets, which occurs during the disaster event itself, and valued at replacement costs.

Based on data collected from this methodology, a post disaster Recovery Plan is costed and developed. A Human Recovery Needs Assessment (HRNA) evolved from this process by expanding assessments from valuation of physical damages and economic losses towards capturing impacts on human development - including impacts on households and communities, and on social, cultural and governance issues. Focus shifts from economic recovery to broader restoration of functions and systems and capacities. This requires information on cross cutting issues such as gender, risks, environment and governance[1]. Governance is especially an important influence on risk management and reduction, and role in Disaster Risk Reduction (DRR). The Water, Sanitation and Hygiene (WASH) sector is particularly cross-cutting, incorporating socio-economic sectors including health, education, agriculture/food security, energy, and thematics such as gender, youth, culture and governance.

The main challenge to developing a strong Recovery Plan is to collect sufficiently detailed and relevant information during a PDNA. Obtaining, synthesizing, analyzing and sharing the information are key components of this activity, requiring actors in the WASH sector capable of working with cross-cutting sectors and themes. Assessment teams should include institutional authorities and experienced professionals, local or international. A PDNA requires:

- establishing baseline data
- collecting secondary information and data (studies and reports)
- conducting surveys and observations for primary data to fill gaps and verify secondary data
- data analysis and validation
- aggregation of data and information to feed back into a global PDNA
- sharing and visualizing data collected and results of analyses

Actors with the relevant and multi-sectoral experience may be unavailable for collaboration, may not have the optimum skills or capacity, and may not exist locally. Information may also have been destroyed during a disaster.

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[1] Guidelines on PDNA and Recovery - IASC meeting 26th April 2013

- **Existing Practice**

Reviews of past methodologies used to map the disaster affected community's needs reveals that many methods to assess emergency needs, reconstruction and development but very few methods that focus on 'recovery' needs (Markantonis et al. 2012[2], IBRD 2010[3]). Historically, data from emergency needs assessments has been used in conjunction with recovery to identify the transitional and early recovery needs (UNDP 2007[4]). In 2010 the UN began developing new Guidance Notes for PDNA which include the following new sectors: WASH, DRR, Community Infrastructure, and Governance – with cross-cutting issues. A technical review of the Guideline Chapters was performed by UN agencies and Cluster Working Groups in 2012. The process is presently waiting endorsement from the EU and the World Bank.

Recent research and documentation begins with the Draft PDNA Guidelines which consists of 2 volumes; Introduction to PDNA (approaches, procedures and tools) and Guidance Notes for PDNAs (for various sectors including WASH). The draft WASH Chapter (Vol 2) was commissioned by UNDP, coordinated by UNICEF and developed by Murray Biedler[5] - and forms the basis for this proposal. The WASH PDNA Chapter is based on a review of PDNA practices[6], of WASH assessments and wide consultations with actors and stakeholders experienced in Humanitarian Recovery and PDNA-type actions.

A need for new ideas and practices was identified by actors consulted was the lack of sufficient primary and secondary data and information needed to perform an effective PDNA and draft a Recovery Plan. With an overview of cross-cutting sectors required, data collection needs and data analysis become more demanding. Difficulties in obtaining data, and gaps in the Assessment Team's capacity, can result in decisions which are difficult to justify. PDNAs are often faced with a lack of tools and infrastructure for collecting, storing and sharing information and data of sufficient detail and content. This proposal addresses the gap in human resources capacity for data collection through:

- Developing an effective mobile ICT tool supported by a desktop/server application for PDNAs;
- Addressing the lack of experienced human resources by developing user-friendly applications for collection of primary data & verifying secondary data;

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[2] Valuating the intangible effects of natural hazards – review and analysis of the costing methods, Markantonis et al. 2012, Nat. Hazards Earth Syst. Sci. Journal.

[3] IBRD, 2012. Damage, Loss and Needs Assessment Guidance Notes.

[4] UNDP 2007, Review of Post Disaster Recovery Needs Assessment and Methodologies, UNDP Publication, with focus on Asia experiences

[5] Of Corporation Blue and EWP advisor on water, development and climate change issues

[6] The UN-ECLAC, Handbook for Estimating the Socio-economic and Environmental Effects of Disasters (2009), the GFDRR (2010) Guidance noted for TTLs Conducting Damage and Loss Assessments after Disaster, and UNDP Volumes II & III, Guide to PDNA/RF, are amongst the most relevant examples of the most referred-to PDNA practices.

- Improving data sharing and coordination for PDNAs by facilitating the integration of primary and secondary data, data analysis & aggregation;
- Reducing human resources costs, improving efficiency and capacity of available human resources and enlarging the potential pool of actors;

The demand to develop a common PDNA methodology is evidenced by the increasing request for PDNAs that, particularly over the last four years, followed major disasters in countries like Pakistan, Haiti, Lesotho, Laos, and Thailand and more recently in Kenya, Djibouti (and more recently the Philippines). There is a corresponding rise in demand for capacity building and training on conducting PDNAs from Governments, the UN and other actors engaged in PDNAs. In 2013 the UNDP began a roll-out of their PDNA program[7] whose core activities are:

- Capacity development to create and/or enhance in-country capacities of national governments, UN Country Teams as well as of UN regional centres and regional inter-governmental organisations to conduct joint PDNAs to internationally accepted standards in selected disaster prone countries;
- Prepare a set of standard common training materials and make them available to all stakeholders engaged in PDNAs[8];
- Create a roster of global PDNA experts to ensure surge capacities to countries when necessary;
- Advocacy of PDNAs as a tool for planning participatory and people-centered recovery frameworks addressing immediate to long term recovery needs.

- **Evidence and rationale for the innovation**

The rationale for the innovation conforms to a solid base-line study and good data collection being necessary to address both recovery and recurring problems in the WASH sector, identify their underlying causes and minimize future risks and vulnerability. By employing data collection methodology with ICT which does not require strong sector-specific expertise or rely on often-strained government support, more persons can be engaged for collection of primary data and can cover a wider geographic scope. A well-designed ICT solution can improve assessment management; providing data analysis tools and a platform for visualization and sharing from a wide range of sources and to a wide user community.

Heavy human resources training and the need for experienced assessment team members are already identified as weak points in the PDNA process. There is also a need to improve the efficiency of data collection, management and analysis. The use of ICT tools and applications that incorporate assessment indicators, but are user-friendly, will allow data collection to be done with less-qualified field personnel. Advanced ICT tools for knowledge management, GIS

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[7] UNDP-EU Partnerships – New PDNA Roll Out Program,
http://www.undp.org/content/brussels/en/home/partnerships_initiatives/results/EU-UNDP-PDNA.html
[8] M Biedler is presently preparing the first WASH PDNA training modules for UNDP, to be presented in the Philippines in early 2014

features run on low cost hardware and a central database management system allow for complex analysis, good information management and easy dissemination of results.

The solution directly addresses the challenges identified in the PDNA process review, consultations with PDNA actors, and in material and in the new draft PDNA Guidelines already cited. ICT technology for humanitarian work is already being employed for damage assessment. There is a tendency to focus on infrastructure, which falls short of the present PDNA needs, but which highlights the need for better developed ICT tools. ICT is already being employed in WASH sector for water management and data collection, allowing for data to be collected and rapidly transmitted from distant locations.

- **Conception of the innovation**

Stakeholder consultations on PDNA data collection issues led to the definition of the innovations proposed for this project. Some of these stakeholders will be involved in the methodology and the field testing phases of this project and include experts in field evaluations, research institutions & NGOs.

A wide range of stakeholders were involved in the development of the WASH Chapter of the of the PDNA guidelines being developed by UNDP, EU and the World Bank (WB). These consultations were carried out through direct interviews with experienced actors working with UNICEF, UNDP, Medecins Sans Frontieres, Group URD, WSP, DG ECHO, Women for Water and individual experts. Challenges for data collection human resources were discussed with researchers from Southern and West African Water Networks of Centres of Excellence, Latin American researchers from the RALCEA Network (Red de Centros de Excelencia en Aguas de America Latina) and from researchers in China as part of the EU-China Water Platform. This was done in conference roundtables, sector workshops and surveys conducted by these researchers. The African Centres of Excellence, where field trials are planned, will be more directly implicated during the field testing phase.

- **Outcomes and Potential Impact**

Sector-wide information will be facilitated by use of innovative support tools to assist data collection teams with limited assessment experience, using mobile ICT tools with geographical support to carry out primary data collection. This solution is intended to be relatively low cost, requiring limited assessment training or experience for locally recruited human resources (e.g. local NGOs). In addition the format and technology allows for collected information to be made quickly accessible to a large number of users. The ICT system will then follow on with data management, analysis and sharing of information.

The innovation will lead to changes that will be more than incremental in impact by introducing new data collection and analysis practices, but not bring a radical change to the overall PDNA content and process. The innovation does present changes in the way PDNA can be carried out in the field through low cost ICT

devices and supporting tools and in the way collected information is analysed and shared.

Potential and main beneficiaries are the government authorities who have need of an effective PDNA in order to implement a Post Disaster Recovery Plan. Secondary beneficiaries are the government WASH sector actors and supporting agencies (e.g. Humanitarian Agencies, local NGOs and IOs) that are responsible for carrying out a WASH PDNA. Final beneficiaries are local populations affected by a disaster event. The groups targeted by this action are the mix of actors involved in performing a WASH PDNA and developing a Recovery Plan.

This tool can provide an alternative way to perform PDNAs that can improve the quantity and quality of data collected and reduces implementation costs. Parts of the PDNA process will be more accessible to a wider group of actors and can potentially increase participation of stakeholders in the process. Improving the quality and scope of a needs assessment, without being limited by numbers of trained personnel, can have a big impact on long term recovery due to a more comprehensive primary data collection and analysis.

The innovation works within the context of the PDNA which is seen as an important stepping stone to recovery. In the long term, the innovation seeks not only to be a tool for improved data collection but also an opportunity to involve non-specialists and a wider range of stakeholders to participate in their own PDNA. Initially the innovation will establish the added value of ICT tools in the PDNA process by improving quality of data collection and analysis, but ultimately the innovation aims to improve accessibility and ease of use of the tool and the information gathered. This is based on assumptions that ICT applications have evolved sufficiently to be adapted for wider consumption, that quality of information can be maintained, and that there is an interest FOR stakeholders and BY stakeholders to become more involved in their PDNA. This wider sourced information, using the ICT system, feeds into the development of the Recovery Plan and can be taken up at management and even policy levels within Government and Institutions.
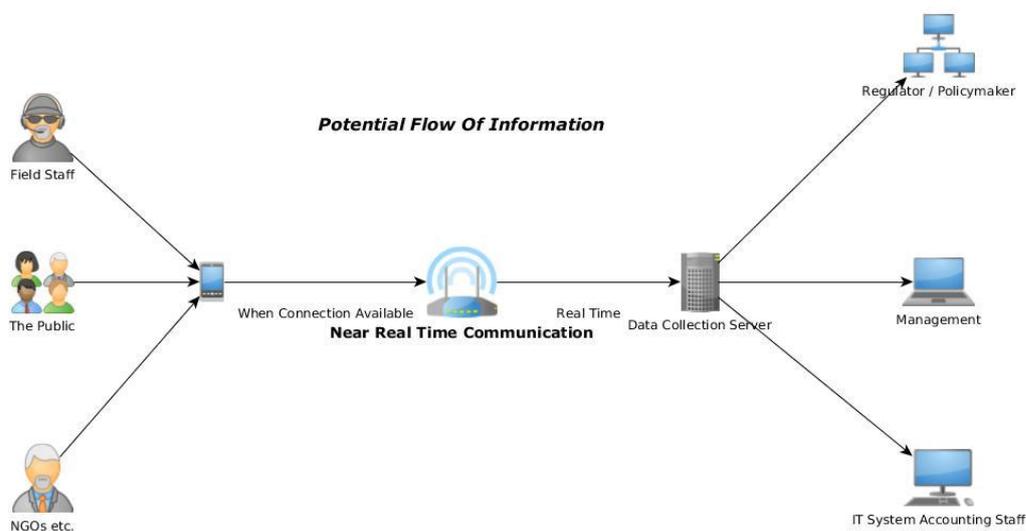
**SECTION 2: DESCRIPTION OF THE PROJECT METHODOLOGY**

The methodology is organised in three phases:1) selection and adaptation of PDNA indicators for integration into ICT tools; 2) development of the ICT tools; 3) field testing;

1)In line with the WASH PDNA guideline chapter, the action will select relevant WASH and cross-cutting indicators, including methodologies for costing damages and loss. Indicators will be adapted and tested in the field using mobile applications, and results will be integrated into an Analysis Indicators Tool (see below).

2) Based on existing software and recommendations from the HumanitariaN Operations Mobile Acquisition of Data (NOMAD) project, the team will develop a tool that can be used on portable devices to provide data based on field evaluation (both observations and measurements), and will be fully integrated into a comprehensive Web decision support tool. The Web tool will be available only for planners and will take advantage of the latest Geographical Information Systems (GIS) technologies to support visualization and analysis of data during all phases of the project.

3) The tool will be tested in Southern Africa in difficult terrain settings selected to emulate a post-disaster situation context and environment. The application will be tested by persons with limited survey training but under the coordination of experienced assessment experts. One test will be for evaluating the effectiveness of the application to measure the indicators and collect the relevant data and to work out bugs and major functioning issues. A second field test will compare results of assessments between 2 teams, with one team using the application tool and accompanying methodology and a second team of more experienced evaluators performing the same assessment without the application tool. All trial results will contribute to the performance measures.

Measuring performance of the innovation against existing practices will be done by comparing:

- Levels of training / expertise required for implementing a successful needs assessment using the software application
- Costs between application supported assessment teams and standard assessment teams of experienced experts, especially for scaling up
- Costs and quality of data analysis, data presentation and data-sharing with other actors.
- The number of effective indicators that can be integrated into and applied by the application tools

The following will be the specific indicators used to build the evidence to support the success criteria:

- Number of training hours required for the application to be successfully used by personnel of limited experience and training
- Minimum level of formal training / education required for the application to be successfully employed

- Cost of preparation, deployment and support for a small team using the application. This can also be used as a mobility indicator of the team.
- Number of WASH-PDNA indicators, including cross-cutting, that can be measured by small assessment teams or individuals using the application
- Direct feedback on ease of application from trainees employing the tool during field testing
- Lightness of the mobile application: a light application can be used by low cost hardware

During the development and following dissemination of the solution:
- Number of Humanitarian Organizations NGOs declaring interest in adopting the new tools developed
- Number of users downloading the application from the internet web site
- Number of contacts & requests for support for using the tool

A template will be developed for collecting monitoring data on the training indicators, the cost indicators, and PDNA-WASH indicators that can effectively be measured by ICT applications in the field. Monitoring data from surveys will be collected by the project field coordinator and verified by the project's PDNA-WASH expert, including field control checks on the collected survey data.

The methodology is relevant to both the innovation and the context since it allows ICT to address 2 key challenges for collecting good quality primary data for PDNAs: the difficulty in finding enough experienced personnel to create an assessment team, and the logistical and financial challenges of deploying sufficient assessment teams over difficult terrain and/or to cover large geographical areas in order to obtain sufficient data for useful PDNA to build a Recovery Plan.

The results and the evidence of the project will be shared through the following activities and tools:
- The creation of an Open Source community Web platform through which the core of the ICT platform will be freely and openly distributed. The Web platform will foster the dissemination of results, the ICT application's approach to PDNA, ongoing development of the ICT tools and new developments such as indicators by the community of users.
- A project report with description, methodology and implementation will be shared with project stakeholders and platforms addressing ICT innovations and PDNA activities.
- Press releases will be prepared and distributed
- A journal article will be submitted to an international review

## SECTION 3: MONITORING AND LEARNING

The grant applicant, EWP, will be responsible for following the implementation of the project according to the work plan of activities, with regular monitoring to ensure that potential delays and risks are prepared for, and actual delays addressed quickly. Regular meetings (in person and web-based) of project staff will allow for updates on the technical and operational development of the application. The field coordinator, with support from the project experts, will

ensure the timely and effective execution of the field trials and file monitoring reports during the trial phases.

The first field trial will assess the functionality of the innovation tool and to signal for reorientation if needed. The second field trial will re-test the adjusted application and will also compare the use of the application between experienced evaluators and less-experienced and/or lower-trained personnel. This will help measure the added value of the innovation. The coordination will draft monthly reports on the progress of development of the innovation, based on contributions from team members. Data and reports will be made available to the HIF team.

The testing will be carried out with the support of stakeholders in the field in developing countries and with personnel, from NGOs, local governments and local Universities, which are the potential implementer of WASH PDNA.

Lessons learned from development, field trials and dissemination of the application will identify areas where the application tool can be improved. This can include adjusting the measurement indicators for the methodology criteria and even PDNA indicators to fit better with the use of an ICT application tool will contribute to a smoother roll-out of activities

Organisations and individuals consulted during the drafting of the first PDNA - WASH guideline chapter will be re-contacted for this exercise and invited to contribute comments and suggestions on development and testing of the tool. Other key stakeholders are the research institutions in the Networks of Centres of Excellence who will collaborate in the field testing of the application tool.

## SECTION 4: PLANNED ACTIVITIES

- **Planned Activities**
  1. Definition of the sector indicators

This activity will consist of a review of WASH indicators relevant to a PDNA, including from cross-cutting sectors and themes. Some indicators may require development or adaptation into a measurable format for the application tool.

  2. Integration of the indicators into the ICT tools and definition of the algorithm of analysis

This activity is the computation needed to convert data collected in the field and transform it, via the ICT application, into measurable indicators that can contribute to the PDNA. The most suitable representation (graphs, tables, maps, etc.) for each indicator, and integrated into the Analysis Indicators Tool.

  3. Development of the ICT tools
   a. The PDNA-WASH server application

This application will be used by survey designers, data analysts and coordinators in charge of the collection, interpretation and analysis of data. The application will include 3 components:

- PDNA-WASH Software Mobile Survey Generator. This software will be used to generate the PDNA-WASH mobile survey application based on predefined questionnaires. Questionnaire design can be defined and adapted in accordance to the context in which the PDNA is going to be performed.

- PDNA-WASH Document Management System. The system will allow actors to store and share all relevant data related to the project. It will act as a central repository for information and data such as reports, studies, graphics… that will be used and shared among different actors involved in the PDNA.
- PDNA-WASH Analysis Indicators Tool. This tool will be the interface to present the field data and information in graphic, mapping or modelling formats (e.g.choropleths, graphs, etc.) depending on the indicator presented.
    b. The PDNA-WASH mobile application

This application will be used by surveyors on the field and will be based on the server application. Surveyors can collect data offline, and synchronize with the PDNA-WASH server application done when an Internet connection is available.

4. Field testing

This application will be tested in different phases in South Africa with support for field coordination from the University of Stellenbosch.

5. Debugging and fine tuning of the ICT tools and of the indicators
6. Dissemination and creation of an Open Source community Web platform

- **Deliverables/Outputs**

| N° | Deliverables | Partners | Delivery |
|---|---|---|---|
| 1 | Sector indicators report | Corporation Blue and EWP | Month 4 |
| 2 | PDNA-WASH Software Mobile Generator and Mobile Application | Anbessa Environmental Consulting | Month 5 |
| 3 | PDNA-WASH Analysis Indicators Tool and Document Management System | Corporation Blue and Anbessa Environmental Consulting | Month 12 |
| 4 | Field testing report | Corporation Blue | Month 14 |
| 5 | Open Source Web Platform and guidelines for the application | Anbessa Environmental Consulting, Corporation Blue and EWP | Month 15 |
| 6 | Project Final Report | Anbessa Environmental Consulting, Corporation Blue and EWP | Month 18 |

## SECTION 5:    REPLICABILITY & SCALE-UP

The application developed within this project will be released under Open Source license ensuring the possibility for other practitioners, developers and people of the sector to have free and easy access through a Web site. The creation of an

Open Source community Web platform will also integrate a wiki for sharing project training materials and technical documentation, including any updates.

Project results will be disseminated to a wide audience including the Humanitarian sector, open source communities and developers who may develop new functionalities and adapt the application to other sectors.

The proposed Open Source business model is one of the most successful for scaling up innovations at low cost. This approach to PDNA is also particularly suited to be replicated in sectors other than WASH such as education and health.

The project will capture and share the knowledge and learning generated to the wider humanitarian system through the creation of the Open Source community Web platform. The Open Source community Web will include free access to a project Wiki, guidelines for the use of the application and training materials developed during field trials.

## SECTION 6:   ASSUMPTIONS, PROJECT RISK AND MITIGATION

We identified two possible risk elements, for which the envisaged risk mitigation measures are formulated below.

**1. Delay in the implementation of tasks.**

Individual partners could fail in their agreements and do not complete assigned tasks in the expected time. However, due to the nature of the different but interconnected activities and objectives, the work plan is based on a series of interconnected deliverables. Each task is under the strict control of one or more task managers and who in turn are constantly monitored by the coordinator.

**2. Lack of participants for field trials.**

The Field Coordinator has large experience in organizing similar exercises in the Southern African region and is an active member of a network of potential participants.

## SECTION 7:   IMPLEMENTATION CAPACITY

The EWP is the overall coordination entity of the project and will coordinate work packages and coordination between the ICT team and the WASH sector experts. The work packages are:

1. Development of the PDNA indicators
2. Development of the ICT tools including the desktop and the mobile applications
3. Field testing
4. Debugging and fine tuning of the application
5. Definition of training material and instructions to use the application
6. Dissemination

The PDNA-WASH consortium represents a unique and multidisciplinary group of highly competent and experienced organizations, with a long experience in the WASH, ICT and research sectors. Specific consortia experience includes:

- EWP as a high-profile European platform for the WASH sector with long experience in project management, consortia coordination and stakeholders' participation. They are active in initiatives such as Water Stewardship, climate change and water and innovation technology.

- Corporation Blue assembles experts each with more than 20 years of experience in Humanitarian Aid, Development and technical innovation in the WASH sector, a current working knowledge of WASH PDNA processes, expertise in evaluations, training and development of guidelines and a long experience in Africa, Asia and Central America.
- Anbessa Environmental Consulting is an innovative ICT firm specialized in development, management and research on ICT applications for development cooperation and humanitarian aid, in particular in the WASH. This includes more than 10 years international experiences in developing countries in Africa. Anbessa Environmental Consulting also specializes in data collection, management and data governance, and supporting policy

Field testing of the tool with indicators and testing of the ICT applications is foreseen. A dedicated expert with field experience will coordinate the field trials. ICT applications will have dedicated testing for debugging applications with the support of two experts with long experience in ICT testing. Finally the results of the two parallel testing activities will be incorporated in the deliverables and used to fine tune the application

EWP is one of the most important European platforms for advocacy in the WASH sector with strong experience in project management, consortia coordination and promoting stakeholder participation. Their experience includes innovative technology and research projects, policy reviews in water and energy sectors for climate change and the development of the European Water Standard for Stewardship on best practices for water management.

The key members of the multidisciplinary team include:
*Murray Biedler*, WASH and Humanitarian aid expert
*Nico Elema*, Project Field Coordinator responsible for the field trials
*Andrea Leone*, WASH expert and ICT project manager
*Juan Arevalo*, GIS and data management expert
*Marco Ferretti*, Senior ICT developer and technology lead
*Elias Gonzalo Gomez*, Socio-economist and governance expert
Letters of support from the following institutions/experts are attached:
- The AU/NEPAD Southern African Water Centres of Excellence
- Jordi Casafont Torra, United Nations Office for the Coordination of Humanitarian Affairs (OCHA)

## SECTION 8: ETHICAL CONSIDERATIONS

This project does not in principle raise any sensitive ethical issue. In the event that issues do emerge during the project activities, they will be addressed according to current European legislation. Concerning the field trials and the involvement of human participants, we apply the "Guidelines for Ethical Approval of Research Involving Human Participants" of the University of Essex (UK), which include widely accepted procedures on ensuring informed consent from affected populations involved in the project.