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**AGUASAN**
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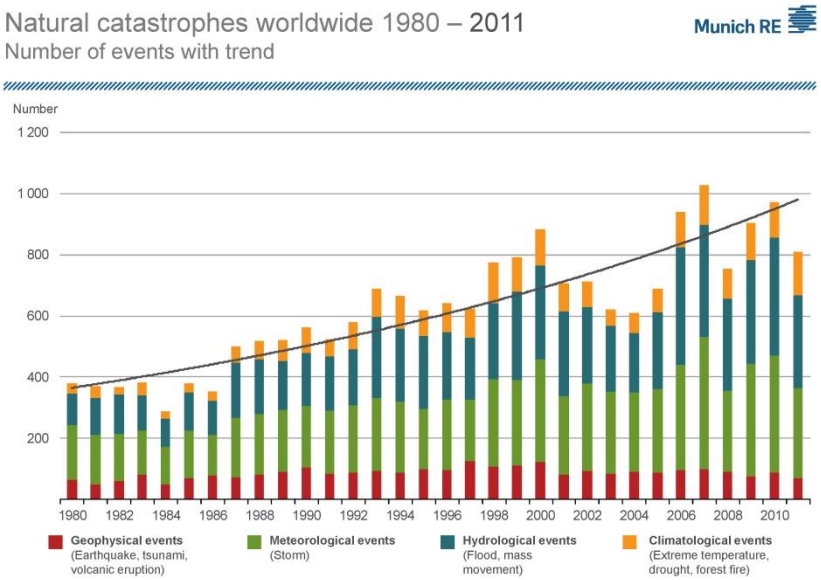
## 31st AGUASAN Workshop (2015) - Briefing Note

# DISASTER RISK REDUCTION IN WASH

## Towards Resilience and Adaptive Management in the Water Sector

## Topic

Today **more than half of the world's population is under threat from the forces of nature –** one fifth of the earth's surface is regularly affected by earthquakes, volcanic eruptions, floods, drought, landslides and storms. The incidence and severity of such natural disasters, as well as their impact in terms of economic losses, have increased markedly in the last decades; in contrast, human losses could be reduced over the past years due to improved preparedness measures. Water-related disasters are the most economically and socially destructive of all natural disasters: over the period 1992-2013, floods, droughts and storms alone have affected 4.2 billion people (95% of all people affected by natural disasters) and caused USD 1.3 trillion of damage (63% of all damage)[1], while the number of people at risk from floods only is projected to rise from 1.2 billion in 2013 to 1.6 billion in 2050[2].




Many factors related to **increased exposure and vulnerability to natural hazards** of people and assets account for this situation: population pressure, increased land use of hazardous areas associated with high-cost investments, urbanisation, environmental degradation and climate change. Poor and densely populated areas are particularly vulnerable to the forces of nature, as the existing structures in such settings can barely cope with minor events and are completely overwhelmed during major events. The death toll among the people affected by disasters over the past 20 years occurred to 95% in developing countries.

Ever since 1990[3], the concept of **disaster risk reduction** (DRR) has evolved to a widely adopted framework to reduce risks of natural hazards with a significant shift in the understanding of disaster management: towards a more comprehensive perception of hazards generating processes and the underlying causes of vulnerability, and towards the development of a forward looking and longer term strategy for anticipating and managing risks in an integrated manner (proactive measures). At the international level, the cornerstone of DRR is the new *Sendai Framework for Disaster Risk Reduction 2015-2030*[4] which was negotiated at the World Conference on DRR in March 2015 (Sendai, Japan) and signed by 187 countries.

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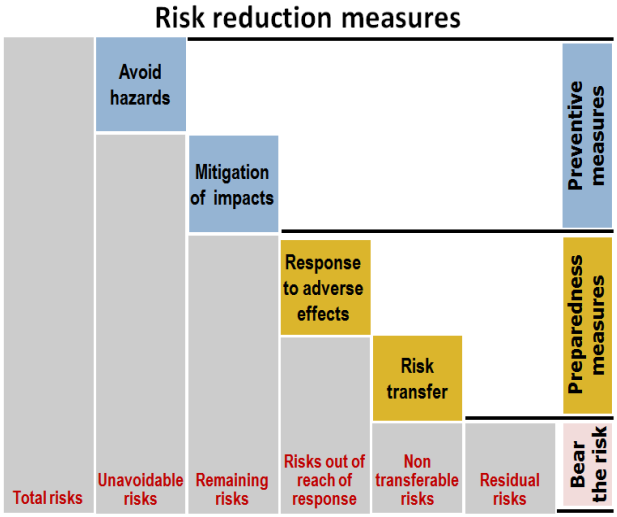
[1] *UNISDR (2012), Impacts of Disasters since the 1992 Rio de Janeiro Earth Summit*
[2] *OECD (2012), OECD Environmental Outlook to 2050: the consequences of inaction*
[3] *International Decade for Natural Disaster Reduction (1990s), Yokohama World Conference on Natural Disaster Reduction (1994) and the Kobe (Hyogo) Conference on Disaster Reduction (2005)*
[4] *http://www.wcdrr.org/conference/outcomes*

The **Sendai Framework for DRR 2015** aims at a **substantial reduction of disaster risk and losses** in lives, livelihoods and health and in the economic, physical, social, cultural and environmental assets of persons, businesses, communities and countries. The **priority actions** at across all levels are to:

1) **Understand disaster risk** in all its dimensions of vulnerability, capacity and exposure of persons and assets, and hazards characteristics;
2) **Strengthen governance and institutions to manage risks** at all levels, through a clear vision, plan guidance and coordination across sectors and a participation of all stakeholders;
3) **Invest in economic, social, cultural and environmental resilience** through structural and non-structural measures leading to risk prevention and reduction;
4) **Enhance disaster preparedness** for effective response, and building back better in recovery and reconstruction, making nations & communities more resilient to disasters.

In this context, **water and disaster risk reduction are intimately linked** and is relevant across a wide range of subtopics and measures, ranging from sustainable projects (on e.g. equitable access to water or local water governance) at micro level up to reducing natural hazard occurrence at macro level. Water is key in addressing natural disasters and climate change, because it's the medium through which most of their impacts are felt. As the whole global water cycle is affected by global warming, e.g. more frequent and severe floods, storms and droughts are already occurring in many places and especially the vulnerable people and developing countries are ill-prepared to respond to these risks. The IPCC WG II report on impacts, adaptation and vulnerability[5], states that there are opportunities to respond to the risks, and that **water management and development strategies have a pivotal role** in reducing exposure and vulnerability of people and assets to natural hazards.

Seeing the complexity and breadth of the issues, the 31st AGUASAN Workshop proposed to unravel the topic from the **viewpoint of "Disaster Risk Reduction (DRR) in Water Supply, Sanitation and Hygiene (WASH)"**. Inadequate WASH services can indeed cause disasters, while disasters can further degrade WASH services, both resulting in increased risk. It is therefore necessary to consider disaster risk when developing WASH services, whether in emergency response, early recovery or in the development phase. This is all about increasing resilience of WASH services to natural disasters by knowing the risks and managing them to the extent possible, through preventive and preparedness measures. Focus was laid on extensive risks (small but frequent disasters): they represent ~42% of the global disaster losses[6], implicating that small scale measures have the potential to effectively reduce risks.




## Process

Against this backdrop, an international group of 47 water sector professionals and DRR specialists gathered in Spiez, Switzerland from June 22 to 26, 2015, for the 31st AGUASAN Workshop. The event tackled the key question of ***""How to best implement DRR principles in the WASH sector to strengthen resilience to natural disasters in a multi-hazard approach?"***. By displaying thematic inputs with illustrative examples, and by looking at a set of topic cases from different contexts and with varied approaches, the workshop addressed a series of topical issues such as:

- Which are most promising **entry points and means** to apply DRR principles in WASH services planning, provision and management in order to reduce vulnerabilities in terms of social, economic and environmental assets and to increase resilience?
- How to **enhance capacities and strengthen institutions** in integrating DRR principles into the WASH sector frameworks and managing their implementation?

[5] *Working Group II of the Intergovernmental Panel on Climate Change – Report of 15.10.2014*
[6] *Global Assessment Report UNISDR 2015 http://www.preventionweb.net/english/hyogo/gar/2015/en/home/index.html*

- Which are successful approaches in **building up knowledge, monitoring systems and capacities for action** towards reduced vulnerabilities of WASH services in communities at risk from natural disasters? and
- How to **mainstream disaster preparedness** for WASH services in a multi-hazard approach, based on improved understanding of risks and reliable design data, which responds to the needs of communities and that is implemented?

The topical issues above were explored in particular along well-prepared **topic studies** (analysed in-depth in respective working groups) that provided different aspects (successes and failures, good practices and remaining challenges) of endeavours fostering the integration of DRR principles in WASH services delivery:

1) **"Mainstreaming DRR in WASH – experience of SDC and partners in Nicaragua"** (Swiss Agency for Development and Cooperation).
   *For further information, contact Ms Miriam Downs at miriam.downs@eda.admin.ch or visit www.eda.admin.ch/deza/en/home/countries/central-america.html*
2) **"Community-based DRR in Myanmar"** (Caritas Switzerland)
   *For further information, contact Mr Nyi Nyi Soe at nyisoe07@gmail.com or visit www.kmss-caritasmyanmar.org*
3) **"Integrating DRR in WASH in Haiti"** (HELVETAS Swiss Intercooperation)
   *For further information, contact Mr Mathias Pierre at mathias.pierre@helvetas.org or visit https://haiti.helvetas.org*
4) **"DRR through the Integrated Management of Micro Basins in Guatemala"** (Vivamos Mejor)
   *For further information, contact Mr Eduardo Juarez at chiosecaira@hotmail.com or visit www.vivamosmejor.org.gt*
5) **"Adopting locally appropriate WASH solutions as a way to build community resilience in South Sudan"** (Caritas Switzerland)
   *For further information, contact Mr Bernd Serway at bserway@caritas.ch or visit www.caritassouthsudan.org*

## Main findings with products crafted

### *Entry points and means for DRR in WASH*

Disaster risk reduction can be used as an entry point for poverty-reduction, education, public health and gender initiatives targeted at vulnerable people, slum-dwellers or other low income communities showing the end results of a disaster. **"Prevention is better the cure"** is a well-accepted idea in all societies. It is important to understand which are most promising entry points and means to apply DRR principles in WASH services planning, provision and management in order to reduce vulnerabilities in terms of social, economic and environmental assets and to increase resilience.

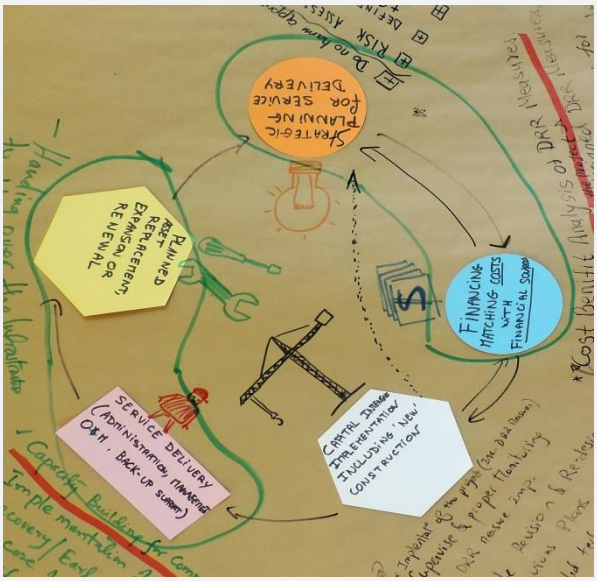
The Nicaragua case study revealed that having technical **DRR requirements in WASH delivery projects/programs/strategies at the local level** is a good entry point for tackling possible disaster affecting WASH services and infrastructures. Similarly in the case of Myanmar, based on the past experiences and an evaluation of water stress led to redesigning of the projects for the second phased that led to **improvement in WASH services that included DRR elements**. Similarly **targeted awareness on DRR and its impacts on health or livelihood** like in Haiti became entry points for DRR in WASH.

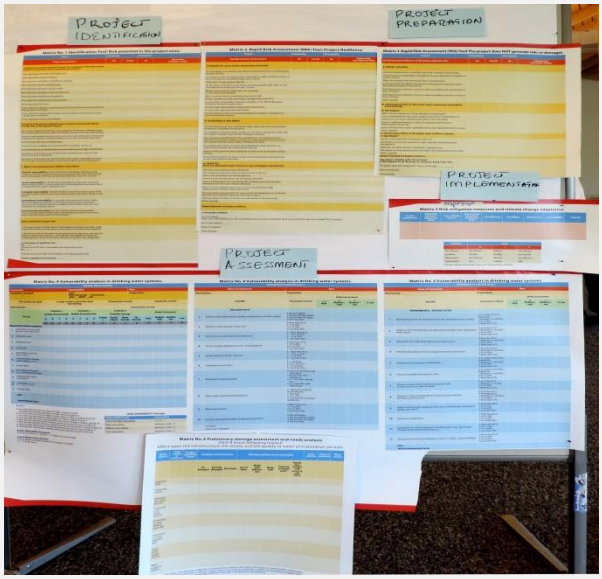
Hence, the key question of "how to best implement DRR principles in the WASH sector to strengthen resilience to natural disasters in a multi-hazard approach" is to **look for acceptable entry points for introducing DRR as function of the context and the local conditions**. Other entry points are also projects supported by donor agencies asking explicitly for DRR elements in the project design and implementation cycle. Enhancing capacities at all levels will also work as entry point for future WASH projects that may be undertaken by different authorities.

#### DRR in the Project Cycle Management (PCM)

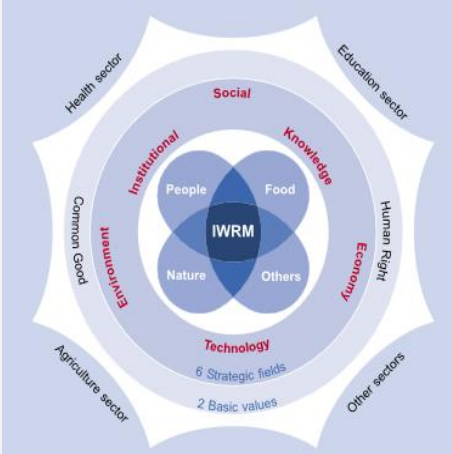
Assuming that all WASH practitioners are familiar with the PCM and that in 'conventional' WASH projects, risk assessment and planning of DRR measures may not be conducted in a systematic way, a PCM highlighting what DRR-related activities such as "Risk and Impact Screening" was developed during the workshop. It was clear from the outset that the full PCM cycle had to be looked at, not only the planning stage but also the implementation, monitoring and evaluation stages. The product consists of a sketch highlighting DRR-related activities in the PCM and a short description of the different DRR-related activities including references to practical tools (cf. "tools tree") that are available. A special focus of the DRR-informed PCM should

be on cost-benefit analysis of DRR activities because this is often not clear to everybody or in some cases only initial investments are calculated and other cost that occurs later on in maintenance are often not accounted for, leading to abandonment of DRR aspects or the projects as such. Such analysis aim to proof that DRR measures are an investment (especially into prevention) which pays off, since such measures are cheaper than reconstruction and recovery endeavours. There is only limited guidance on DRR in WASH in stable conditions. The same need to be done in emergency situations, early recovery phases and conflict and fragile situations. The guidance or tools that deal with risk reduction in respect to WASH systems are mostly deal with water supply and not all aspects of WASH. Preparedness should be most effective risk reduction approach. It should include mitigation in the development approach to complete the circle.




## DRR in the Blue Diamond (the 6 strategic fields of sustainable interventions in the water sector)




This product describes dos and don'ts and guiding questions related to DRR structured along the 6 dimensions (strategic fields) of the Blue Diamond including IWRM as the core element. The six interdependent strategic fields are: social, environmental and economic aspects (the three pillars of sustainability) as well as institutional, technological and knowledge aspects (the three thematic fields) making up together the "Blue Diamond". Within the "Blue Diamond", the strategy for reaching and sustaining the sector targets is based on the basic values of human rights and of water as a common good. The use of drinking water, the disposal of liquid and solid waste, and the hygiene behaviour of the population are all part of the socio-cultural and natural context. It allows adequate solutions for the development, implementation, management and use of WASH services based on an equal consideration of the sustainable development.

| Social |
|---|
| Integrating Risks in Community-based Assessment |
| Strengthening Water Committees to address risks |
| Strengthening linkages between community groups |

| Institutions |
|---|
| Advocate for the inclusion of DRR in the budget of institutions |
| National institutions related to the WASH sector are working together with DRR institutions |
| Strengthen institutions at all level addressing risks (e.g. local authorities, civil protection) |
| Planning and implementation of DRR mechanisms |

| Technical |
|---|
| Risk assessment of WASH technologies (screening) |
| Back up systems |
| Protection structures (incl. bioengineering) |

| Economic |
|---|
| Clarifying responsibilities for payment (incl. DRR costs) |
| Analysing cost-benefit (considering DRR costs) |
| Promoting income generating activities (linked to DRR activities) |
| Put in place risk transfer mechanisms (insurance) |

| Environment |
|---|
| Adopt a watershed perspective |
| Apply water resource protection measures |
| Apply 3R (recharge, retention & reuse) measures |
| Promote resource recovery from waste streams |

| Knowledge |
|---|
| Collect, generate, evaluate information |
| Monitor identified and new arisen risks |
| Integration of DRR into curricula |
| Share information and knowledge amongst stakeholders |

### *Enhanced capacities and strengthened institutions*

It is critical to enhance capacities and strengthen governance and institutions to manage risks at all levels, through a **clear vision, plan guidance and coordination** across sectors with participation from relevant stakeholders including communities themselves. **Additional cost** is one of the key constraints in implementation of DRR related measures in WASH or any other infrastructure development, though DRR measures should be considered as an investment (for resilient development) and not merely as a "cost".

Taking this fact into account, policy makers and regulators should focus on identifying all costs, highlighting financial gaps and implementing sound strategies to match costs with revenues. Initial investment costs for WASH schemes and their long-term management, operation, maintenance, replacement and extension/upgrading of services have to be accounted for carefully. However, it is commonly acknowledged that system managers don't usually know e.g. what the recurrent costs truly are, even if there are initial investments done. The same is also the case at regional or national level regarding indirect support costs or costs of capital.

Lack of such key capacities among both local government authorities and communities were found to be a key challenge beside coordination between different departments, as revealed in the case of Nicaragua and Guatemala. In the case of Myanmar such **capacity building was able to pull in resources from different actors to invest in projects**. The Guatemala case showed that it is important to have **in-depth capacity and knowledge of the risk factors at local scale from both technical and scientific perspective as well as from the communities' perceptions**. The key challenge in all the five projects appeared to be **inadequate capacity as well as lack of coordination among different department**s particularly at the municipal or local levels.

But in unstable political conditions such as South Sudan, it can be even more challenging with frequent transfer of officials and changing political priorities. It is also often the case with different cooperation agencies who participate in the implementation of a Disaster Risk Management Plan (or a DRR plan) without a coordination mechanism. Building capacity and improving coordination can be much **more challenging in cases of unstable political systems** like South Sudan or other such conflict ridden and fragile countries.

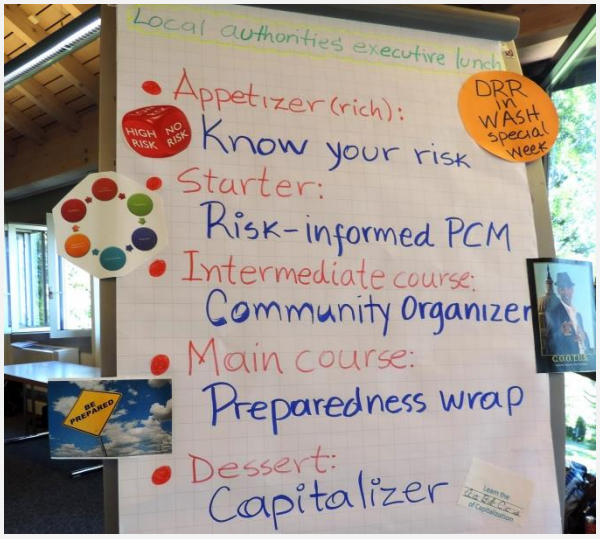
The South Sudan case further revealed that it is hard to focus on building resilience of government institutions in such an unstable context, hence it is better to **focus on building resilience at community level** and recommends this approach. This also seems to be the case of Myanmar where it prepares a more resilient community to take ownership of WASH structures and recommends a similar approach.

It can be stated that it will largely depend to what extend the **coordination mechanism between various departments of government** are able to effectively enhance and implement national disaster risk reduction policies and measures in the context of their respective circumstances. It is important to have a self-assessment of existing capabilities and how it can be further enhanced through the provision of sustainable international cooperation. Discussion of participants revealed that public administration reform and capacity development of local level government officials is a building block of disaster risk reduction efforts in any country with regard to WASH.

#### Capacity self-assessment tool for local authorities

The guidance available for practitioners are generally all about the "what and when, with which tools"-questions of integrating DRR in WASH. What is widely missing is the "how"-question: the means and capacities needed to do so. The participants repeatedly highlighted we should look into what does it mean for my institution/partners to integrate DRR in WASH and what capacities need to be available/built? They stated that strengthening governance to manage risks (at all levels) – vision, policies, strategies, plans, guidance and coordination across sectors and stakeholders are very critical.

Therefore a prototype of a capacity self-assessment tool for local authorities was developed as a possible way towards strengthened risk management capacities for WASH. The tool was presented using a restaurant's menu of a "Local authorities executive lunch" in terms of "Appetizer" explaining how to know your risk, "Starter" teaching on risk-informed PCM, "Intermediate course" for community organisation, "Main course" introducing the preparedness plan and of a "Dessert" as regarding the capitalisation of experiences and continuous learning.



## *Building up knowledge, monitoring systems and capacities for action*

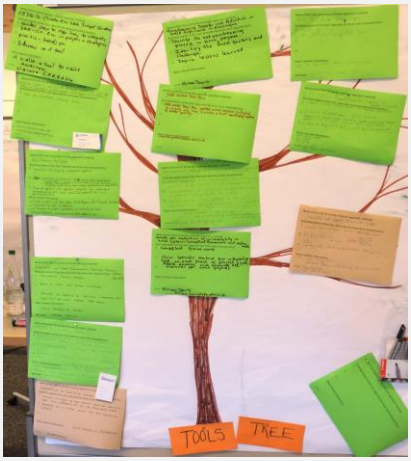
Understanding and knowledge of disaster risk in all its dimensions of vulnerability, capacity and exposure of persons and assets, and hazards characteristics are important not just for monitoring such projects but also for building local capacities in the project cycle management. A number of **DRR literatures** (mostly tools) produced in last two decades or so provide useful insights into DRR and WASH. There are also tools mostly presenting **country cases** on different DRR aspects that support the specific thematic discussion of DRR in WASH. While there are generic tools like CEDRIG, there are also national or regional level materials which are essentially a collection of institutional progress reports describing progress made at different geographical levels: local, national, regional and international in DRR and WASH.

However, this category of tools largely capture the contribution made by specific institutions through their own work and therefore bring in **specific institutional perspective rather than a complete view of the progress and gaps** for the integration of DRR into WASH like the one presented in Nicaragua and Guatemala case studies. The Nicaragua case emphasized understanding of local institutions and context while that of Guatemala emphasized in depth knowledge of micro basins to make effective interventions. The Guatemala case study also showed that how effective an alert and monitoring system could be in prevention of disasters. Similarly the Myanmar case showed community mobilization and capacity building for sustaining WASH structures.

With **access to technologies for improved and integrated measurements along with other modelling systems** are enabling a greater understanding of where and when a particular hazard event is most likely to occur and result in significant socioeconomic impact. To promote the incorporation of disaster risk knowledge, including disaster prevention, mitigation, preparedness, response, recovery and rehabilitation, in formal and non-formal education, as well as in civic education at all levels, as well as in professional education and training was stated to be desirable.

### Tools tree

A basic and repeatedly stated expectation in the workshop was how to how to practically introduce DRR in WASH, calling for simple tools with an annotation of what are tools to be used for what purpose and in which context. Hence a cumulative list of tools that exist in the knowledge of the participants was developed in the form of a "tools tree". The graphic started with few branches (names with basic facts) on day 1 and by the end of the workshop it had grown into a full tree. While there are good amount of tools available, its usability at local, national or international level is often not established. Hence, an annotated short-list of different tools was compiled and is provided in the annexe. The list distinguished between:




- Tools for integration of DRR - and adaptation to climate change (ACC) - at strategy/program/project level for program/ project managers and implementing partners

- Tools for integration of DRR (and ACC) in community based project planning for communities and other partners /beneficiaries at local level
- Tools for integration of DRR in WASH projects in particular for mainly WASH project implementers.

### *Mainstream disaster preparedness*

Mainstreaming disaster preparedness requires that all institutions at all levels work in a coordinated manner for an effective response. Only a **coordinated effort at all levels** can help in building back better in recovery and reconstruction phases, making nations and communities more resilient to disasters. The big question is how to mainstream DRR in WASH Services in a multi-hazard approach, based on improved understanding of risks and reliable design data, which responds to the needs of communities and which is implemented? This can be started with **mainstreaming disaster risk reduction into project development**, particularly focusing on land-use planning, construction and water and sanitation. But mainstreaming DRR in WASH will initially or may be on an ongoing basis also requiring heavy element of **advocacy which should be based on credible research and data**. One such area of requirement is credible research which shows cost-benefit analysis to policy makers and other stakeholders including communities. The cost-benefit analysis will help to allocate funding for DRR elements in WASH projects for improved resilience and hence more sustainable services. But such evidence is often hard to find.

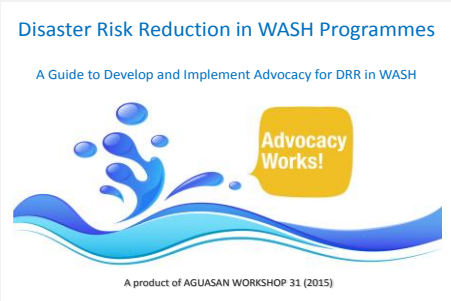
This came out strongly both in the case studies as well as in the other workshop sessions where people sought answer to their solutions to integrating DRR elements in WASH. In the Nicaragua case, it was stated that the key challenges in such projects remain on **overcoming governmental "centralism", creating a regulatory framework and demonstrating net gains** in long-term cost-benefit of DRR activities. The Myanmar case study shows that a **good risk assessment study** can also help in integrating DRR in future projects through advocacy based on risk assessment data.

Disaster risk reduction measures are put in practice in some places but it is still not obvious everywhere and to everybody. It is expected that donor should first make it part of their WASH support, so that it works as an advocacy for other projects. WASH staff from government and other field practitioners including staff of donor agencies would like to see clear guidance on DRR in WASH or WASH programming. Thus **DRR needs to be de-mystified** clearly. An **advocacy tool** came out as a suggestion for promoting DRR in WASH.

#### Guide to develop and implement advocacy for DRR in WASH

Advocacy for DRR is an important tool to get government agrees to invest in DRR measures. Participants agreed that if DRR in WASH has to be effective, a sound advocacy strategy is needed. Advocacy is particularly important in promoting the adoption of DRR by partners, local and national institutions and other stakeholders. Advocacy should be carefully planned and its results monitored and evaluated. The objectives of advocacy in DRR in WASH include:

- The scaling up and promoting the sustainability of pilot interventions;
- The integration of DRR in humanitarian and development action;
- Improving legal and institutional mechanisms processes and means to apply DRR;
- Promoting and defending the rights of disaster affected people and vulnerable groups.
- Cost-benefit analysis and effectiveness of DRR measures wherever it has been done.




The targets for advocacy on DRR should include decision-makers at different levels, including those in central or national governments, regional and local, national bodies on Disaster Risk Management or Civil Protection, international humanitarian and development donors, private sector, the media, and the at-risk communities themselves.

## Key messages

☞ **Relevance of DRR in WASH:** The incidence and severity of natural disasters, as well as their impact in terms of economic losses, have increased markedly in the last few decades and with climate change looming large, it may further increase. Water-related disasters are the most economically and socially destructive of all natural disasters. Water and disaster risk reduction are intimately linked. Water is key in addressing natural disasters and climate

change, because it is the medium through which most of their impacts are felt including in WASH services and infrastructures which are most needed and is a basic human right.

- **Knowing the risk:** Knowing and understanding the disaster risk in all its dimensions of vulnerability, capacity and exposure of persons and assets, and hazards characteristics is critically important to respond in a timely manner to minimize loss of life and assets. It is therefore necessary to consider disaster risk when developing WASH services, whether in emergency response, early recovery or in the development phase. This is all about increasing resilience of WASH services to natural disasters by knowing the risks and managing them to the extent possible through planning for preventive and preparedness measures.
- **Logic of risk reduction measures "staircase":** There are certain risks that can be avoided through preventive and preparedness measures, but at the same time there is a certain amount of risks that is unavoidable. Data shows that a major portion of risk can be avoided that can reduce the potential loss of lives, health status, livelihoods, assets and services, which could occur in a particular community or a society due to the impact of a natural hazard. For example if WASH sector is linked to existing early warning systems at the national, sub-national and community level, it can save many lives and assets. There is a stepwise or progressive way to minimize risk.
- **Main entry points:** Disaster risk reduction can be used as an entry point for poverty-reduction, education, public health and gender initiatives targeted at vulnerable communities showing the end results of a disaster or also for general interventions. Prevention is better the cure is a well-accepted idea in all societies. Having technical DRR requirements in WASH delivery can be a good entry point, while also past experiences and a new assessment or evaluation of WASH can help include DRR elements. Targeted awareness on disaster risks and its impacts on health or livelihood can also become entry points for DRR in WASH.
- **Call for "a" tool:** A repeatedly stated expectation is to have a simple tool helping to practically integrate DRR into WASH. The annexe provides an annotated list of useful tools that exist in the knowledge of the DRR and WASH practitioners, though their applicability depends on the intervention type/stage. Most of these tools inform risk assessments and help to understand the "what" and "why", but not necessarily the "how" to take action. Their usability at local, national or international level is often not established. Once more, there is not "one size fits all" product. One may have to customize these tools to their own needs in the context of their level of risk and geographical and climatic conditions, including institutional structures.
- **Need for capacity building and advocacy:** It is critical to enhance capacities and strengthen governance and institutions to manage risks at all levels, through a clear vision, plan guidance and coordination across sectors with participation from relevant stakeholders including communities themselves. A special focus of the (disaster) risk-informed PCM should be on cost-benefit analysis of DRR activities because this is often not fully clear to everybody or all stakeholders. A prototype of a capacity self-assessment tool for local authorities can be adopted from others or developed as a possible way towards strengthened risk management capacities for WASH. Advocacy for DRR is an important tool to convince government and other relevant actors to invest into DRR measures. Cost-benefit analysis proofing the effectiveness of DRR measures can add weight to advocacy.

*"We cannot stop natural disasters but we can arm ourselves with knowledge: so many lives wouldn't have to be lost if there was enough disaster preparedness".*

*Petra Nemcova*

*"While natural disasters capture headlines and national attention short-term, the work of recovery and rebuilding is long-term".*

*Sylvia Mathews Burwell*

***Participants 31st AGUASAN Workshop (2015)***

## TOOLS FOR THE INTEGRATION OF DRR (ACC) IN PCM – AN INCOMPLETE OVERVIEW

**Integration of DRR (ACC) at programme and project level**
**Public: programme and project manager and implementing partners**

| Tool | Institution | Download link | AGUASAN contact for further information | Comment |
|---|---|---|---|---|
| CEDRIG (Climate Environment DRR Integration Guidance) | SDC | https://www.shareweb.ch/site/Disaster-Resilience/tools-and-training/cedric-tool | Nadia.benani@eda.admin.ch<br>Naraya.carasco@eda.admin.ch | Two part tool: rapid screening and in-depth analysis of risks and impacts for strategic and project planning. |
| Bolivian version of CEDRIG (translated and adjusted) | SDC Bolivia, Helvetas | Not yet available<br>Cf. http://www.rrd.com.bo | Marcelo.barron@eda.admin.ch | |
| Bosnian version of CEDRIG (translated) | SDC, Aquasan | Not yet available | Samir.alibabic@aquasanbih.ba<br>http://aquasanbih.ba | |

**Integration of DRR (ACC) in community based project planning**
**Public: Communities and other project partners and beneficiaries at local level**

| Tool | Institution | Download link | AGUASAN contact for further information | Comment |
|---|---|---|---|---|
| CRiSTAL (Climate Risk Screening Tool – Adaptation & Livelihoods) | iisd, Intercoopera-tion, SEI, IUCN | http://www.iisd.org/cristaltool/ | mkkhattak@helvetas.org.pk<br>Eveline.studer@helvetas.org | Focus on Adaptation to climate change (ACC). |
| PACDR (Participatory Assessment of Climate and Disaster Risks) | HEKS, Bread for all | http://www.breadforall.ch/development-policy/climate-change | Judith.maccchi@heks.ch | DRR & ACC,<br>Risk and Impact Assessment. |
| VCA (Vulnerability and capacity assessment) | IFRC | http://www.ifrc.org/vca<br>http://www.ifrc.org/Global/Publications/disasters/vca/vca-toolbox-en.pdf | anton.joehr@redcross.ch | DRR (& ACC).<br>Toolkit with training guide, lessons learnt. |

Note: Many (H)VCA (Hazard-Vulnerability-Capacity-Assessment) tools exist from a range of organizations at local to global level; at the base are participatory assessments of hazards, vulnerabilities and capacities of a specific location. Above two tables are an overview of most spread tools - amongst the Swiss DRR / ACC community of practitioners - for the integration of DRR (ACC) in project planning and implementation processes. The list is incomplete and constantly growing. Meanwhile many organizations developed and promote their own tools.

**Integration of DRR in WASH projects**
**Public: Mainly WASH project implementers**

| Tool | Institution | Download link | AGUASAN contact for further information | Comment |
|---|---|---|---|---|
| SABA toolbox (Spanish)<br>1.Tool for the integration of DRR in rural WASH projects<br>2. Mitigation measures<br>3. Damage assessment | SDC, Care, Regional Gov. Cusco | http://proyectosaba.org/publicaciones.html<br>http://proyectosaba.org/facipub/upload/cont/1073/files/01__herramienta_para_integrar_la_reduccion__48_pag_.pdf (part 1/3)<br>http://www.infoandina.org/es/content/gu%C3%ADa-de-mitigaci%C3%B3n-en-agua-y-saneamiento-rural (part 2/3)<br>http://proyectosaba.org/facipub/upload/cont/1074/files/03__manual_para_la_evaluacion_de_danos__28_pag_.pdf (part 3/3) | cesarina.quintana@eda.admin.ch | • Context of Peru (municipalities)<br>• Soon also in English good illustrations.<br>• Structure: Potential damages and measures per hazard type & WASH component (with illustrations)<br>• For project planning and management. |
| Guide for vulnerability reduction in WATSAN systems (spanish) | SDC | http://www.aguasan.org/images/reduccion_vulnerabilidad_agua.pdf | miriam.downs@eda.admin.ch | • Context of Nicaragua. Set of tools. Recent English translation.<br>• Structure: former CEDRIG, "WASH & DRR" annexes.<br>• For project planning. |
| Methodological tool for the formulation of DRR programs in WASH sector (Spanish) | Gov. Colombia, UNICEF | http://cedir.gestiondelriesgo.gov.co/dvd/archivospdf/Herramienta_GRD_Acueducto-2014.pdf | luzangela.bernalmedina@eda.admin.ch | • Structure: VCA per WASH component. Mitigation and preparedness measures<br>• For project planning. |
| DRR and water, sanitation and hygiene; comprehensive guidance | Wash Cluster, Care, PSO, AusAID | http://www.preventionweb.net/files/25105_disasterriskreductionandwashcompreh.pdf | - | • Structure: per hazard, dos & don'ts.<br>• Emergency /humanitarian focus.<br>• For project planning. |

**Further references related to DRR (ACC)**

- Swiss NGO DRR platform: http://www.drrplatform.org
- SDC DRR network: https://www.shareweb.ch/site/Disaster-Resilience
- SDC Climate Change & Environment Network: https://www.shareweb.ch/site/Climate-Change-and-Environment/
- PreventionWeb by UNISDR: http://www.preventionweb.net/english/
- Tool finder through UNFCC: http://unfccc.int/adaptation/nairobi_workprogramme/knowledge_resources_and_publications/items/5457.php

**Other useful tools, guidance (as collected by participants during AGUASAN workshop)**
**Public: practitioners of WASH sector**

| Tool, guidance, information | Institution | Download link | AGUASAN contact for further information |
|---|---|---|---|
| Compendium of Sanitation Systems and Technologies. | Eawag / Sandec | http://www.eawag.ch/en/department/sandec/e-compendium/ | philippe.reymond@eawag.ch |
| Community-Led Urban Environmental Sanitation Planning: CLUES | Eawag/ Sandec | www.sandec.ch/clues | philippe.reymond@eawag.ch |
| Financial, Institutional, Environmental, Technological and Social sustainability FIETS sustainability approach | Washalliance NL | http://adfair.me/end/fiets-guide-book-nl.pdf under http://www.washalliance.nl/sustainability-portal/ | ehorbaty@yahoo.com |