Delft University of Technology

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Water Management as a Peace Mechanism

An integrated and comprehensive new policy framework for the application of water management in stabilisation operations

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Colophon

MSc Thesis Report

Title: **Water Management as a Peace Mechanism**

Subtitle: **An integrated and comprehensive new policy framework for the application of water management in stabilisation operations**

This master thesis research has been performed to fulfil the requirements for the Master of Science degree in **Engineering & Policy Analysis, track Infrastructure & Environmental Governance, specialisation Water Management** at the Delft University of Technology.

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Preface

I believe that with good water management we can change the world. Especially in those areas with a minimum level of socioeconomic development. Since water is the basic need for human survival and is closely related to all facets of life, water management is a crucial development theme and possesses multiple characteristics to function as a peace mechanism in the (post-)conflict mission area of stabilisation operations.

By means of this MSc thesis I had the opportunity to put my thoughts into practice and the possibility to integrate my two professional passions: the water management sector which includes water governance, water diplomacy and hydraulic engineering; and the domains of international military and development operations. Ideally, I want to work for an organisation who appreciates the research outcomes as a true added value and has the resources package to implement the new policy framework. Therefore, I contacted the Netherlands ministry of Defence In the beginning of 2012. The Netherlands Military Engineering Centre of Expertise provided me the opportunity to execute this research. For this opportunity I am grateful and want to thank Ltcol. Edwin Leidelmeijer (Chief, Military Engineering Centre of Expertise) and Dr. Ir. Edwin Dado (Associate Professor, Netherlands Defence Academy). As a researcher at Military Engineering Centre of Expertise, I worked in the interesting and dynamic world of future military operations. By participating in several military exercises, diplomacy and humanitarian workshops and through a 3 months placement at the NATO headquarters in Brussels, I have gained a substantial amount of new knowledge and amazing personal and professional experiences. Regarding the placement at NATO I am very grateful for the opportunity and the guidance Dr. Susanne Michaelis (Officer Emerging Security Challenges Division, NATO) provided me. Also, I would like to thank the assistance of the Netherlands Delegation at NATO and NATO's staff members.

Special acknowledgements are for my daily supervisors Dr. Ir. Bert Enserink and Cap. (Ing.) Pieter van Ingen for supervising the process, their expertise, tips, interesting discussions and the guidance they provided throughout the research project. Furthermore, I would like to thank Prof. Dr. Ir. Wil Thissen, Dr. Ir. Eefje Cuppen and Ltcol. Edwin Leidelmeijer for providing constructive feedback and optimisation suggestions as part of my graduation committee. Koen Sterke, Victor Trees, Raoul Collenteur and Peter Ekelmans significantly contributed in improving my thesis as members of the review team. Furthermore, Drs. A. Mijling (Senior Advisor Communication, Netherlands ministry of Defence) has provided me with key communication and storytelling tips. Also, I would like to thank Dr. Jamie Shea (Deputy Assistant Secretary General for Emerging Security Challenges, NATO) for his foreword and all staff members of the Military Engineering Centre of Expertise for the pleasant and interesting working environment.

The validation and optimisation processes would not have been possible without the efforts of the consulted experts. Therefore I would like to thank the following persons for their efforts, interesting and inspiring conversation, good tips and critical opinions: Bgen. C.J. Matthijssen (Commander, Netherlands 11 Air Assault Brigade), Bgen. N. Tak (Director Comprehensive Crisis and Operations Management Centre, NATO-SHAPE), Col. G. van Cooten (Commander, Netherlands Army Corps of Engineers), Lcol. L. Chubbs (Staff Officer Environmental Management, NATO-SHAPE), Maj. P. Cremers (Staff Officer, Netherlands Land Warfare Centre), Cap. S. Leertouwer (Operations Officer, Netherlands Army Corps of Engineers), K. Vetting (Humanitarian Affairs Advisor, NATO-SHAPE), J. Kleijn (Focal Point Water Affairs Middle East, Netherlands ministry of Foreign Affairs), G. J. Lucius (Netherlands Diplomat, Netherlands ministry of Foreign Affairs), P. van den Berg (Political Advisor, Cordaid), F. van de Ven (Team leader Urban Land & Water Management, Deltares), H. Post (Director Water Management, Waterboard Reest & Wieden), A. Eikelboom (Consultant Military Operations, TNO), F. Koolhof (Lecturer at the Civil-Military Cooperation Centre of Excellence) and A. Onencan (PhD researcher: Water governance and water diplomacy, TU-Delft).

The essential support the home front provides is recognised by all employees of the Netherlands Armed Forces. Personally, I believe this is also applicable for writing a MSc thesis. Therefore, I am very thankful for the support my girlfriend, my family and my friends have provided me throughout the entire MSc graduation process.

Foreword

Foreword by Dr. Jamie Shea, Deputy Assistant Secretary General, Emerging Security Challenges Division, NATO.

The Alliance shares responsibility, as an active participant, for defining the post-conflict setting, including peace-keeping, stabilisation and security. A healthy environment is a pre-requisite for building a stable and safe society, and early cooperation with relevant civilian authorities is a pre-condition to ensure a good "hand-over-take-over".

Since the 1960s environmental experts have argued that the military should adopt measures to protect the physical and natural environment from harmful and detrimental effects of its activities. Environmental degradation can cause social and economic instability and new tensions, whereas the preservation of the environment during a military operation can enhance stabilisation and foster lasting security. Hence, minimising environmental damage during training and military operations is of great importance for the overall success of NATO's missions.

Especially following the Balkan conflict in the 1990s, NATO member countries are aware of the environmental challenges during military operations and they have adopted rules and regulations to protect the environment. NATO's measures range from safeguarding hazardous materials (including fuels and oils), treating waste water, reducing fossil fuel consumption and managing waste by putting environmental management systems in place during NATO-led activities. In line with these objectives, NATO has been facilitating the integration of environmental protection measures into all NATO-led military activities.

Integrated water management in the Alliance, however, is still an underdeveloped theme as it requires a thorough knowledge of the water resources and infrastructure, the climatic situation and dependencies, as well as the relevant local actors.

This thesis, by Robbert Huizinga, is a first attempt to bring together the different facets of integrated water management and assist with the establishment of a solid water management portfolio and implementation method for the military. Robbert breaks the tasks into short-term (water as enabler), medium term (water for conflict resolution) and long-term (water for cooperation).

For his case study, Robbert uses the Afghan region Uruzgan, a region that has been assisted by the Netherlands in its reconstruction and development. Due to Robbert's direct access to Dutch Battle Groups and Provincial Reconstruction Teams, he obtained a wealth of first-hand information and lessons identified. His findings have been validated by experts, who concluded that the framework is ready for implementation.

I consider that this work is of great relevance to future Alliance and multinational military operations, as well as to NATO's overall situational awareness in the field of the impact of environmental change on security.

I congratulate Robbert for his invaluable research and hope the Allies and others will give it the close attention that it deserves.

Reading Guide

This research report is written to be applicable for experts within the Defence, Development, Diplomacy and Water Management domains. Due to the diverse audience with diverging levels of expertise and the complexity of implementing the new policy framework at multiple organisational levels, all applied theoretical frameworks, lessons learned and best practices are explained in this report. Based on the report structure presented in figure A, this reading guide elaborates which chapters are recommended to consult for each type of reader.

1. **Summary.** Starting by reading the Summary is advised for all readers. Here the gap, research strategy, design criteria, the new policy framework, implementation principles, constrains, its usability and recommended steps for implementation and additional research opportunities are elaborated.
2. **Topic Introduction & Research Outline**. When the reader is not acquainted with or interested in: Emergent & Future Conflicts Drivers; Future Water Conflicts; and the Potential of Water Management in Stabilisation Operations, it is advised to consult chapter 1. To understand the gap and goals of this research including the problem statement, research objective, design objectives, research boundaries, research questions, research strategy and research methodology, please consult chapter 2.
3. **New Policy Framework.** First, explore the new developed policy framework by consulting chapter 8 of Part III. After, study the Fundamental Implementation Principles elaborated in chapter 9. Consulting chapters 8 and 9 is recommended for all readers. When the reader is not acquainted with Civilian-Military Interaction within the Integrated Approach, it is advised to consult chapter 10 as well. The new policy framework is created based on the design criteria presented in chapter 7. Within this chapter, the fundamental building blocks are summarised. For detailed explanation, the reader can consult the chapters 3, 4, 5 and 6 of Part II and the corresponding appendices.
4. **Case Study: Water Management in Uruzgan.** Because the application of water management in the NATO-ISAF Uruzgan mission is studied in depth for the first time, it is strongly recommended for all readers to consult chapter 6.
5. **Conclusions & Reflection.** In chapter 11, the research questions are answered. For all readers it is recommended to read chapter 12 which presents the usability, added value and constrains of the new policy framework. For policy makers and military commanders, it is advised to consult the next steps implementation opportunities and the additional research recommendations discussed in chapter 13.

Figure A: Report Structure.

Summary

In the Global Risk 2015 Report, the World Economic Forum has mapped the current and future global risks for societies. On a global scale, a water crisis is identified as the second largest risk. In the Middle East and North Africa, it holds the number one position. Consequently, water scarcity will have a significant influence on social, economic and political (in)stability. Figure 1 illustrates the locations and intensity of contemporary water risks.

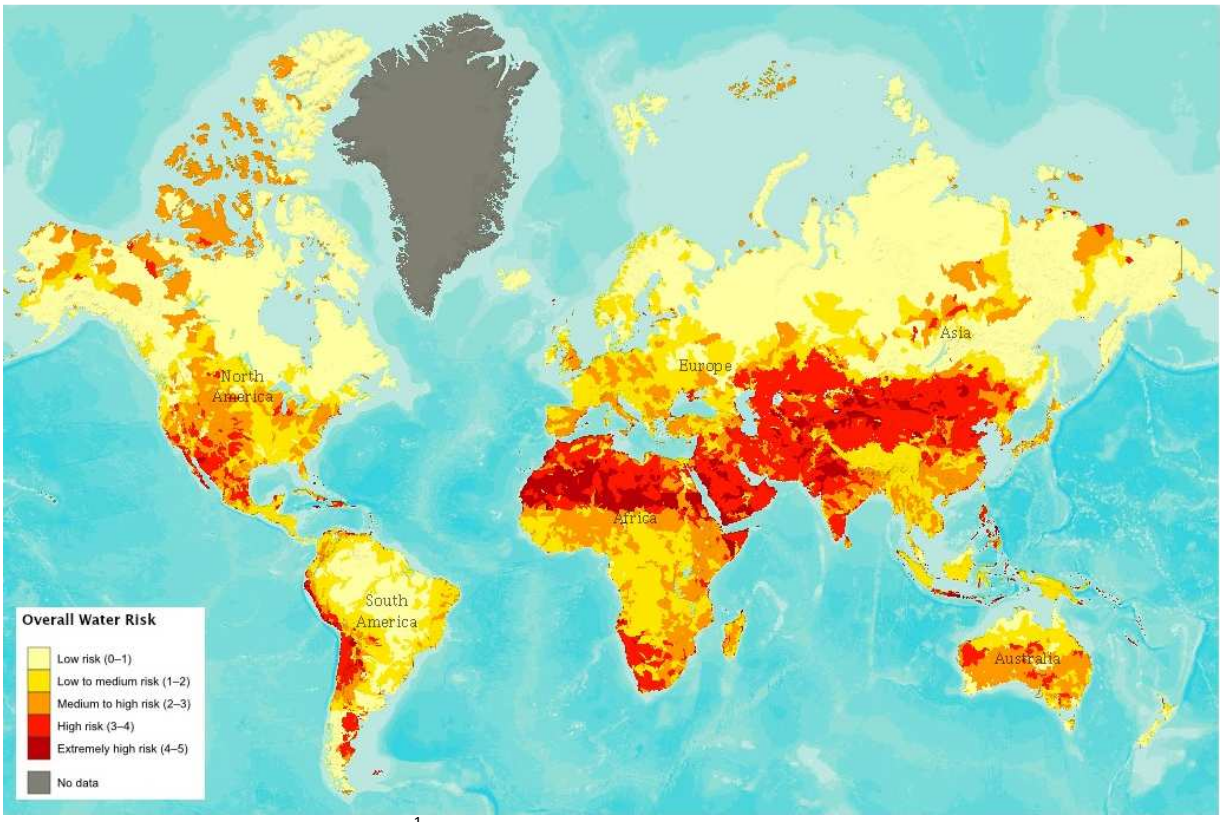

Figure 1: Overall contemporary Water Risk[1] (WRI, 2015).

Rapid population growth in combination with the effects of climate change, are the main drivers for the increasing water stress and scarcity levels in the current red and orange areas. The U.S. Department of State predicts that water scarcity and water quality problems will contribute to local, national and regional instability in the presented red regions of figure 1 within the next 10 years (ICA, 2012). Water shortages, poor water quality and floods are unlikely to cause a state failure and international tensions directly. However, in combination with environmental degradation, weak political institutes and limited resources (financial and technical), water scarcity and quality problems will be a destabilising factor. Caused by demographic and economic developing pressures in combination with weak water governance institutions, Africa, the Middle East and South Asia will face major water management challenges. Because water problems are strongly interlinked with geopolitical, social, economical and environmental issues, water issues can result in food shortages, economic recession, environmental degradation, serious health issues, large-scale involuntary migration, profound social instability, failure of national governance, state collapse and interstate conflicts.

[1] Overall contemporary Water Risk is define as (WRI, 2015: http://www.wri.org/our-work/project/aqueduct):

- Quantity Risk = 69.7% (Baseline Water Stress, Inter-annual Variability, Seasonal Variability, Flood Occurrence, Drought Severity, Upstream Storage, Groundwater Stress).
- Quality Risk = 9.1% (Return Flow Ration, Upstream Protected Land).
- Regulatory & Reputational Risk = 21,2% (Media Coverage, Access to Water, Threatened Amphibians).

According to Wolf (2007), Recent history taught us that in the 20th century no war has been fought due to water scarcity. Only minor armed skirmishes have been reported between ethnical groups, tribes, water-user groups or countries. Due to the shared water interests and water interdependency, most enemies around the world have a water-related agreement in place or are in the process of negotiating one. Thereby, the "baskets of benefits" principle which creates a positive sum of joint gains has proven its effectiveness. Once transboundary water management agreements are established through treaties, they turn out to be very resilient and effective over time even when conflicts are waged over non-water related issues. International water disputes have proven to act as a cooperation unifier on the long-term, especially when strong governance institutions are established. Until now the shared interests and interdependencies between nations and water-users have prevailed over armed conflicts regarding water resources. Also, water wars are neither strategically rational, hydrographically effective nor economically viable at this moment. However, the world is changing rapidly. According to the U.S. Department of State and the International Water Management Institute, the following "water wars" predictions can be expected in the next 10 years (ICA, 2012; Bliek, 2015):

- **Small and local armed conflicts over water resources will be likely,** because much is at stake for individuals or user groups. Especially when one actor (group) is excluded or limited by another actor(group) regarding water usages, water can be the root-cause or catalyst for armed conflicts between tribes, ethnical groups or coalitions. Since these conflicts will impact food and energy security, they can escalate into larger conflicts.
- **Water-related state-on-state armed conflicts will be unlikely**. However, as water shortages are becoming more acute, shared waters will be used as negotiation leverage, to exert power and for destabilisation activities through social, political and economic strategies.
- **Water used as a weapon by terrorist or in hybrid warfare will become more likely,** through targeting essential or vulnerable physical water infrastructure.

Research Objective

The root-cause of every conflict lies in political-, social-, and economic inequalities due to the uneven distribution of resources between groups of actors or the exclusion of one group from resources by another. This also includes the humiliation and marginalisation of (groups of) people (Royal Netherlands Army, 2003; Ramsbotham et al., 2011).

Using water management in a comprehensive manner is challenging, but at the same time also an opportunity for creating long-term security, prosperity and freedom in the complex and dynamic multi-actor environment of today's stabilisation operations[2]. Due to its vital functions at all societal levels, good water management is a crucial ingredient in every reconstruction step and sustainable socioeconomic development strategy in the aftermath of war and armed conflicts. During the NATO-ISAF Uruzgan mission, the Netherlands Armed Forces rediscovered and experienced the conflict prevention and conflict resolution potentials water management possesses. The Afghan scenario is not unique. In every region where water is an issue, water management can be applied as a strategic dispute resolution, confidence building and cooperation mechanism.

[2] Stabilisation operations by third parties are a mean to de-escalate wars and prevent conflict escalations. Thereby, the aim of every stabilisation operation is to decrease the level and number of violent conflicts and shape the conditions for a self-reliant society. This is accomplished by rebuilding the host-nation governmental and security organisations, sustainable long-term orientated socioeconomic development and short-term reconstruction acts. As a result, a successful stabilisation operation should render itself superfluous. Stabilisation operations are complex and dynamic, since a mixture of peacekeeping-, peace enforcing-, humanitarian operations and reconstruction acts are executed simultaneously in an unstable, problematic and underdeveloped (post-) conflict arena, where multiple stakeholders with different interest and power positions act accordingly to their own interests.

Based on Kleijn (2014), Onencan (2014), Berg (2014), Lucius (2015), Matthijssen (2015), Post (2015), Tak (2015), and Cooten (2015), the following three specific water peace mechanisms were identified by the author in an early stage of the research:

1. **Water as Enabler.** Ground warfare is characterised by capturing or defending land. Because water is a basic need, water issues are a discussable item in every region within a (post-)conflict area, safe and un-safe. Through initiating a dialogue about water, problem awareness is created. After, basic water needs can be provided through development projects which are executed in cooperation with the local population. As a result, the commander increase its area under influence and control step by step.
2. **Water for Conflict Resolution.** By means of water diplomacy, water conflicts including its destabilising effects can be prevented. Also, other pressing water problems can be made discussible.
3. **Water for Cooperation.** By facilitating water meetings between the local water users, water issues and possible solution are made discussible. Thereby, the foundation is created for resilient, locally oriented and cooperative water governance systems.

To prevent conflicts, contradictions and reconstruction duplications in the aftermath of war, a coherent, coordinated, participatory, and conflict-sensitive approach to manage water in the post-conflict region is needed (Weinthal et al., 2011). Therefore, the Integrated Approach, a civilian-military planning and execution method, is developed by the Netherlands government. However, this is a generic non-water methodology aimed to create synergy between the participating Netherlands ministries, NGOs, IOs, and the host-nation. Consequently, the following problem is addressed by this research:

Problem Statement: **Absence of a policy framework which applies Water as Enabler, Water for Conflict Resolution and Water for Cooperation as a peace mechanism in the complex and dynamic post-conflict transformation towards normalisation.**

In the future, water issues are expected to be a root-cause or catalyst of conflicts (ICA, 2012; Bliek, 2015). As a result, the Netherlands Armed Forces will be confronted with water issues in stabilisation operations. Consequently, a policy framework how to apply water management as a de-escalating, conflict prevention and resolution instrument in stabilisation operations is regarded essential by the Netherlands Army Corps of Engineers (Cooten, 2015). However, an integrated and comprehensive policy framework which applies water management as a development and peace mechanisms tailored for application in the complex and dynamic environment of stabilisation operations, did not yet exist. Therefore the following research objective is formulated to close the gap through the development of the new policy framework:

Research Objective: **Providing the Netherlands Armed Forces and its partners with a comprehensive policy framework which integrates water management and water diplomacy as a peace mechanism for application in stabilisation operations.**

Research Strategy & Process

A policy framework transforms a future vision to specific actions with the aim to make the vision reality (Johnson et al., 2013). By applying the Research Strategy as displayed in figure 2, the new policy framework was developed. Thereby, the following main- and sub-research questions obtained a central position:

Main Research Question:

In what manner is water management applicable as a peace mechanism in the complex and dynamic environment of stabilisation operations?

Sub Research Questions:

1. What are the fundamental design criteria for the comprehensive, coherent, strategic and integrated new policy framework?
2. How can the Integrated Approach be extended to a comprehensive, coherent and integrated policy framework for the application of water management and water diplomacy as a peace mechanism in stabilisation operations.
3. What are the strengths, weaknesses, opportunities and threats of the new policy framework?

First the topic was explored and the policy gap was made explicit. As a result the problem statement, research objective, design objectives, research boundaries, research questions, research strategy and the research methodology were formulated.

In the Analysis part the complex and broad research objective was structured. Therefore, the problem was explored thoroughly by: literature reviews; participation in workshops and military exercises; expert consultations; and a case study. Thereby, essential understanding and knowledge was obtained, accumulated and summarised regarding Stabilisation Operations, the Integrated Approach, the Integrated Water Resources Management (IWRM) framework and which water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices can be applied in stabilisation operations. Through the case study: Water Management in Uruzgan (NATO-ISAF), the application of water management in a recent stabilisation operation was studied. As a result, crucial recommendations for the application of water management in future stabilisation operations were discovered and formulated. Based on these studies, the design criteria for the new policy framework were determined.

Founded on the formulated design criteria, the new policy framework is designed iteratively in part three. Inspired by the six implementation phases of the Integrated Approach, the Uruzgan Campaign Plan methodology and the Integrated Water Recourses Management implementation principles, a blank sheet of paper evolved to a conceptual design at the early beginning. By means of tips and recommendations of the consulted experts following from the validation interviews, the conceptual design was optimised resulting in the new policy framework. Their optimisation tips are included in the design criteria. This explains the connection between the design and validation process, displayed in figure 2 as the development-validation-optimisation loop. For the validation process, 12 experts within the domains of defence, development, diplomacy and water management were consulted. The results of the validation process were summarised by means of a strengths, weaknesses, opportunities and threats analysis (SWOT- analysis).

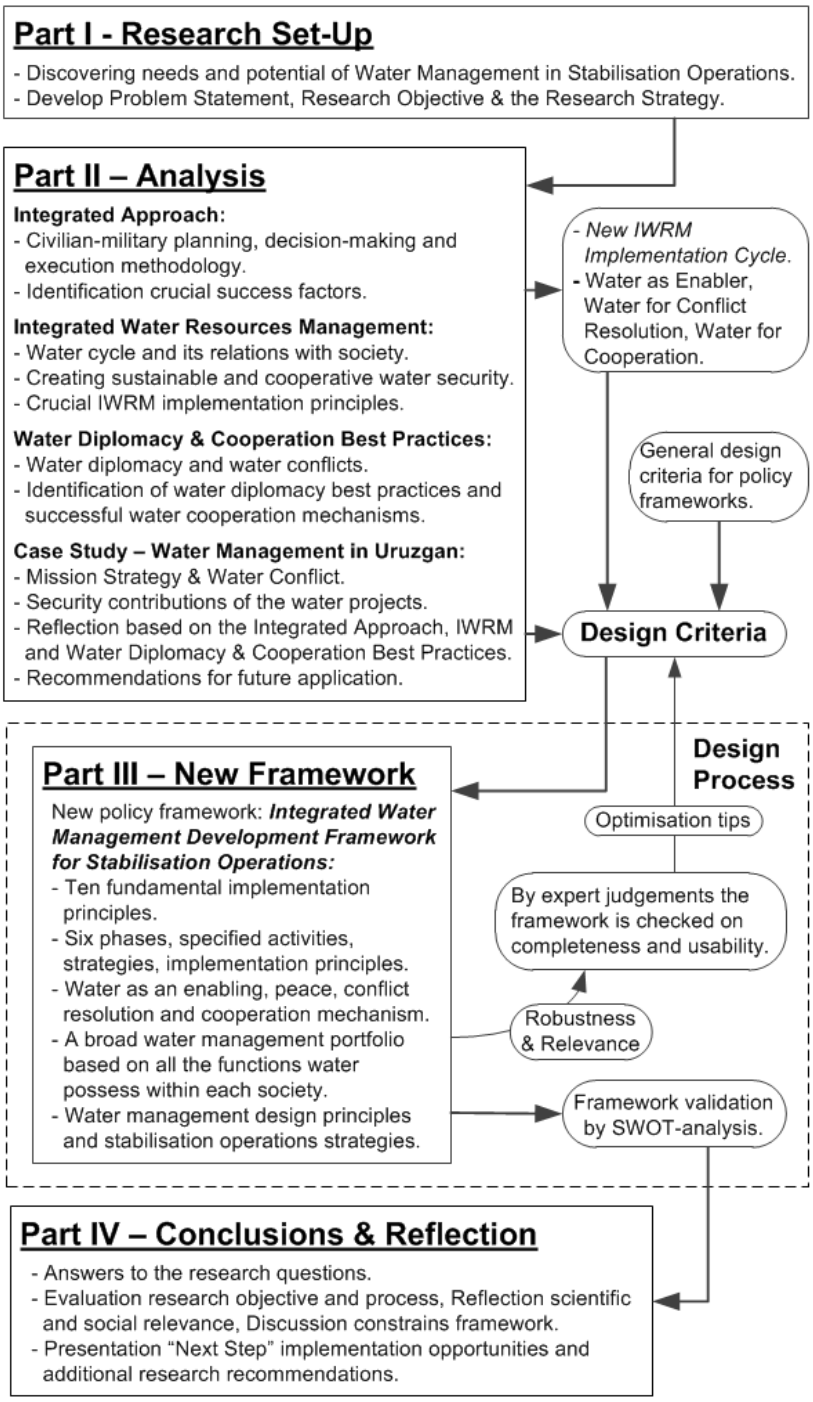

Figure 2: Research Strategy & Process.

In the fourth and final part the research questions were answered. Also, the usability, constraints, added value, the scientific and social relevance of the new policy framework including the research process were evaluated Finally, next steps implementation opportunities for the Netherlands Armed Forces and additional research suggestions which emerged throughout the research process were formulated.

Design Criteria

In general, an integrated policy framework should be (Johnson et al., 2013; Daalen et al., 2014):

- **Holistic,** by integration of the planning, decision-making and implementation of the system interests.
- **Flexible,** through fundamental "pillars" with a flexible "skin" since requirements will change over time.
- **Robust**, by recognising errors mitigation measures should be developed to make it failure proof.
- **Well and clear structured,** to ensure a good performance.
- **Designed upon multiple stakeholder views**, for the creation of innovative solutions and a broad supported implementation.

Regarding the application of water management in stabilisation operations, the following specific design criteria were formulated based upon the knowledge obtained in the Analysis part and the recommendations from the consulted experts (see figure 2):

- Use the Integrated Approach as the fundamental pillar.
- Make the Integrated Approach water specific.
- Include Water as Enabler, Water for Conflict Resolution and Water for Cooperation as crucial strategies in combination with the DIME (Diplomacy, Information, Military, Economic) and Ink Blot strategies.
- Include scenario development to study how water management can serve as a de-escalating, conflict resolution, development, peace and cooperation instrument.
- Prevent water conflicts and create water security through coherently planning the short-, and medium-term activities accordingly with the long-term development scenarios of the host-nation.
- Include the identified critical success factors of the Integrated Approach and the Integrated Water Resources Management framework. Also, include the discovered water diplomacy and resolution best practices, the de-escalating water cooperation mechanisms and the recommended design criteria regarding the applications of water management in future stabilisation operations following from the case study: Water Management in Uruzgan (NATO-ISAF mission).
- To guarantee applicability in every geographical environment, inclusion of a broad Water Management Portfolio which represents all water functions is crucial.
- Develop an Impact & Assessment Plan including key performance indicators.

The New Policy Framework

To create the recommended holistic, robust and water specific new policy framework with a clear structure, the six implementation phases of Integrated Approach serve as the fundamental backbone of the new policy framework. As displayed in the figures 4 and 5, the following six implementation phases of the Integrated Approach are included through the Activities pillar: orientation, analysis, plan formulation and decision-making, planning, implementation and evaluation. Consequently, all phases crucial for the application of water management in a stabilisation operation are included in one overall policy framework. Furthermore, the phases of the Activities pillar are made specific for the application of water management in stabilisation operations. More specific and crucial supporting strategies corresponding with the activities formulated in the Activities pillar, are presented in the Strategies pillar. In this pillar, the short-term quick impact reconstruction projects, medium-term transition activities and long-term water management development objectives are interlinked, planned and executed based on the Adaptive Solution Path approach which is presented in figure 3. Based on this integrated strategy all short-, medium- and long-term activities can be planned and synchronised with the needed flexibility and coherency which are tailored accordingly to the set boundaries of the development scenarios of the host-nation.

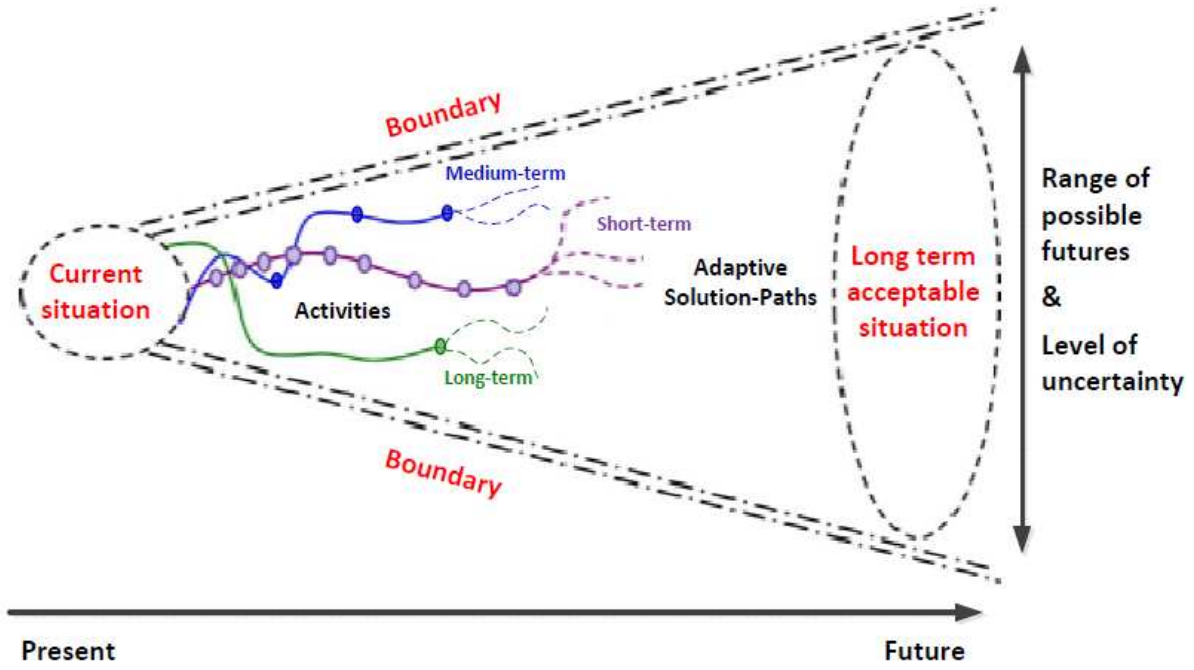

Figure 3: The Adaptive Solution Path approach (Based on: Bemmel et al., 2014; Enserink et al., 2010; combined and supplemented by the author).

Furthermore, Water as Enabler, Water for Conflict Resolution and Water for Cooperation are included in the Strategies pillar. As a result, the application of water management as a de-escalating, conflict prevention, development, peace and cooperation instrument in stabilisation operations is made specific. To provide a clear structure, the Phases pillar introduces each phase of the Activities and Strategies pillar with a distinguishing question or comment. The coherency and interrelation between the six implementation phases and three pillars is strong. As displayed in the figures 4 and 5, the new policy framework is divided into two parts. Phase 1 until 3 is distinguished by orientation, assessing, plan formulation and decision-making at the higher political and military levels. Mission planning, deployment, execution and evaluation characterises phases 4, 5 and 6.

Figure 4 presents the implementation phases 1 until 3. The process starts by the Orientation phase which is based upon the strategic objectives of the Netherlands government. Long-term stability can only be established by a functional and effective governance system as well as socioeconomic growth. A joint execution of defence, development and diplomacy activities is thus required to transform the (post-)conflict area toward a self-reliant region. To prevent conflicts and create coherency, the short-term peace-building efforts need to be interlinked according to the long-term development objectives. Therefore, cooperation or coordination with relevant civilian and military actors including the host-nation is a must. Preferably, the creation of the Civil-Military Water Group[3] starts in phase 2 which includes: gaining situational awareness and understanding, determining the conflict stage and possible resolution techniques, mapping of possible strategic scenarios within the DIME domain (Diplomatic, Information, Military, Economic) and by which water management peace mechanisms water security can be achieved. As end result, scenarios are development how water management can serve as a peace mechanism. In phase 3 the campaign plan goals and development themes are formulated. Through its own campaign plan theme: "Water Management & Governance", the application of water management is formalised and included in the campaign plan. Also, the water management objectives and synchronisation opportunities are mapped and the factors to mitigate, exploit and influence formulated. The end of phase 3 is marked by the political decision-making moment through the publication of the Parliament 100 Letter.

[3] The Civil-Military Water Group preferably includes: the Netherlands ministries of Defence, Foreign Affairs and others, host-nation GOs and local actors, coalition- and partners nations, IOs, NGOs, IFIs and private sector enterprises.

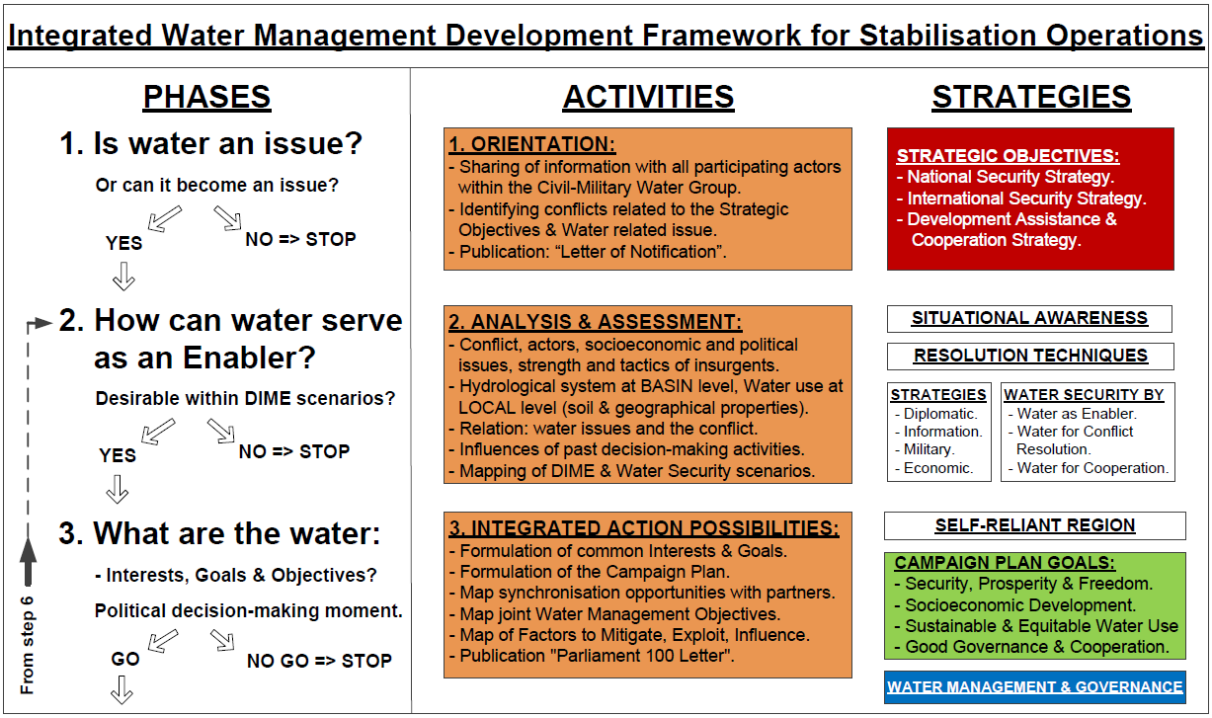

Figure 4: Implementation phases 1 until 3.

Figure 5 discuses the planning, execution and evaluation of the mission. In phase 4, all water functions are represented by the following seven Water Management Development Themes:

- Water for Food.
- Water for Drinking.
- Water for Nature.
- Water for Healthcare.
- Water for Safety & Shipping.
- Water for Industry & Energy.
- Water for Recreation & Tourism.

In order to increase the overall benefits, these themes are connected by the Water Governance theme. Local water usage and problems including the hydrological and geographical conditions, differ per location and situation. Consequently, each water management problem-solving instruments needs to be tailored to the local conditions. To be effective and efficient from the start, a broad and flexible Water Management Portfolio for each development theme is presented in the research rapport. As a result, all possible water management activities regarded appropriate to prevent water conflicts and for the creation of water security can easily be mapped in phase 4. This ensures the applicability of the new policy framework in every geographical environment.

To strengthen the sum of the results and to prevent contradictions and duplication, first the long-term objectives, secondly the medium-term shaping conditions and finally the short-term quick impact projects are planned. Moreover, a comprehensive and synchronised implementation with all participating partners within the Civil-Military Water Group is crucial. Thereby, the water management activities are planned accordingly with the host-nation development scenarios, existing water policies and the prioritised needs. Because the time and engagement horizons of, and between the different involved actors differ, agreements are essential. Consequently, clear demarcated synchronisation agreements are made in phase 4 between the participating partners regarding appropriate water management activities and their objectives. This includes the distribution of tasks, resources, responsibilities, accountability, the exit-strategy and the joint ownership of the long-term goals. Through this integrated strategy, coherency between the activities is created and continuity guaranteed.

Based upon the in phase 4 mapped, planned and synchronised water management activities, first the short-term activities, followed by the medium- and long-term activities are executed in phase 5 by means of the *New IWRM Implementation Cycle.* Because water management is by definition long-term orientated accompanied with short- and medium-term activities, it is an ideal mechanism to transform the conflict from the early beginning of the stabilisation stage to the end of the normalisation stage. Within this transition process, the following water peace mechanisms are applicable for executing the short-, medium- and long-term activities:

- **Water as Enabler (short-term supporting effects).** Ground warfare is characterised by capturing or defending land. In both circumstance, commanders use the landscape in their advantage. Because water is a basic need, water has proven to be a discussable issue in every region within a (post-)conflict area, safe and un-safe. By starting the discussion over water issues, the situational understanding related to water and non-water issues is improved. As a result, water management reconstruction activities can be made debatable and executed in cooperation with the local population. Thereby, essential development activities are performed. As a result, water management contributes to security, prosperity and freedom since the breeding grounds of the armed insurgency; political, social and economical dissatisfactions are decreased. More importantly, this enables the commander to increase its area of influence through initiating a dialogue about water with the local population in the areas that are not under his control. By executing reconstruction activities in the areas outside its ink blots of control, the stabilisation force can increase its area under influence and control, step by step.
- **Water for Conflict Resolution (medium-term shaping conditions).** By means of water diplomacy, water conflicts including its destabilising effects can be prevented. Also, other pressing water problems can be made discussible. Good water management and governance is a common interest of most actors. Consequently, most freshwater utilisation disputes are resolved through negotiations. Organising and facilitating water meetings between the local water users, has proven to be successful in de-escalating water conflicts, stimulating mutual actor problem understanding and discussing possible solutions. By connecting the short-term reconstruction project with the Water Development & Cooperation policies, the medium-term shaping conditions transform the process to sustainable cooperation and water security agreements. Thereby, the stabilisation operation represents a window of opportunity to rebuild or improve resilient, adaptive and cooperative water governance institutions that are capable of coping with future uncertainties and impacts.
- **Water for Cooperation (long-term objectives).** When actors are dependent or interrelated by cooperation mechanisms, violent conflicts are unlikely to occur. Especially when the water resource is shared sustainable, equitable and reasonable between up- and downstream users including its cost and benefits. As a result, violent conflict over water availability and quality will be reduced and opportunities for long-term sustainable livelihoods created. Therefore, properly tailored water diplomacy functions as the base for creating common goals regarding the local water issues. From this trust, consensus and cooperation can flourish resulting in long-term focussed stability and socioeconomic development. Consequently, peace-building is strengthened since confidence is built and cohesion between communities created. Furthermore, the foundation is created for resilient, locally oriented and cooperative water governance systems. Thereby, future and pressing water problems, can be resolved peacefully.

To create a self-reliant region, all the water management activities need to be tailored and executed in cooperation with the local population and host-nation governmental organisations. As a result, local ownership is fostered. Thereby, the developed Water Management Portfolio assists in the planning, selection, execution and optimisation of the water management activities during the stabilisation operation. By means of water allocation and prioritisation, water security can be achieved for its different functions and users. Robust, resilient and sustainable designs will significantly contribute in achieving water security. Therefore, application of the formulated Water Management Design Principles is strongly advised. When the time is right, the activities handedover-takenover process to the host-nation authorities, local population, NGOs, IOs or coalition- and partner-nations takes place.

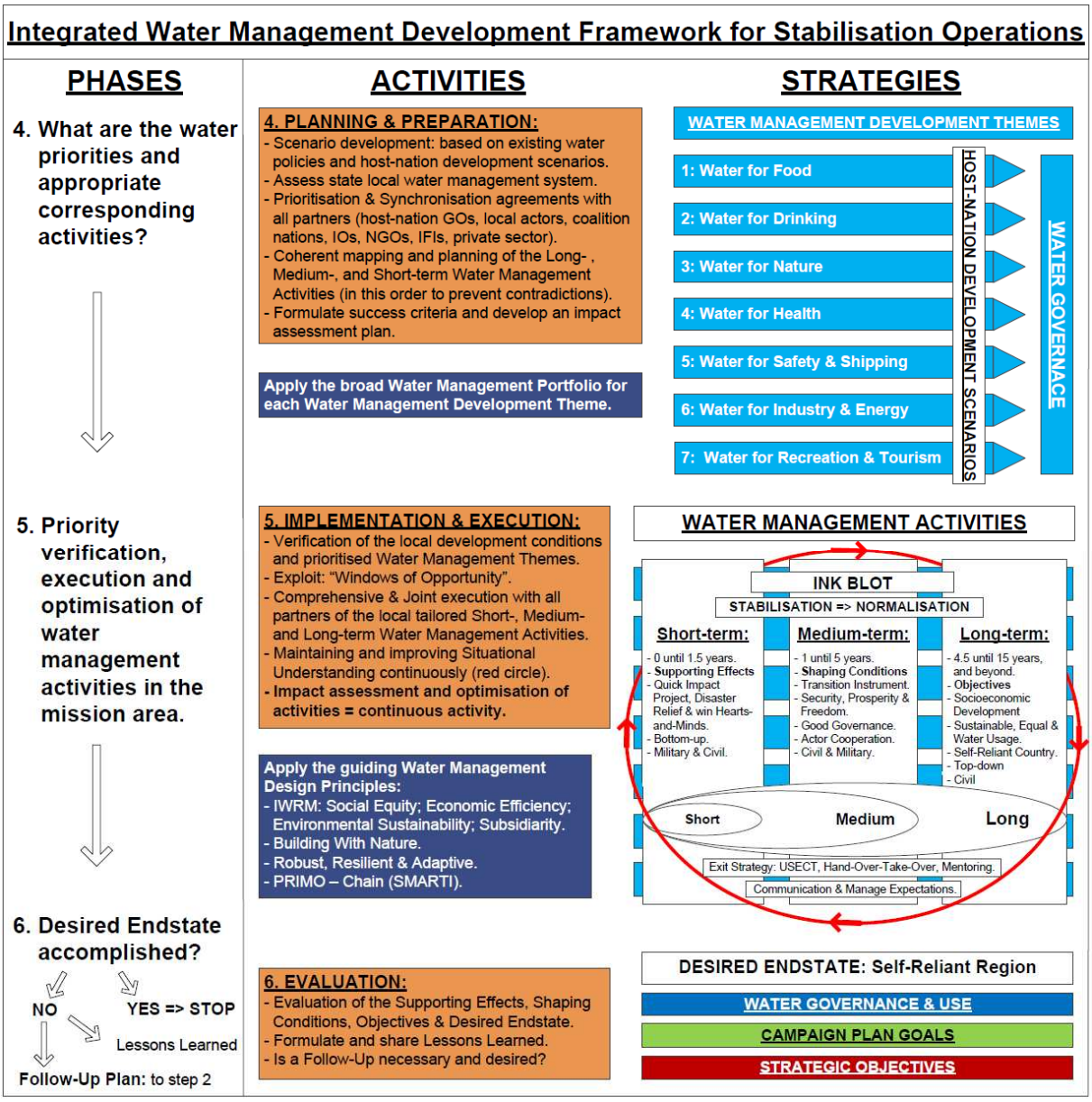

Figure 5: Implementation phases 4 until 6.

By means of the key performance indicators included in the impact and assessment plan, the Desired Endstate; a self-reliant region or country, is evaluated in phase 6. When needed or regarded appropriate, a follow-up plan can be formulated. Consequently, the new implementation starts again at implementation phase 2, since the participating actors already reached the consensus on whether water is or can become an issue in the region.

Fundamental Implementation Principles & Framework Constraints

For a successful implementation of the new policy framework, application of the following ten Fundamental Implementation Principles will be crucial[4]:

1. DO NO HARM! (Do not create a root-cause of conflict and use a minimum level of force).
2. A long-term engagement is key!
3. Common (local) interest is the starting point for cooperation.
4. Treat each actor equally and with respect. Do not exclude actors from any kind of resources, like water. Favouring or marginalisation is a root-cause of conflict.
5. Trust is the precondition for cooperation: interact equivalent, act transparent, stay neutral, have a collaborative mind-set, make difficult and delicate subjects discussable.
6. Manage expectations and only invest in activities which have real value for the local population.
7. Apply a non-zero-sum multiple actor gain approach. Do not start a multi-issue game related with social, cultural and political sensitive issues. Keep it with water!
8. Work "as civilian as possible and as military as necessary". Minimise the use of force. But be aware, safety and security priorities have a higher priority.
9. Apply the Adaptive Solution Path approach (see figure 3): coherent and synchronised planning of the short- and medium-term activities accordingly with the long-term objectives which are tailored based on the host-nation development scenarios. To create the desired unity of effort and complementarity, early actor involvement, common goals, sustainable cooperation and relevant coordination between all appropriate civilian and military actors is crucial.
10. Exit Strategy = local problem ownership, local problem-solving responsibilities, local entrepreneurship and governance capacity. Consequently, from the start all activities need to be planned, designed and performed together with the local inhabitants and be based on their knowledge, cultural principles and methods. To stimulate socioeconomic development these are ideally labour intensive.

However, be aware, the new policy framework obtains the following constraints:

- The new policy framework is a simplification of reality. An actual implementation will not be simple. Thereby, the new policy framework provides the needed guidance and enhances coherence.
- To guarantee a successful implementation, education and training in the application of the new policy framework will be essential especially for non-experts.
- Due to the scale of water management, it is sensitive to be undermined by strategies of the opponents.
- A short-term focus will result in failure. Hence, since it will be a long-term process, a long-term commitment is needed. Also, support from the top decision-making levels is needed at an early stage.
- For maintaining the required security level and to increasing the level of trust with the local population, a stabilisation force need to be present which acts appropriately against the armed insurgents.
- Participating actors also become responsible and accountable. This can be a barrier for involvement.
- Involving too many actors will make the implementation of the new policy framework complex. For a real-time implementation, selecting the right partners with substantial experience will be crucial.
- Only implementing the new policy framework does not guarantee success. Its success depends on a wide variety of other factors and issues which are difficult to control.
- The phases and activities are schematised as a linear process and standalone activities. Due to the complexity and dynamics in stabilisation operations, implementation is not a strictly a linear process.
- Military, safety or security priorities will probably come first.
- The solutions need to be in harmony with the changes the local culture can absorb. Especially fundamental changes need to be implemented gradually and appropriately in respect to the local values, interests, social and political structures.

[4] Based on the studied subjects presented in the Analysis part (see figure 2), these principles are formulated by the author. For detailed information including the applied sources, consult chapter 9 of the research report.

Conclusions

Effective and Efficient Integration of Water Management in Stabilisation Operations. The aim of every stabilisation operation is to decrease the level and number of violent conflicts and shape the conditions for a self-reliant society. Here, the main strategy is to undermine the opponent's hostile aspirations by creating a secure environment in which socioeconomic activities can be developed. In this process, rebuilding the host-nation governmental authorities and security organisations, sustainable long-term orientated socioeconomic development and short-term reconstruction acts are essentials. As a result, a successful stabilisation operation should render itself superfluous.

Due to its vital functions at all societal levels, good water management is a crucial ingredient in every reconstruction step and sustainable socioeconomic development strategies in the aftermath of war and armed conflicts. When water is a cause of conflict related with state fragility or other problems, the new policy framework can contribute to solving the problems. Thereby, the new policy framework provides coherency and strategies to the subject of water in stabilisation operations, secures and describes the required knowledge and makes priority setting possible. Also, it provides the needed handles and levers to use water as an enabling development and peace instrument. Thereby, resolving pressing water problems by proper water management, directly contributes to security, prosperity and freedom since the breeding grounds of the armed insurgency; political, social and economical dissatisfactions are decreased. In addition, the new policy framework transforms the focus on the problematic conflict itself, toward solutions and cooperation through water management. In this process, the application of the ten Fundamental Implementation principles is crucial in any conflict situation. Consequently, peace-building is linked with water management which is regarded as an essential need by the consulted experts. Especially when all relevant actors are provided with a sustainable, equitable and reasonable water utilisation, the new policy framework acts conflict preventive.

The new policy framework is based on the Integrated Approach and multiple other fundamental policies, strategies and lessons learned. Consequently, the new policy framework is regarded by the consulted experts as directly applicable. Thereby, it serves as a guiding tool for the top political and military decision-makers. Furthermore, it is evaluated as a clear, coherent, well structured line to follow and checklist for military and development personnel who will execute and optimise the water management activities throughout the stabilisation and normalisation stages. Since the short-term projects, medium-term transition and long-term sustainable development activities are planned and executed coherently and accordingly with the host-nation development scenarios, conflicting and contradicting (well-intentioned) actions will be prevented. Furthermore, duplications and a focus primarily on the quick impact projects will be decreased. Thereby, the broad and flexible portfolio describing all possible water management activities developed and presented in the research report, provides structure and guidance. As a result, water issues can be addressed in an integrated, coherent and structured way in every geographical environment from the beginning of a stabilisation operation. Furthermore, early actor cooperation and synchronisation agreements between the participating actors can be made regarding; what to do, to what degree and in what sequence including who is best suited and equipped to deal with which challenge at what moment in time. As a result, a greater impact and better results can be achieved due to a clear prioritisation of activities and a clear distribution of labour and other resources. Consequently, a crisis management operation can be conducted faster, more effective and more efficient. Not only is a plan created for the military deployment, but also for the follow-up period when the military component is pulled-out. Thereby fewer organisational shortfalls, less personnel, maximum utilisation of the available resources, less financial assets, minimum duplications, faster help and fewer casualties are expected.

Concluding, the new policy framework will help the Netherlands Armed Forces including its military and non-military partners to conduct better stabilisation operations. Since the Netherlands Armed Forces has identified water as a potential root-cause of future conflicts, the commander of the Netherlands Army Corps of Engineers considers the new policy framework as an essential tool for future operations (Cooten, 2015).

Leading its Implementation. Since the problems are not military, neither the long-term solutions are. When reasonable developed, a host-nation governmental organisation with sufficient water management knowledge ideally implements the new policy framework. However, in stabilisation operations this will be unlikely. Because water usage and water allocation are political sensitive, the nations who are going to assist with the implementation should obtain a neutral position. Due to the long-term needed commitment and engagement, preferably one or a combination of international civilian conflict-resolution and development organisations, like the UN or EU is recommended to lead the implementation. They can redirect the water part to NGOs, a knowledge institute or the government of the Netherlands. In this situation, the Netherlands ministry of Foreign Affairs is the most appropriate organisation to lead its implementation in close cooperation with the ministry of Defence and the other actors participating in the Civil-Military Water Groups[5], because:

- Engagement with the host-nation should be established by means of the political channels. Foreign Affairs has these contacts due to their global embassy network.
- Foreign Affairs can better focus on the long-term socioeconomic development objectives compared to the ministry of Defence.
- Because the ministry of Foreign Affairs maintains contact with the host-nation continuously, they are better able to guard the long-term needed continuity and engagement.

Crisis Management Instrument. When water is or can become a security or development issue, application of the new policy framework can contribute to establish security, prosperity and freedom**.** Because both preventive and de-escalation measures are included, the new policy framework is applicable in the prevention, stabilisation and normalisation stages of the crisis management spectrum. Also, the new policy framework can be applied as a hybrid warfare counter strategy.

Contributes in achieving the Strategic Objectives of the Netherlands. Application of the new policy framework contributes in achieving the following national and international strategic objectives and vanguards of the Netherlands government:

- Defence of national territory and interests including those of the NATO alliance.
- Economic, trade, energy and resources security.
- International water and food security including healthcare rights.

Unique International Capability. The new policy framework provides the professional answers how water conflicts can be resolved and prevented. As a result, the Netherlands Armed Forces and its partners are prepared when they will be confronted with water related conflict issues in future stabilisation operations. In combination with the capabilities of 1CMI-Co and the Army Corps of Engineers, the Netherlands possesses a unique capability within the NATO alliance. Consequently, the Netherlands can play an important role in enhancing conflict prevention, development, humanitarian and disaster relief missions, stabilisation- and crisis management operations of NATO, the UN and EU.

A comprehensive Integrated Approach. The new policy framework contributes to a sustainable cooperation environment between the Netherlands ministries of Defence and Foreign Affairs, collation- and partner national, NGOs, IOs, IFIs, host-nation GOs, local residents and actors, knowledge institutes and private sector enterprises. Because early stakeholder interaction and involvement is included, cooperation and coordination is stimulated by the new policy framework from the beginning of the mission. Since non-governmental actors have a prominent position in the new policy framework, it is the first in its kind describing a real, total and comprehensive Integrated Approach. Especially when the Top Sector Water, the Netherlands Water Partnership and Water Development programs are included and synchronised. This comprehensive Integrated Approach is an important vanguard of the Netherlands government.

[5] The Civil-Military Water Group preferably includes: the Netherlands ministries of Defence, Foreign Affairs and others, host-nation GOs and local actors, coalition- and partners nations, IOs, NGOs, IFIs and private sector enterprises.

Contributes in Achieving the UN Sustainable Development Goals. Resolving water issues in stabilisation operations directly contributes in achieving goal 6 of the United Nations Sustainable Development Goals: *'Ensure availability and sustainable management of water and sanitation for all'.* Also, nine of the seventeen goals are closely related to and effected by the water cycle. As a result, they cannot be achieved without good water management. Consequently, the implementation of the new policy framework in poor, fragile, failing and conflicting regions, contributes in achieving a substantial part of the United Nations Sustainable Development Goals and creates opportunities for long-term sustainable and peaceful livelihoods.

Contributes in Mitigating the Global Risks Landscape 2015. In the Global Risks Landscape 2015, a water crisis is identified as the second largest global risk. In the Middle East and North Africa, the water crisis risk holds the number one position. Therefore, water security and scarcity will have a significant influence on social, economic and political (in)stability. Due to the interconnections displayed in figure 6, the occurrence of the water crisis risk consequently triggers other risks like; a food crisis, large-scale involuntary migration or a state collapse. Hence, for sustainable risk mitigation creating proactive risk-source control solutions based on prevention will be the most effective method. In practical terms, the new policy framework can significantly contribute in mitigating the water crisis risks and its interrelated second order risk events by creating and gradually expanding the ink blot of security, stability, development and prosperity at the unstable and conflicting southern borders of Europe, like in Mali and Syria.

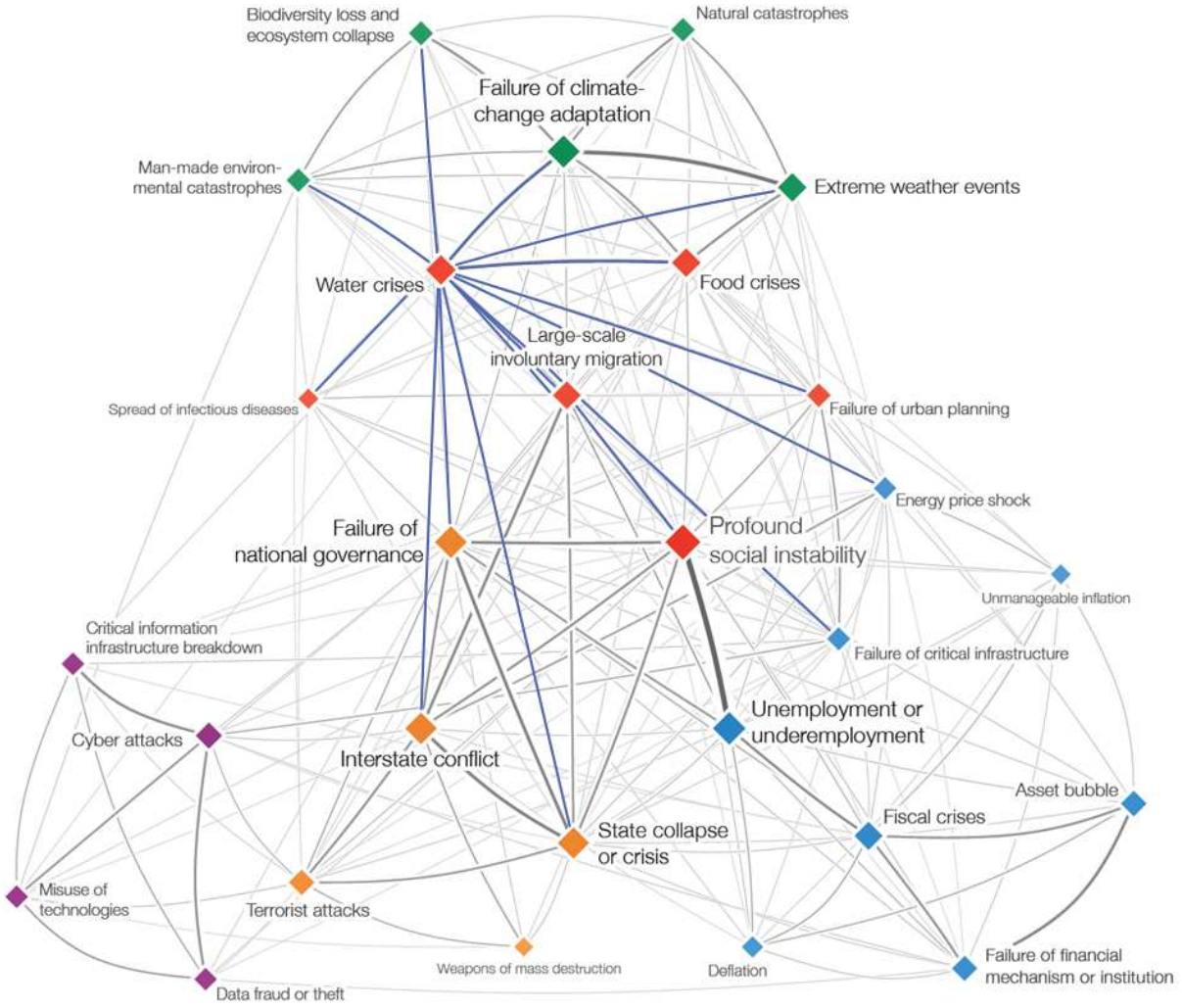

Figure 6: Global Risks Interconnections Map 2015 (WEF, 2015).

Recommendations

Education. It is advised to integrate the new policy framework within the education programs of: the Civil-Military Cooperation Centre of Excellence; the Executive Master of Security and Defence at the Netherlands Defence Academy; the Netherlands Army Corps of Engineers; 1 Civil Military Interaction Command (1CMI-Co) of the Royal Netherlands Army; "Klasje Clingendael" of the Netherlands ministry of Foreign Affairs and the NATO School.

Inclusion in the Integrated Approach. The new policy framework provides the Netherlands government with a tool to fulfil an important role on the international playing field of stabilisation and crisis management operations. Therefore, it is advised to add the new policy framework as official policy within the Integrated Approach. In addition, inclusion in the planning doctrine of the Civil-Military Cooperation (J9 CIMIC) specialist of Netherlands Military Operations Centre (DOPS), is strongly advised.

Verification & Optimisation. It is advised to verify and optimise the new policy framework based upon implementation in an exercise of the First German/Netherlands Corps. Because NATO partners, global NGOs and IOs cooperate within the lager exercises of the First German/Netherlands Corps, this is an ideal platform to test and optimise the new policy framework.

Mission Implementation. As displayed in figure 1, the overall water risks are high and extremely high in Mali and Afghanistan. Because water issues are probably effecting the security situation, water management is also a part of the solution. In Mali the Netherlands contributes in the stabilisation activities of MINUSMA (UN) and in Afghanistan through Resolute Support (NATO). Thereby, Mali and Afghanistan are interesting implementation opportunities. Especially, since the Netherlands ministry of Foreign Affairs and the Netherlands Water Partnership are conducting water development programs in Mali. Therefore, it is recommended to investigate the implementation opportunities in these countries.

Develop Mitigation Strategies. Due to the scale of water management it is sensitive to be undermined by strategies of the opponents. To mitigate these risk, it is advised to develop mitigation strategies and actions based on a broad collection of possible undermining scenarios.

Investigate Interrelations. Due to the importance of water, the new policy framework will influence and will be influenced by multiple water and non-water related issues. Multiple factors are expected to have a significant influence on the new policy framework. Therefore it is recommended to investigate how these factors influence and can be influenced by the new policy framework through a SWOT-analysis:

- Root-causes of conflict (water and non-water related).
- Water as a weapon: medium or tool in warfare, destabilisation activities and socioeconomic political leverage instrument.
- Law: international, national and water law.
- Economics: micro- and macroeconomic policies and water economics.
- Local culture: socio-political relations and issues, water and its relation with gender issues, political system related issue and investments, historical developed processes and developments which effect the current socioeconomic and political systems, religion, ethnical backgrounds, etc.
- Water education.
- Effects and influences of corruption on water governance systems.

Based on the outcomes, it is recommended to developed appropriate mitigation measures. Also, it is advised to exploit and synchronise the opportunities.

New methodology for Campaign Plans development. The structure and way of thinking developed within the new policy framework can also be applied for the development of other Campaign Plan Development Themes, like; Governance, Rule of Law, Education, Social Protection, Infrastructure & Rural Development, Healthcare and Economic Activities. Therefore it is recommended to develop a similar framework for all other 1 Civil Military Interaction Command networks: Politics, Military, Economy, Social, Infrastructure and Information.

Monetary Benefits Models. It is advised to investigate if there are appropriate models to calculate the monetary benefits and disadvantaged of specific water management related investments, like: economic pay back or return of investment models.

Application of Serious Gaming. Serious gaming in combination with system dynamics models, remote sensing and mobile apps applications can play an important role within the mediation and negations process of water conflicts in (post-)conflicts areas. This is also applicable for the Constructive Conflict Approach and Public Participation GIS. Therefore, it is advised to investigate this potential and it's constrains.

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List of Abbreviations

1CMI-Co[6]: 1 Civil Military Interaction Command.

3D: Defence, Development & Diplomacy

ADA: Afghan Development Association (Afghan NGO).

ADZ: Afghan Development Zone.

ANSF: Afghan National Security Forces.

AOG: Armed Opposition Group.

ASEAN: Association of Southeast Asian Nations.

ASF: African Standby Force.

AU: African Union.

AUSAID: Australian Agency for International Development.

CA: Comprehensive Approach.

CCOE: Civil-Military Cooperation Centre of Excellence.

CDC: Community Development Council.

CH: Chora.

CIMIC: Civilian-Military Cooperation.

CMPD: Crisis Management and Planning Directorate (European External Action Service).

COIN: Counter Insurgency.

Cordaid: Dutch NGO.

DFID: Department for International Development (London).

DFS: Department of Field Support, UN.

DIME: Diplomatic, Information, Military, Economic.

DOPS: Management of Netherlands Military Operations, Netherlands ministry of Defence (Directie Operaties).

DPA: Department of Political Affairs, UN.

DPKO: Department of Peacekeeping Operations, UN.

DRR-Team: Dutch Risk Reduction Team.

ECOWAS: Economic Community of West African States.

EU: European Union.

EUBG: European Union Battlegroup.

EUSR: European Union Special Representative.

FOB: Forward Operating Base.

GIZ: Deutsche Gesellschaft für Internationale Zusammenarbeit / German Society for International Cooperation.

GO: Governmental Organisation.

GTZ: Gesellschaft für Technische Zusammenarbeit (German NGO).

GWP: Global Water Partnership.

HDV: Higher Defence Collage / Executive Master of Security and Defence at the NLDA (Hogere Defensie Vorming).

[6] 1CMI-Co: 1 Civil Military Interaction Command is a unit within the Royal Netherlands Army. By means of the CIMIC platoon, 1CMI-Co enhances the civil - military interaction, communications and cooperation in the area of operation. Moreover 1CMI-Co has a pool of reserve officers specialized in the disciples Politics, Military, Economy, Social, Infrastructure and Information which can be deployed for the achievement of the Campaign Plan Development Themes. Normally these reserve officers have a job in the private or public sector and are deployed on a voluntary bases.

IA: Integrated Approach.
IANSA: International Action Network on Small Arms.
IED: Improvised Explosive Device.
IFI: International Financial Institution.
IMF: International Monetary Fund.
IO: International Organisation.
ISAF: International Security Assistance Force (Afghanistan - NATO).
IWRM: Integrated Water Resources Management.
NA: Negotiated Approach.
NATO: North Atlantic Treaty Organization.
NATO-ISAF: North Atlantic Treaty Organization - International Security Assistance Force (Afghanistan).
NATO-SHAPE: North Atlantic Treaty Organization - Supreme Headquarters Allied Powers Europe.
NGO: Non-Governmental Organisation.
NLDA: Netherlands Defence Academy (Nederlandse Defensie Academie).
NRF: NATO Response Force.
NSP: National Solidarity Programme.
NWP: Netherlands Water Partnership.
OAS: Organisation of American States.
ODIHR: Office for Democratic Institutions and Human Rights, OSCE.
OECD: Organisation for Economic Co-operations and Development.
OMF: Opposing Military Force.
OSCE: Organisation for Security and Cooperation in Europe.
PB: Patrol Base.
RD: Deh Rawud.
PRIMO: Policy, Regulation, Implementation, Management, Organisation.
PRT: Provincial Reconstruction Team.
SHAPE: Supreme Headquarters Allied Powers Europe (NATO).
TFU: Task Force Uruzgan.
TK: Tarin Kot.
UN: United Nations.
UNAMA: United Nations Assistance Mission in Afghanistan.
UNDP: United Nations Development Programme.
UNHCR: United Nations High Commissioner for Refugees.
UNICEF: United Nations Children's Fund.
USAID: United States Agency for International Development.
USECT: Understand, Shape, Engage, Consolidate, Transfer.
WDF: Water Diplomacy Framework.
WFP: World Food Program (UN).
ZOA: Zuid Oost Azië (Dutch NGO).

PART I

Research Set-Up

'Fierce competition for fresh water may well become a source of conflict and wars in the future.'

Kofi Annan, 2001

'But the water problems of our world need not to be only a cause of tension; they can also be a catalyst for cooperation... If we work together, a secure and sustainable water future can be ours.'

Kofi Annan, 2002

1

Topic Introduction

Recent studies indicate an increasing uncertainty with regard to the local and global safety and security levels. An increase in local unstable areas, stability reduction of international politics, rapid emerging crisis and international tension regarding energy, water and food scarcity are its main drivers. Furthermore, environmental and resources constrains including health risks, climate change and water scarcity will have a significant influence on social, economic and political (in)stability. It is also clear that the world is moving towards a multipolar order in which non-state actors emerge since political and economic power relations are changing (Koninklijke Landmacht, 2014a; NATO-EAPC, 2014; Clingendael, 2014; FFP, 2014).

The world is changing rapidly. In paragraph 1.1, the emergent and future conflict drivers will be discussed. Consequently, water management will be faced with significant challenges. The future water challenges in relation with the predicted scale and dimensions of possible water conflict is elaborated in paragraph 1.2. Finally, the potential water management possesses for application in a stabilisation operation will be concluded in paragraph 1.3.

1.1 Emergent & Future Conflicts Drivers

After the Cold War era, the conflict theatre has changed from conflicts between states towards interstate conflicts (NATO-RM, 2015). Therefore military operations have evolved into crisis management and stabilisation operations in the 1990's. Multiple UN and NATO missions like in formal Yugoslavia, the Democratic Republic of Congo, Afghanistan and Mali are just a few examples. These operations are characterised by long-term involvements in peace enforcing, peace keeping and peace-building acts accompanied with reconstruction activities (Royal Netherlands Army, 2003). Due to the recent events in Ukraine, Hybrid Warfare emerged. Hybrid Warfare is a political strategy conducted by a state to slowly increase its power over another state by the use of a coherent military strategy, including:

- Conventional armed forces as a deterrence combined with a media campaign.
- Irregular warfare using special forces to conduct destabilising operations, gather intelligence and train local like-minded militias in order to enlarge the space of influence with the aim to seize total power.
- Cyber warfare to gather intelligence and to destabilise the area of operations.

At the same time all elements of the DIME (Diplomatic, Information, Military, Economic) domain like, economic boycotts energy reduction sanctions are applied (NATO-RM, 2015).

The character of conflicts is changing constantly. Present and future conflicts are expected to be situated in urban areas, since the majority of the population lives in cities; the economic, cultural and ethnical centres. Furthermore, conflicts will be more situated around international intersections, such as; sea- and airport infrastructures, energy and telecom distribution networks and logistical trading routes and corridors. In addition, the influence of traditional and social media on the political and public opinions will be significant (Koninklijke Landmacht, 2014a). Predicting the future is impossible. Nevertheless, the following four main types of conflicts are likely to occur in the near future (Clingendael, 2014; HCSS, 2014; Ramsbotham et al., 2011):

- **Interstate conflicts:** conflicts between states.
- **Ethnonational conflicts**: conflicts to determine the identity of the states.
- **Ideological-government conflicts:** conflicts to decide the nature of the state.
- **Economic-factional conflicts:** conflicts to control the resources of the state.

At the root of these four conflict types, lie deep-rooted protracted social conflicts (Ramsbotham et al., 2011). Through the Global Risk 2015 report (WEF, 2015), the World Economic Forum has mapped the current and future global risks in terms of Likelihood x Impact. Through the categories: Economic; Environmental; Geopolitical; Societal; and Technological the global risks landscape is presented in figure 1.1. When managed inappropriately, the occurrences of these risk events are expected to drive or fuel future violent conflicts (Clingendael, 2014; HCSS, 2014; WEF, 2015). To promote long-term stability and security in conflict areas plus failing and fragile regions, stabilisation operations need to incorporate strategies to overcome these global risks. More information regarding the Global Risk Landscape, is presented in Appendix E.

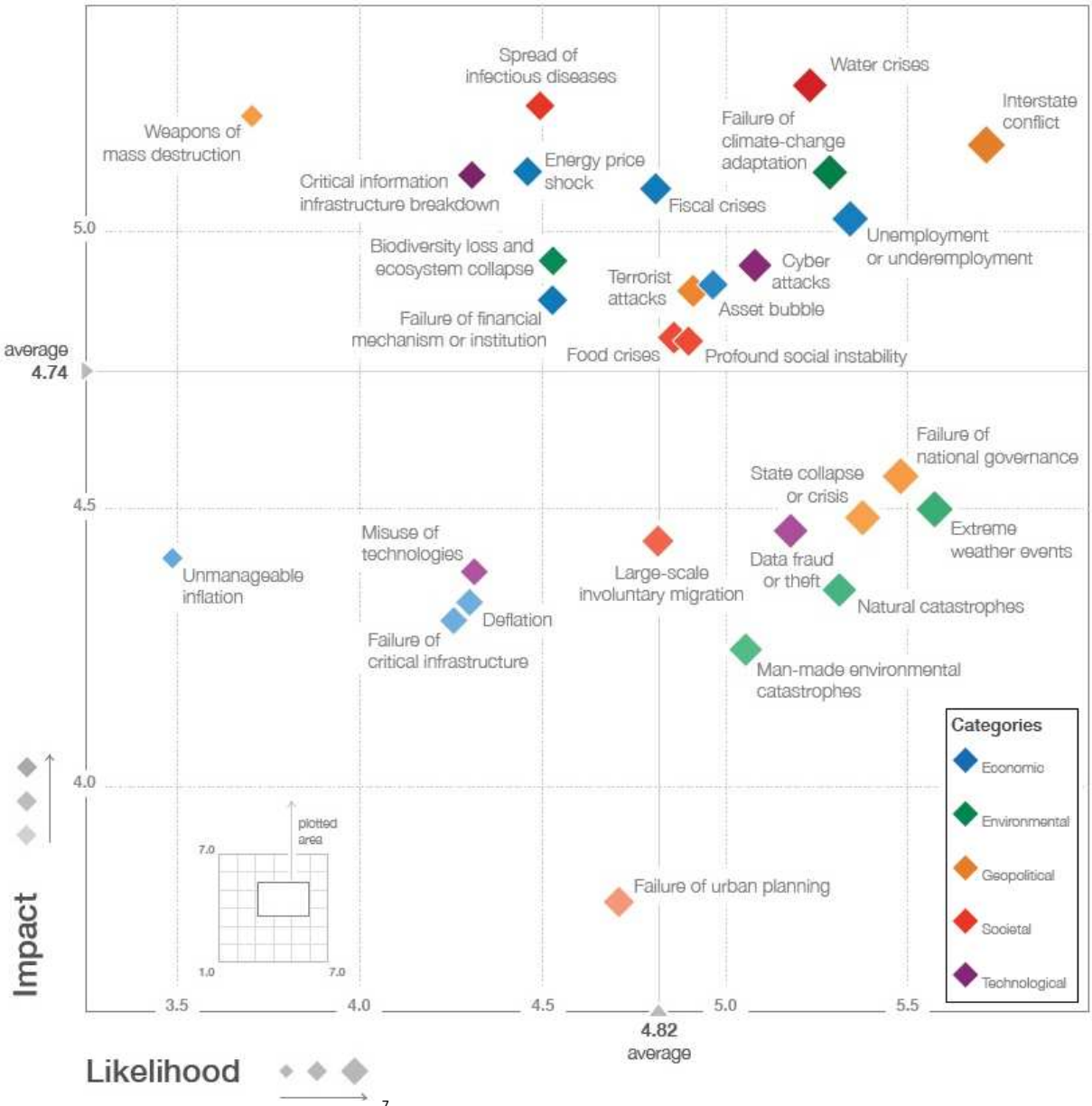

Figure 1.1: The Global Risks Landscape 2015[7] (WEF, 2015).

On a global scale, a Water Crisis is identified as the second largest risk. In the Middle East and North Africa, it holds the number one position (WEF, 2015). Multiple reports predict that a water crisis can escalate into a water war (Mitchell, 2006; Wolf, 2007; ICA, 2012). In the next paragraph, this prediction will be discussed.

[7] Note: Likelihood and impact of the individual risks is modeled on a scale of 1 to 7. One represents a risk that is not likely to occur or has a limited impact. How higher the number, how larger the likelihood of occurrence or impact is.

1.2 Future Water Conflicts

Although wars caused by water abundance or freshwater shortage have not occurred in the last century, water usage and political (in)stability are strongly interrelated (Wolf, 2007). Thereby, water resources are used as a political leverage. These political strategies are usually threatening the processes of sustainable socioeconomic development and environmental protection. Occasionally they have resulted in regional instability and violence (Wolf, 2007; Ramsbotham et al., 2011). Within this political arena, non-water related factors are always present and intertwined (Kleijn, 2014).

The risks presented in figure 1.1 are the predicted root-causes for future (violent) conflicts. Due to their interconnections, displayed in figure 1.2, the occurrence of one or a combination of risk events, consequently can be the trigger or driver for more conflicts (Ramsbotham et al., 2011; Clingendael, 2014; WEF, 2015).

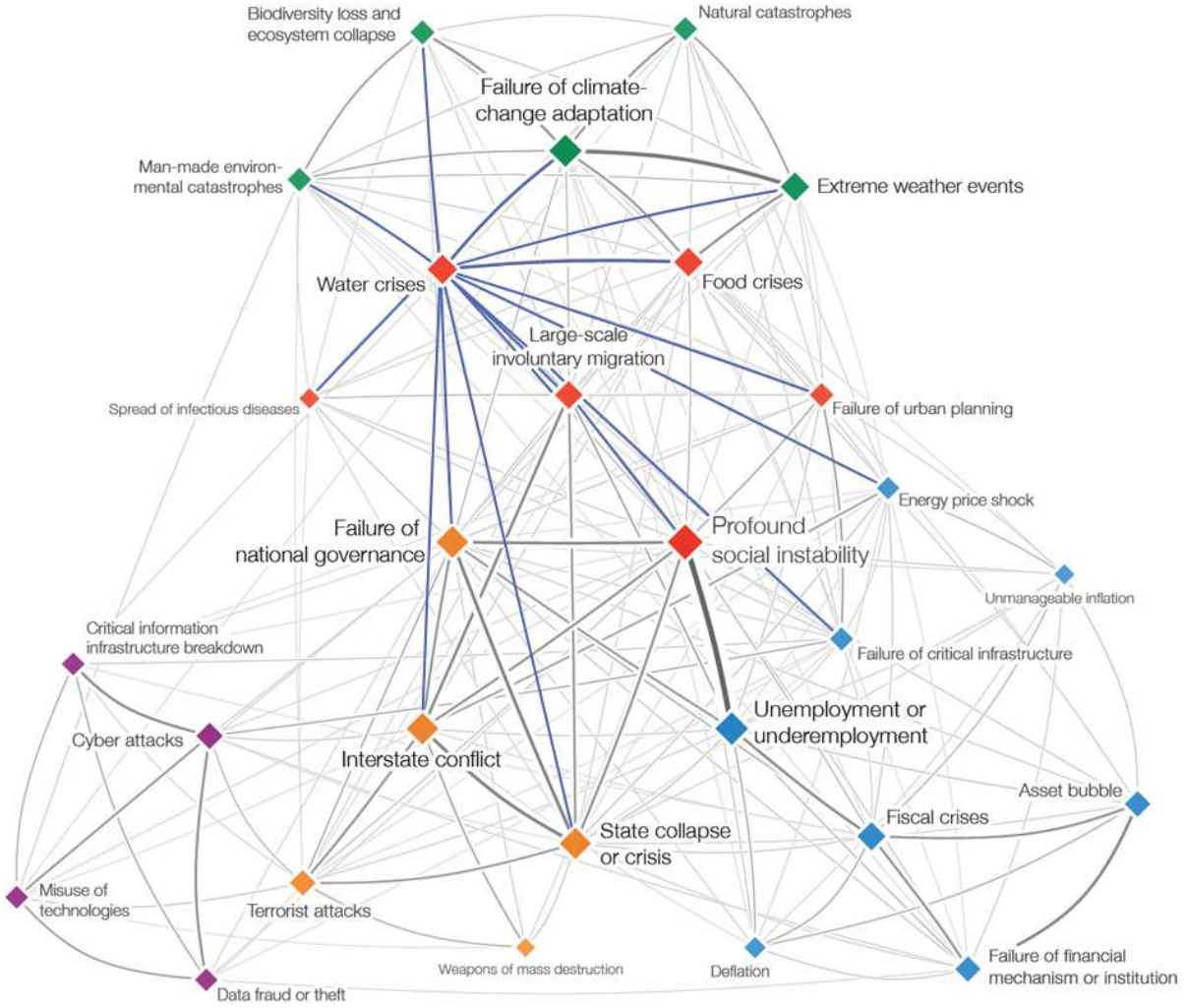

Figure 1.2: Global Risks Interconnections Map 2015 (WEF, 2015).

For example: Failure of regional climate change adaption, unemployment and the global unequal distribution of socioeconomic wealth and opportunities is predicted to accelerate large-scale involuntary migration over the next decades. A local population growth will affect the utilisation of the available freshwater resources (Ramsbotham et al., 2011). Unsustainable water usage, mismanagement, the lack of holistic water governance, deterioration of water quality due to human activities, the results of climate change and an uneven distribution of precipitation by the natural hydrological system are the main causes for water stress and scarcity (Haddadin, 2002; Feitelson, 2002). When water is limited in combination with an unequal distribution among its different users, a local water conflict is born (Berg, 2014).

When existing governance structures are unable to resolve or control the water crisis, water acts as the catalyst for the creation of internal political instability and large scale involuntary migration (Wolf, 2007; Ramsbotham et al., 2011). This can result in failure of national governments, resulting in a regional crisis, interstate (violent) conflicts or a state collapse (Ramsbotham et al., 2011; Clingendael, 2014; Koninklijke Landmacht, 2014a). Especially when one actor (group) is excluded or limited by another actor(group) regarding water usages, water can be the root-cause or catalyst for armed conflicts between tribes, ethnical groups, countries or coalitions (Haddadin, 2002; Feitelson, 2002; Wolf, 2007; Berg, 2015). The ongoing Israeli - Palestinian dispute is a clear example (Haddadin, 2002; Feitelson, 2002).

As indicated by the Global Risk 2015 report, a water crisis is the second largest identified global risk (WEF, 2015). Figure 1.3 illustrates the overall contemporary Water Risk.

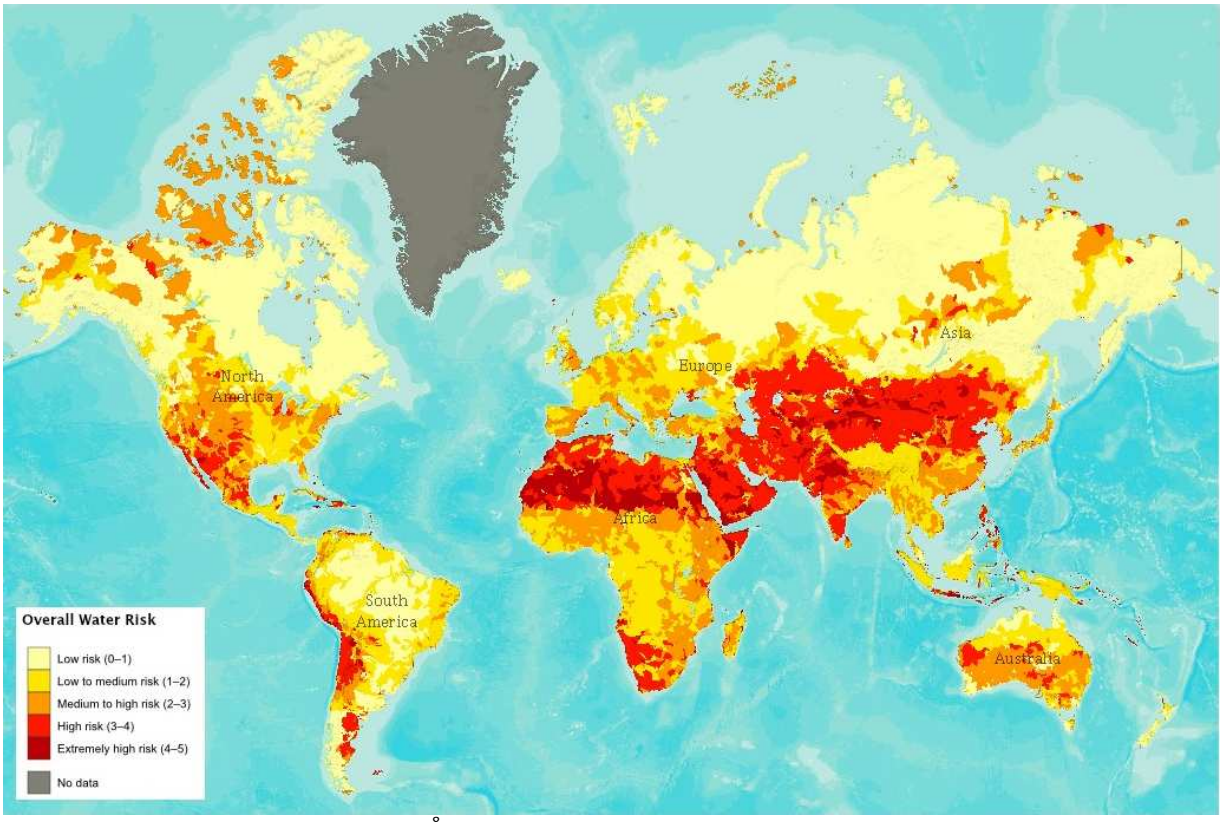

Figure 1.3: Overall contemporary Water Risk[8] (WRI, 2015).

As box 1.1 explains, population growth and climate will cause increasing water stress and scarcity levels in the current red and orange areas until 2025 (WRI, 2015; ICA, 2012). Also, water problems are complex and interlinked with other actors in multiple sectors, such as: agriculture; energy; industry; transportation; communication; education; the environment; health and rural or regional development (Biswas, 2008; Brears, 2014). These factors are strongly interconnected and intertwined with social, economic, environmental, legal and political issues at local and national levels and sometimes even at regional and international levels (Savenije et al., 2008; Biswas, 2008).

[8] Overall present Water Risk is define as (WRI, 2015):

- Quantity risk = 69.7% (Baseline Water Stress, Inter-annual Variability, Seasonal Variability, Flood Occurrence, Drought Severity, Upstream, Storage, Groundwater Stress).
- Quality risk = 9.1% (Return Flow Ration, Upstream Protected Land).
- Regulatory & Reputational risk = 21,2% (Media Coverage, Access to Water, Threatened Amphibians).

If water problems are not managed successfully, the freshwater supply for drinking is threatened, food supplies will decline, energy available for economic growth will reduce, the risk of certain water related diseases will increase, poverty will increase and the environment will degrade. Especially societies living in conflict affected and fragile regions are directly affected (Ministerie van Buitenlandse Zaken, 2012; ICA, 2012; WEF, 2015). Therefore, it is essential to increase the efforts of providing an adequate fresh and clean water supply to all its users and preserve essential ecosystem functions. If not, failure can ultimately results in social tensions or one of the following negative outcomes (Biswas, 2008; ICA, 2012; Brears, 2014; NATO-EAPC, 2014;WEF, 2015):

- **Geopolitical:** national unrest due to water and food riots, security risks over transboundary natural resources, interstate conflicts, failure of national governance, state collapse or crisis.
- **Societal:** water usage restrictions, food crisis due to reduced agricultural yields, spread of infectious diseases due to a deteriorated water quality, large-scale involuntary migration due to unemployment or loss of livelihoods, failure of urban planning.
- **Economic:** stagnation in economic growth, increased social costs of unemployment, failure of critical infrastructure, energy price stock, export constraints, lost investment opportunities.
- **Environmental:** extreme weather events (floods and draughts), failure of climate change adaption, increased environmental degradation resulting in biodiversity loss and ecosystem collapse, man-made environmental catastrophes.

Today, a fifth of the world's population, 1.2 billion people, are living in areas facing direct freshwater scarcity. Consequently, five to ten million people, most of them children, die each year from water-related diseases, lack of clean drinking water or inadequate sanitation. In these regions there is simply not enough freshwater to meet all agricultural, industrial and domestic water demands including environmental ones. Almost one billion people do not have access to a safe water supplies and three billion people do not have access to adequate sanitation facilities (WWAP, 2003; Wolf, 2007; Ministerie van Buitenlandse Zaken, 2012; OCHA, 2014).

In 2030, the global demand for water is predicted to outweigh the supply by 40% (Brears, 2014). Due to the rapid population increase and changing consumption patterns, two thirds of humanity will live in areas facing water scarcity by 2025 (WWAP, 2003; Wolf, 2007; Ministerie van Buitenlandse Zaken, 2012; OCHA, 2014). Trends suggest a population growth of an additional 1.5 billion people by 2050, resulting in a global population of 8.9 billion people. This rapid population growth primarily causes the steep demand increase regarding freshwater (UNEP, 2008). Consequently drinking water, food supply by the agriculture sector, domestic, healthcare, industrial, economical and energy production related water usages will show strong magnifications. The strong increase of urbanisation, especially in the developing countries of Africa and Asia, will be accompanied with land-use changes including an increase of water pollution from industrial, organic, chemical and domestic waste. The ecosystem serves as a vital hydrological buffer in absorbing water to prevent flooding, releasing it in times of droughts and functions as the natural air-conditioning by means of vegetation. Its destruction due to pollution will result in even more challenges regarding flood and drought control. The effects caused by climate change in combination with the uneven natural freshwater supply and storage over different parts of the world, are regarded as a threat multiplier. Climate change will increase the frequency and magnitude of precipitation, resulting in more frequent and intense floods and droughts events. Droughts, sea level rise, deforestation, land subsidence and declining rainfall will affect agriculture yields significantly, epically the poor farmers. Thereby, water related problems associated with climate change affect the poorest "bottom" billion who already live in weak economies and governance systems. Furthermore, it will reduce social and economic prospects, loss of income and horizontal inequalities. Thereby, unequal water distribution contributes to insecurity and governmental fragility of the developing countries (Wolf, 1998; Radif, 1999; Mitchell, 2006; Wolf, 2007; Savenije, 2007; Salman, 2007; Savenije et al., 2008; Hoes et all, 2010; Ramsbotham et al., 2011; Swain, 2011; Brears, 2014; NATO-EAPC, 2014; OCHA, 2014; WEF, 2015).

Box 1.1: Present Water Problems & Future Water Challenges.

Within the next 10 years water scarcity and water quality problems will contribute to local, national and regional instability in the presented red regions of figure 1.3 (ICA, 2012). Water shortages, poor water quality and floods themselves are unlikely to directly cause a state failure and international tensions. However, in combination with a weak water governance system and limited financial and technical resources, water scarcity and water quality problems will be a destabilising factor (ICA, 2012; WEF, 2015). In order to meet present and future water challenges local, national and international water governance systems is essential (Wolf, 2007; Post, 2015). Due to the existing robust water governance systems within the wealthier countries, they will be capable of addressing water problems without a risk of social disruption (Wolf, 2007). As illustrated in figure 1.4 the water governance systems in Africa, the Middle East (except Egypt) and South Asia are weak (WRI, 2015). Furthermore, as a result of demographic and economic developing pressures these regions will face major water management problems. At the same time, these regions are the least prepared for future water challenges (ICA, 2012; WEF, 2015). These facts, the vital aspects water possesses in every society in combination with environmental degradation, ineffective leadership and weak political institutes, can result social disruption, a state failure and ultimately in violent conflicts (ICA, 2012).

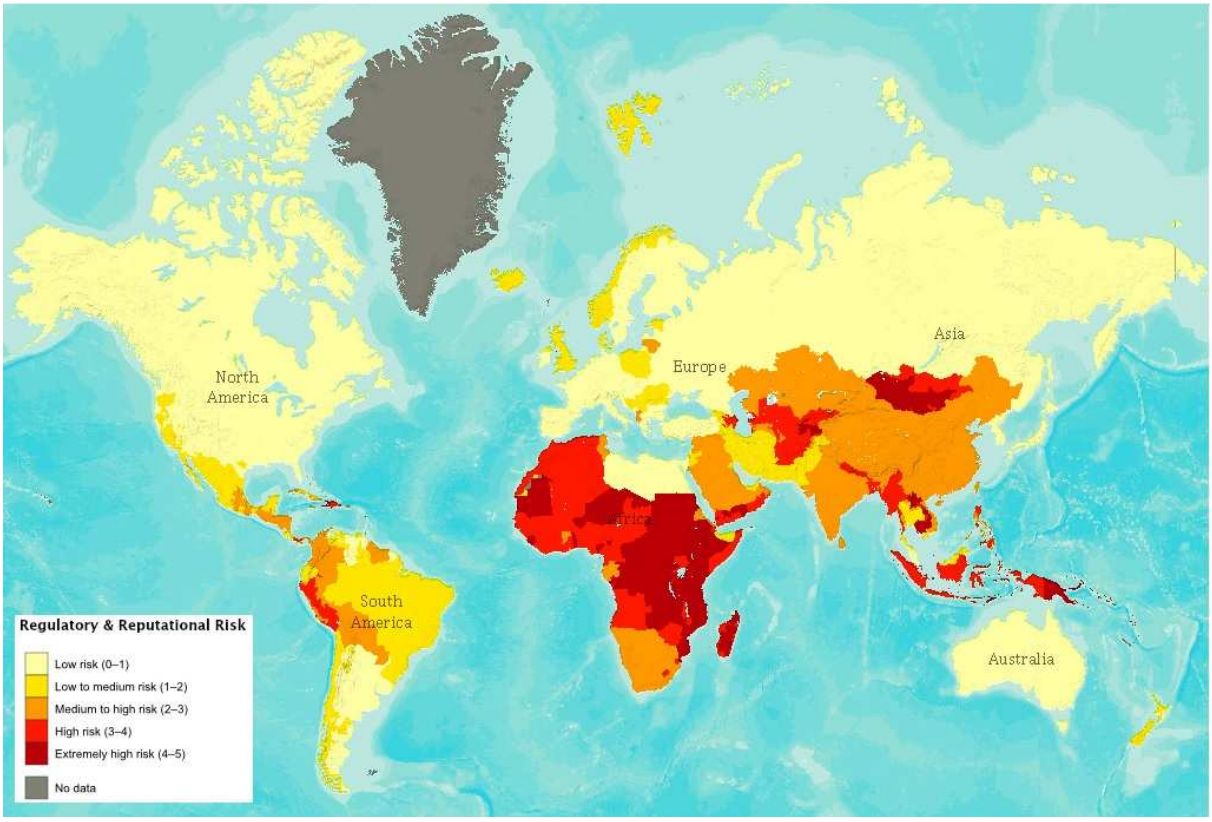

Figure 1.4: Overall present Regulatory & Reputational Water Risk (WRI, 2015).

Conflicts over shared water resources occur at multiple scales: from individual irrigators, urban and rural users to international waterways (Wolf, 2007). Appendix F provides a specific overview of potential conflicting river basin systems. Regarding water wars, the following predictions can be expected within the next 10 years:

- The lack of an adequate freshwater supply will be a destabilising factor in some countries. When countries do not have a well working governance system, limited financial resources or the technical ability to solve their internal water problems, these water issues will lead to social disruption (Wolf, 2007; ICA, 2012). When water is controlled by elites and used to suppress specific populations, poor water management will contribute to local instability (Berg, 2015). When managed inappropriate local instability caused by grievances of political units or ethnic groups within nations can ultimately result in state failure and increased regional tensions (Wolf, 2007; ICA, 2012).

In this situation, **small and local armed conflicts over water resources will be likely** because much is at stake for individuals or user groups (Bliek, 2015). Since these conflicts will impact food and energy security, they can escalate into larger conflicts (Bliek, 2015).

- **Water-related state-on-state armed conflicts will be unlikely** (Bliek, 2015). As mentioned earlier in paragraph 1.3, most water tensions are resolved through water treaties and agreements because violent conflicts over water are costly and accompanied with other negative consequences (Wolf, 2007). However, **as water shortages will become more acute, shared water basins will increasingly be used as a negotiation leverage and for destabilisation activities** (Wolf, 2007; ICA, 2012). Some states will become dependent on river water controlled by upstream nations. In social, political and economical strategies, states will exert this leverage over their neighbours to preserve their own water interests. For example: powerful upstream nations can reduce downstream flow, making downstream states totally dependent regarding water usage. Powerful downstream nation can use their leverage points in international forums by pressuring investors, non-governmental organisations and donor countries to support or halt water infrastructure projects. Also, states will use their ability to construct and support major water projects to obtain regional influence or preserve their national water interests. These events can result in water shortages and a pattern of unresolved water-sharing problems, resulting in regional tensions and violent outbursts (Moel et al., 2012; ICA, 2012; Bliek, 2015).
- Within war, water is used for defensive and disabling strategies. The "Hollandse Waterlinie", a connected ring of flooded land aimed to protect the western part of the Netherlands against a German invasion, is a well known historical example of a water defensive strategy. The bombing of dikes and dams is an example of applying water as an offensive military disabling strategy. Thereby, enemy troops are flushed-out of a strategic area. Moreover, by destroying dams not only strategic industrial and domestic areas are flooded and thereby becoming unusable, also hydropower generation is cut off. These are just a couple of examples how water is used in military operations as a direct disabler. Through targeting essential or vulnerable physical water infrastructure, **water used as a weapon by terrorist will become likely** (ICA, 2012). Drinking water facilities or critical single point channels or pipelines are interesting targets for terrorists. Dams will be the main targets because even if an attack is unsuccessful, the fear of massive floods or loss of freshwater resources would alarm the public and cause governments to take costly measures to protect their water infrastructure (ICA, 2012). In additions, these tactics can also be applied in hybrid warfare.

1.3 Potential of Water Management in Stabilisation Operations

Today, 1.5 billion people live in conflict affected and fragile states (IDPS, 2011). Consequently economic livelihoods are destroyed and poverty exacerbated (Weinthal et al., 2011). As concluded in paragraph 1.2, a water crisis is the second largest global risk (WEF, 2015). Due to the strong interrelation of water with every facet of society, water scarcity in combination with a weak governance system can be the root-cause of conflict (ICA, 2012; WEF, 2015). When managed inappropriately, a water crisis can be the driver for a regional crisis, state collapse or interstate conflicts (ICA, 2012; Bliek, 2015). In combination with political, social and economic inequalities, exclusion, favouring, belittle or marginalisation of actors, a root-cause of violent conflicts is created (Berg, 2014; Lucius, 2015).

Stabilisation operations by third parties are a mean to de-escalate wars and prevent conflict escalations. Thereby, the aim of every stabilisation operation is to decrease the level and number of violent conflicts and shape the conditions for a self-reliant society (Cooten, 2015). This is accomplished by rebuilding the host-nation governmental organisations, sustainable long-term orientated socioeconomic development and short-term reconstruction acts (Royal Netherlands Army, 2003; Koninklijke Landmacht, 2014b; Lucius, 2015; Post; 2015; Berg, 2014).

As explained by Maslow's (1943) Hierarchy of Needs, water is one of the most basic needs. During a war, basic water services and infrastructures like irrigation systems and hydroelectric plants are destroyed. In addition, productive agricultural and industrial growth are reduced to a minimum, thereby weakening the states capacity and those of local water governing institutions (Weinthal et al., 2011). As a basic human need, the provision of safe drinking water and basic sanitation is among the highest priorities in stabilisation operations. Furthermore, a sufficient amount of freshwater is also essential to ensure food and energy security including the support of basic livelihoods and economic development in urban and rural areas. Also, large-scale water infrastructures are essential to enable and support economic development (Wolf, 2007; Weinthal et al., 2011).

Within stable and developed countries, water management has proven to be an effective cooperation mechanism to resolve non-violent conflicts in a shared basin system (Mostert, 2003; Wolf, 2007). Shared water does lead to political tensions and a few have resulted in local violence. However, almost all disputes over freshwater utilisation are resolved through negotiation resulting in a sustainable dialogue, cooperation and working agreements even while hostilities rage over other issues (Wolf, 2007).

Water is a common pool transboundary natural resource crucial in human and ecological survival. Water management issues effect all sectors and facets of society. Consequently, good water management is a common interest of most affected actors (Wolf, 2007; Weinthal et al., 2011; Islam et al., 2013; Post, 2015). Since common interests are a precondition for conflict resolution, application of water management within stabilisation operations, post-conflict recovery and peace-building possesses an unique and interesting potential (UNEP 2009; Berg, 2014; Post, 2015). Especially, because most of the actors who are contributing to the instability in a region are also influenced by water usage. Consequently, preventing or resolving armed conflicts by contributing to a relative equal share of this natural resources based on a comprehensive and collaborative minded water management program, possesses a unique opportunity. When water management practices are included in the stabilisation operation, water management can act as a base for creating common goals among the conflicting actors. From this trust, consensus and reconstruction works can flourish which are crucial in creating long-term focussed stability, peace and socioeconomic development.

Conflict prevention through source control is regarded as the best solution (Ministerie van Buitenlandse Zaken, 2012). Thereby, the stabilisation operation represents a window of opportunity to rebuild or improve resilient, adaptive and cooperative water governance institutions that are capable of coping with future uncertainties and impacts like climate change. Thereby local peace-building is strengthened since confidence is build and cohesion created among local communities (Weinthal et al., 2011). Consequently, violent conflict over water availability and quality will be reduced and opportunities for long-term sustainable livelihoods created. (Weinthal et al., 2011).

Within conflict and post-conflict regions, water management plays an integral role in meeting basic human needs, maintaining public health, and supporting livelihoods in every society (Weinthal et al., 2011; Post, 2015; Cooten, 2015). Also, good water management is a crucial ingredient in the recovery of all economically productive sectors in the aftermath of war and armed conflicts. Due to its vital functions at all societal levels, good water management is crucial in every reconstruction step towards sustainable socioeconomic development over the long-term (Ministerie van Buitenlandse Zaken et al., 2005; Weinthal et al., 2011; Onencan, 2014; Kleijn, 2014; Berg, 2014, Ven, 2014; Koolhof, 2014; Post, 2015; Matthijssen, 2015, Tak, 2015; Cooten, 2015). During the NATO-ISAF stabilisation operation in the Afghan province of Uruzgan, the Netherlands Armed Forces experienced the conflict prevention and resolution potentials water management possesses (Berg, 2014, Koolhof, 2014; Lucius, 2015; Post, 2015; Matthijssen, 2015, Tak, 2015; Cooten, 2015). The Afghan scenario is not standing on its own. In every region where water is an issue, water management can be applied as an strategic enabler or peace mechanism (Onencan, 2014; Ven, 2014; Berg, 2014; Lucius, 2014; Matthijssen, 2015; Post, 2015; Tak, 2015; Cooten, 2015).

2

Research Outline

In this chapter the research outline is described. First the problem statement and the research objective are explained in paragraph 2.1. Second, in paragraph 2.2 the design criteria and research boundaries are elaborated. The research objective and design criteria are made specific through the formulation of research questions. These are presented in paragraph 2.3. In order to answer the research questions and accomplish the research objective, a tailored research approach and multiple research methodologies are applied. In paragraph 2.4 the applied research strategy and research methodologies are discussed.

2.1 Problem Statement & Research Objective

The root-cause of every conflict lies in political-, social-, and economic inequalities due to the uneven distribution of resources between groups of actors or the exclusion of one group from resources by another. This also includes the humiliation and marginalisation of (groups of) people (Royal Netherlands Army, 2003; Ramsbotham et al., 2011; Koninklijke Landmacht, 2014a; Berg, 2015).

Water is an essential natural resource, which we all use and need (Savenije et al., 2008). Already, water is applied as a leverage instrument in political, social and economical strategies (Wolf, 2007; Swain, 2011; Weinthal et al., 2011). As a result, the connection between water and political (in)stability is strongly present (Wolf, 1998; Wolf, 2007; ICA, 2012; WEF, 2015). At this moment large scale armed conflicts over freshwater are not economically viable (Wolf, 2007). Due to the prognosis that freshwater needs and water scarcity will increase in the coming decades, they can become viable in the future. Caused by climate change and population growth including urbanisation, increasing energy and food demands plus economic growth, a water crisis is identified as the second largest global risk (WEF, 2015). An increase in water demand in combination with an uneven and unequal water distribution and freshwater scarcity can be the root-cause or catalyst for armed conflicts (Wolf, 2007). This prediction is especially valid on the local and regional levels between tribes, ethnical groups and nations (Berg, 2014; Post, 2015; Bliek 2015). Furthermore, regional and international power positions are changing due to new rising economical, political and military powerful nations. Since all user groups will become more dependent on water, it is expected that water used as a political leverage will increase significantly (Wolf, 2007; Swain, 2011; Weinthal et al., 2011; Kleijn, 2014; Ven, 2014; Berg, 2014; Onencan, 2014; Post, 2015; Bliek 2015).

The importance of water security in relation to international peace and stability including its second order effects are acknowledged by the Netherlands government, United Nations, European Union and the OECD (UN-University, 2013; EU, 2013a; OECD, 2013; Ministerie van Buitenlandse Zaken, 2013; Koninklijke Landmacht, 2014a). At the same time, shared waters have proven to obtain a large potential in establishing actor cooperation, building confidence and to function as a dispute resolution mechanism (Mostert, 2003; Wolf, 2007; Swain, 2011; Weinthal et al., 2011; Post; 2015). Consequently, water is an important vanguard in the development assistance and cooperation strategy of the Netherlands government (Ministerie van Buitenlandse Zaken, 2011).

Using water management in a comprehensive manner is challenging, but at the same time also an opportunity for creating long-term security, prosperity and freedom in the complex multi-actor environment of today's stabilisation operations[9] (Berg, 2014; Lucius, 2015; Matthijssen, 2014; Post, 2015; Cooten, 2015). Due to its vital functions at all societal levels, good water management is a crucial ingredient in every reconstruction step and sustainable socioeconomic development strategies in the aftermath of war and armed conflicts (Ministerie van Buitenlandse Zaken et al., 2005; Weinthal et al., 2011). During the NATO-ISAF Uruzgan mission, the Netherlands Armed Forces rediscovered and experienced the conflict prevention and conflict resolution potentials water possesses (Berg, 2014; Post, 2015; Matthijssen, 2015; Lucius, 2015; Post; 2015; Tak, 2015; Cooten, 2015). The Afghan scenario is not unique. In every region where water is an issue, water management can be applied as a strategic dispute resolution, confidence building and cooperation mechanism (Weinthal et al., 2011). Based on Kleijn (2014), Onencan (2014), Berg (2014), Lucius (2015), Matthijssen (2015), Post (2015), Tak (2015), and Cooten (2015), the following three specific water peace mechanisms were identified by the author in an early stage of the research:

1. **Water as Enabler.** Ground warfare is characterised by capturing or defending land. Because water is a basic need, water issues are a discussable item in every region within a (post-)conflict area, safe and unsafe. Through initiating a dialogue about water, problem awareness is created. After, basic water needs can be provided through development projects which are executed in cooperation with the local population. As a result, the commander increase its area under influence and control step by step.
2. **Water for Conflict Resolution.** By means of water diplomacy, water conflicts including its destabilising effects can be prevented. Also, other pressing water problems can be made discussible.
3. **Water for Cooperation.** By facilitating water meetings between the local water users, water issues and possible solution are made discussible. Thereby, the foundation is created for resilient, locally oriented and cooperative water governance systems.

To prevent conflicts, contradictions and reconstruction duplications in the aftermath of war, a coherent, coordinated, participatory, and conflict-sensitive approach to manage water in the (post-)conflict region is needed (Weinthal et al., 2011). Therefore, the Integrated Approach, a civilian-military planning and execution method, is developed by the Netherlands government (Ministerie van Buitenlandse Zaken, 2014). However, this is a generic non-water methodology aimed to create synergy between the participating Netherlands ministries, NGOs, IOs, and the host-nation. Consequently, the following problem is addressed by this research:

Problem Statement: **Absence of a policy framework which applies Water as Enabler, Water for Conflict Resolution and Water for Cooperation as a peace mechanism in the complex and dynamic (post-)conflict transformation towards normalisation.**

Water will be a root-cause or catalyst of conflicts (ICA, 2012; Bliek, 2015). As a result, the Netherlands Armed Forces and its partners will be confronted with water issues in stabilisation operations (Koninklijke Landmacht, 2014a). Consequently, a policy framework how to apply water management as a de-escalating, conflict prevention and resolution instrument in stabilisation operations is regarded essential by the Netherlands Army Corps of Engineers (Cooten, 2015). However, an integrated and comprehensive policy framework which applies water management as a development and peace mechanisms tailored for application in the complex and dynamic environment of stabilisation operations, did not yet exist. Therefore the following research objective is formulated to close the gap through the development of the new policy framework:

Research Objective: **Providing the Netherlands Armed Forces and its partners with a comprehensive policy framework which integrates water management and water diplomacy as a peace mechanism for application in stabilisation operations.**

[9] Stabilisation operations are regarded as complex, since a mixture of peacekeeping, peace enforcing operations, humanitarian operations and reconstruction acts are executed simultaneously in an unstable, problematic and underdeveloped (post-)conflict arena, where multiple stakeholders with different interest and power positions act according to their own interests (Gabriëls, 2007; Grandia, 2009).

2.2 Design Objectives & Research Boundaries

For successful application within stabilisation operations the short-term quick impact reconstruction projects and long-term water management development objectives need to be interlinked within one coherent strategy. Furthermore, the new policy framework is designed to:

- Prevent contradictions and create coherence between the short-, medium- and long-term water management activities.
- Be generically applicable in politically unstable, fragile or falling states including their safe and non-un-safe regions.
- Be applicable in every geographical environment.
- Stimulate actor cooperation through bottom-up and top-down philosophies.
- Be executed by the Royal Netherlands Armed Forces and its partners.

The final product, the new policy framework, need to describe and include:

- Its position within a stabilisation operation plan.
- A civil-military planning and execution method, like the Integrated Approach, which includes specific water management activities based on the multiple functions water possess within each society.
- The three identified water peace mechanisms: Water as Enabler, Water for Conflict Resolution and Water for Cooperation.
- Guiding implementation principles for each phase, the preferred military and civilian stakeholder involvements, essential water management design principles and important stabilisation operation strategies.
- Short-, medium- and long-term water management technical projects and management policies, plus methods how to assess their impacts and effectiveness.
- Methods to prevent contradictions between, and create coherence with, the short-term actions and long-term orientated development goals.

As can be concluded from the research objective, the set ambition level is high. This is caused by the potential water management obtains as an enabling peace mechanism. Because water fulfils vital socioeconomic functions and provides the basic needs within each society, the new policy framework will influence and be influenced by multiple water and non-water related issues. The following factors are expected to have a significant influence on the new policy framework, but will not be treated in-depth in this research due the set time limitation:

- Root causes of conflict (water and non-water related).
- Water as a weapon: medium or tool in warfare, destabilisation activities and as a socioeconomic political leverage instrument.
- Law: international, national and water law.
- Economics: micro- and macroeconomic policies and water economics.
- Local culture: socio-political relations and issues, water and its relations with gender issues, political system related issue and investments, historical developed processes and developments which effect the current socioeconomic and political systems, religion, ethnical backgrounds, etc.
- Water education.
- Effects and influences of corruption on water governance systems.

2.3 Research Questions

Based on the research objective and design criteria described in the paragraphs 2.1 and 2.2, the following main research question and sub research questions are formulated.

Main Research Question:

In what manner is water management applicable as a peace mechanism in the complex and dynamic environment of stabilisation operations?

To ensure that the research stays focussed, the following **sub research questions** are formulated:

1. What are the fundamental design criteria for the comprehensive, coherent, strategic and integrated new policy framework?
    - 1A. What are the characteristics of Stabilisation Operations?
    - 1B. What are the characteristics of the Integrated Approach?
    - 1C. What are the characteristics of the Integrated Water Resources Management framework?
    - 1D. Which water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices can be applied in stabilisation operations?
    - 1E. What are the main recommendations for application of water management in a stabilisation operation based on the Uruzgan experiences?
2. How can the Integrated Approach be extended to a comprehensive, coherent and integrated policy framework for the application of water management and water diplomacy as a peace mechanism in stabilisation operations.
    - 2A. What are the fundamental guiding principles for applicable implementation of the new policy framework in stabilisation operations?
    - 2B. Which military and civilian actors should be involved in each of the specific implementation steps and what should be their level of interaction?
    - 2C. Who is the most appropriate actor for leading the implementation of the new policy framework?
    - 2D. What short-, medium- and long-term water management activities regarding technical projects, management approaches and governance policies can be applied?
3. What are the strengths, weaknesses, opportunities and threats of the new policy framework?

The new developed policy framework: *The Integrated Water Management Development Framework for Stabilisation Operations* provides the answers to these research questions. In the next paragraph, the applied strategies and methodologies for its development are elaborated.

2.4 Research Strategy & Research Methodologies

This master thesis research is conducted in collaboration with the Netherlands ministry of Defence - Royal Netherlands Army - Military Engineering Centre of Expertise. The centre of expertise conducts research for the development of knowledge and innovation for the Netherlands Armed Forces. This knowledge and innovation is translated into applicable engineering and management policies for the implementation within military or civil-military operations. Furthermore, hosted by NATO's Science for Peace and Security Programme - Emerging Security Challenges Division, a part of this thesis research was conducted at the NATO Headquarters in Brussels.

In this paragraph the research strategy and applied research methodologies are elaborated. By means of this strategy and mythologies the new policy framework is developed and the research questions answered. First, the research strategy, which functioned as a guide throughout the research is elaborated in section 2.4.1. Finally, in section 2.4.2 the applied research mythologies are explained. Moreover, how a scientifically robust research product is guaranteed is discussed in these two paragraphs.

2.4.1 Research Strategy

In this section the research approach which is characterised by multiple phases and activities is elaborated and presented. The applied research approach is presented in figure 2.1. It is based on the philosophies of Hevner et al. (2004), Verschuren et al. (2010) and Johnson et al. (2013) and adapted to fit this specific research subject. Its structure is consistent with the in figure A presented report structure (see Reading Guide).

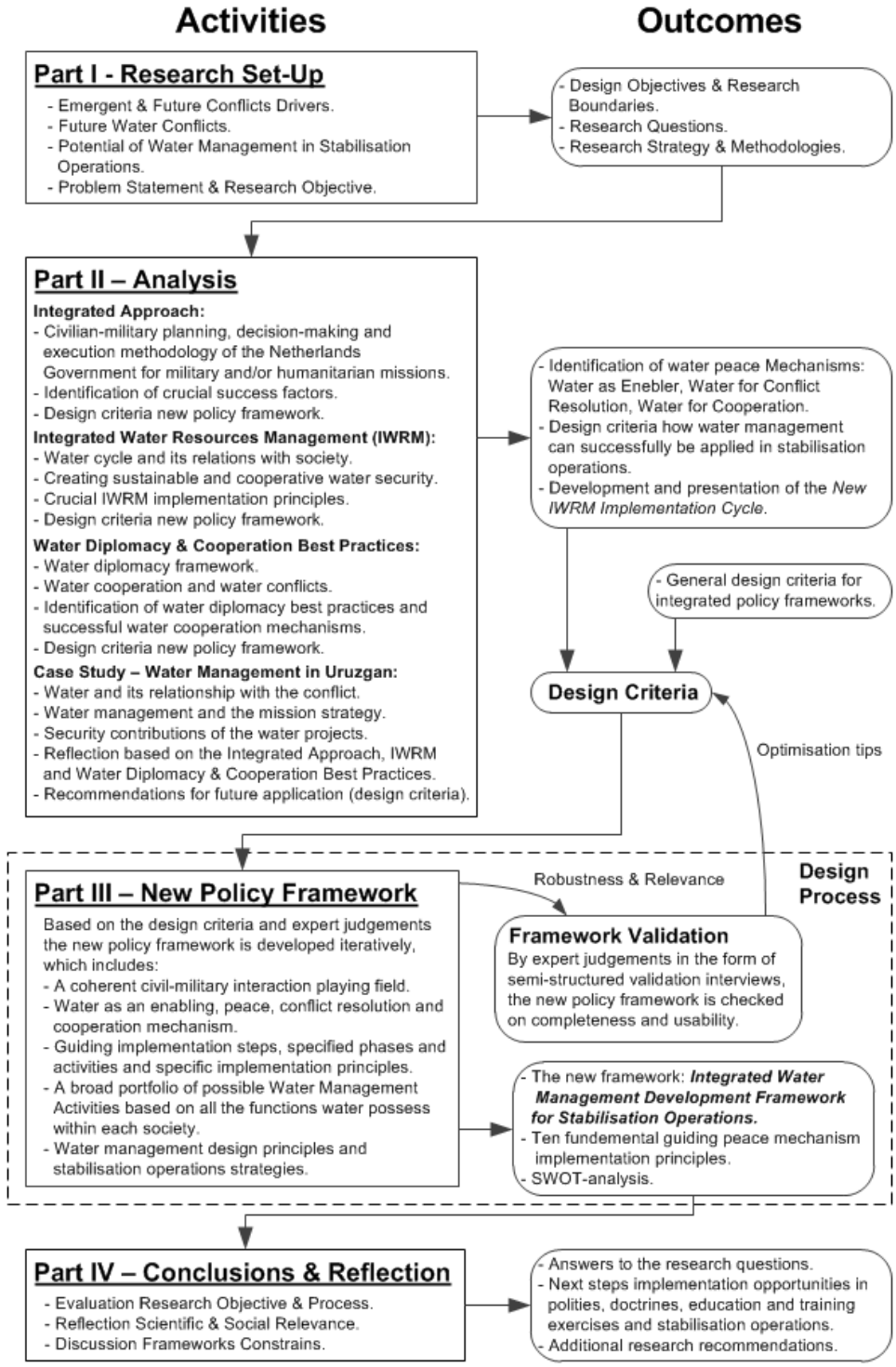

Figure 2.1: Research Strategy & Process.

A policy framework transforms a future vision to specific actions with the aim to make the vision reality (Johnson et al., 2013). Thereby, Johnson et al. (2013) states that *'policy is designing the future through artificial systems'* and Daalen et al. (2014) defines the design process as *'a purposeful intervention in a system with the aim of improving its performance'.*

Although there are many variants, the development of a new policy framework is always characterised by the identification of requirements, the cycle of policy development and the evaluation of possible optimisations, and reformulating the objectives and criteria as the subject becomes better understood (Johnson et al., 2013). To answer the research question, this research project was performed in four phases:

1. Research Set-Up.
2. Analysis.
3. Design Process of the New Policy Framework.
4. Conclusions & Reflection.

Based on existing methodologies and policies, the research objective involves the development of a new policy framework. Consequently, the process starts with many uncertainties and unknowns. Therefore, first the topic was explored by reviewing water management, water conflict and peace-building literature. In consultation with the two supervisors of the Military Engineering Centre of Expertise the policy gap was made explicit. Also, the requirements for the new policy framework and appropriate existing policies were identified. In order to merge a practical orientated research in a scientific context, the academic requirements were set with the first and second supervisors of Delft University of Technology. The literature review and expert consultation resulted in the formulation of the problem statement and research objective, the design objectives and research boundaries, the research questions, the research strategy and research methodology.

In the Analysis phase the complex and broad research objective was structured. Therefore, the problem was explored thoroughly by: literature reviews; participation in diplomacy workshops and military exercises; expert consultations; and a case study was executed. Thereby, essential understanding and knowledge was obtained, accumulated and summarised by mind-maps regarding the characteristics of Stabilisation Operations, the Integrated Approach, the Integrated Water Resources Management (IWRM) framework and which water diplomacy best practices and water cooperation mechanisms can be applied in stabilisation operations. As a result the sub research questions 1A, 1B, 1C and 1D were answered. Also, the main recommendations for inclusion in the new policy framework are concluded in each corresponding chapter.
Through the case study: Water Management in Uruzgan, the application of water management in a recent stabilisation operation was studied. Since this subject was never studied and evaluated before, crucial new knowledge for developing the new policy framework was created. First, the Uruzgan conflict, the mission strategy and their relationships with water was analysed. Second, the application of water management reconstruction activities and their contributions to the overall security level was studied and concluded. As a result, the three enabling peace mechanism characteristics water management possesses were identified: Water as Enabler, Water for Conflict Resolution and Water for Cooperation. Based on the fundamental characteristics of the Integrated Approach, the IWRM framework and the identified water diplomacy best practices and water cooperation mechanisms, the application of water management in the Uruzgan mission was evaluated. As a result, crucial recommendations for the application of water management in future stabilisation operations was discovered and formulated. Thereby, sub research question 1E was answered.
Based on the design objectives formulated in phase 1, the inclusion recommendations following from the above mentioned subjects and general design criteria literature for an integrated framework, the design criteria for the new policy framework were determined. As a result, sub research question 1 was answered.

Founded on the formulated design criteria, the new policy framework is designed iteratively in phase three. Inspired by the six implementation phases of the Integrated Approach, the Uruzgan Campaign Plan methodology and the IWRM principles and implementation cycle, a blank sheet of paper evolved to a conceptual design at the early beginning. By means of tips and recommendation of the consulted experts following from the validation interviews, the conceptual design was optimised resulting in the new policy framework. Their important optimisation tips are included in the design criteria. This explains the connection between the design and validation processes, displayed in figure 2.1 as the development-validation-optimisation loop.

The new policy framework is characterised by four vertical columns and six horizontal rows. For a structured implementation, each row is introduced through a guiding question in the Phases column. The Activities column is based on the six Integrated Approach phases. The activities in each phase are made specific for the planning and application of water management in stabilisation operations. By means of the Strategies and Implementation Principle columns following from the authors own opinion, the consulted literature and expert opinions, the input needed for the execution of the Activities column are presented in the desired level of detail for each phase. Consequently, sub research question 2 was answered. Thereby, appropriate short-, medium- and long-term water management activities are included in the planning and implementation process. As a result, sub research question 2D was answered. Also, the position of the framework within a civil-military campaign plan was determined, the desired civilian and military actors inducing their level of interaction within the new policy framework was set and the most appropriate actor for leading the implementation was identified. Thereby, the sub research questions 2C and 2B were answered based on the consulted literature, set design criteria and expert input. Furthermore, based on the consulted literature and the optimisation tips of the consulted experts, ten fundamental implementation principles emerged and were formulated during the design phase. As a result, sub research question 2A was answered.
For the validation process, 12 experts within the domains of defence, development, diplomacy and water management were consulted. The results of the validation process were summarised by means of a SWOT-analysis (strengths, weaknesses, opportunities, threats). Consequently, sub research question 3 was answered.

In the fourth and final phase the research questions answers are presented. Moreover, the usability, constraints, added value, the scientific and social relevance of the new policy framework and the research process were evaluated based on the validation interviews and the authors own opinion. In addition, next steps implementation opportunities for the Netherlands Armed Forces and additional research suggestions emerged throughout the research process. Based on the input from the consulted experts and the authors own opinion, these are presented in the final chapter of this report.

2.4.2 Research Methodologies

The purpose of scientific research is characterised by analysis, explanation and improvement of reality (Keuchler et al., 2007). Furthermore, scientific robustness is an important need (Hevner et al., 2004). By conducting the research in collaboration with the Netherlands Military Engineering Centre of Expertise, there is a chance of becoming biased. To guarantee scientific quality and robustness, literature was reviewed, experts consulted, field researches performed and a case study conducted. For each research methodology, the details are further elaborated below.

Literature Reviews. In order to acquire more knowledge about the domains of Stabilisation Operations, the Integrated Approach, the Integrated Water Resources Management framework, water diplomacy best practices and water cooperation mechanisms multiple academic and organisational reports and papers are reviewed. In the References chapter, the applied literature is listed. These book, papers and reports were gathered through tips of the consulted experts and the online databases of ScienceDirect, Google Scholar, the ministry of Defence and the Delft University of Technology. Thereby, the above mentioned subject were used as the search terms. A basic understanding of each subject was quickly achieved through summarising the literature in mind-maps. When more in-depth knowledge in the subjects was required, the literature was consulted again. The exploration of the multiple theories, existing policies, lessons learned and best practices was an important base for the development of the new policy framework.

Expert Consultations & Validation Judgments. The input of all consulted experts, was an essential need for the development and optimisation of the new policy framework. To gain detailed insight and knowledge of stabilisation operations and its relationship with water management, development and diplomacy practices, one-on-one interviews and discussions with the following experts were conducted:

- Cap. P. van Ingen (Staff Officer, Military Engineering Centre of Expertise).
- Ltcol. E. Leidelmeijer (Chief, Military Engineering Centre of Expertise).
- Dr. S. Michaelis (Officer Emerging Security Challenges Division, NATO).

- K. Vetting (Humanitarian Affairs Advisor, NATO-SHAPE).
- A. Eikelboom (Consultant Military Operations, TNO).

The theory developed by the new policy framework was validated and optimised based on the consultation of the following 12 experts in the domains of defence, development, diplomacy and water management. Per domain, at least 2 experts were interviewed. Through semi-structured interviews, the following experts reviewed the new policy framework:

- Bgen. C.J. Matthijssen (Commander Netherlands 11 Air Assault Brigade).
- Bgen. N. Tak (Director Comprehensive Crisis and Operations Management Centre, NATO-SHAPE).
- Col. G. van Cooten (Commander Netherlands Army Corps of Engineers).
- Lcol. L. Chubbs (Staff Officer Environmental Management, NATO-SHAPE).
- Maj. P. Cremers (Staff Officer Netherlands Land Warfare Centre).
- J. Kleijn (Focal Point Water Affairs Middle East, Netherlands ministry of Foreign Affairs).
- G. J. Lucius (Netherlands Diplomat, Netherlands ministry of Foreign Affairs).
- P. van den Berg (Political Advisor, Cordaid).
- Dr. F. van de Ven (Team leader Urban Land & Water Management, Deltares).
- H. Post (Director Water Management, Waterboard Reest & Wieden).
- F. Koolhof (Board Member ViAfrica & Lecturer at the Civil-Military Cooperation Centre of Excellence).
- Onencan (PhD researcher: Water governance and water diplomacy, TU-Delft).

These experts were specifically selected based on their level of knowledge and expertise regarding the subject and their critical, open, constructive and un-biased feedback capability. When answers could be explained in multiple ways, the follow-up questions were more specifically formulated or the answer was summarised by the author for understanding the right context.

One week in advance, the conceptual policy framework version, a summary of the research including the initial findings plus the interview questions were sent to the experts by email. Each interview had a duration of 1 to 2 hours. To fully concentrate on the discussion and answers, the interviews were voice-recorded. After, an interview report was developed. Per consulted expert, the interview reports are presented in Appendix N. The included validation interviews are checked by the interviewed experts. There feedback, corrections and additions are included in the presented interview reports. From all the interviewed experts, their permission is received to publish the included interview reports as a part of this master thesis report. Since this database is open for inspection, reliability is achieved.

During the interviews, the semi-structured interview questions were divided in five themes. These questions were tailored to the expertise of the consulted expert. Generically, per theme the following questions were asked:

1. Personal background:
   - What is your current working position and past working experiences?
   - What is your expertise with regards to the 3D subjects / Integrated Approach and Water Management?
2. The new policy framework:
   - How can the new policy framework be made correct and complete?
3. Organisational and stakeholder involvement:
   - Will the new policy framework contribute to a sustainable cooperation environment between the ministries of Foreign Affairs and Defence, NGOs, IOs, local GOs, the local stakeholders (residents, government and private industry), knowledge institutes and the private industry? What will be the challenges? How can these be optimised?
   - How can your organisation apply the new policy framework?
   - What is the potential of the new policy framework when it will be integrated in the existing organisational policy? Does it add value for your organisation? How? What should be optimised to make it work?

- How and in which part of your organisation should the new policy framework be integrated to increase the potential of application?

4. Possible contributions of the new policy framework within the Uruzgan, Afghanistan mission:
   - Did the performed water management projects contribute to the overall safety and stability in the region? If yes / if no, how?
   - Are existing or planned water management activities of the local community, government or NGOs exploited? Why (yes/no)? How did you find out the existence of these projects?
   - What are the important lessons learned from the Uruzgan mission?
   - Would the application of the new policy framework have made a difference? How?
5. Application and performance of the new policy framework:
   - Who should be leading in the implementation of the new policy framework? And who should be leading for the initiation?
   - What is your opinion of the proposal to make reserve officers from 1 CMI-Co the project managers of this policy framework (for the Implementation & Execution phase 5, because they understand and can act in both the civilian and military domains)?
   - Is the transition management approach between the short-, medium- and long-term activities correct (from Quick Impact Projects on the short-term, towards and connected with Water Development, Aid & Cooperation policies on the medium-term, connected by means of the private sector activities on the long-term)? Why? What is the potential and challenges of this approach?
   - Can the new policy framework, after it is corrected and optimised be applied within a civil-military stabilisation mission? Yes, No, Depends => What are the determining factors? In what way is this new policy framework relevant and/or applicable?

Each interview was concluded with an expert specific SWOT-analysis. As a result, domain specific and organisational related judgment of its strengths, weaknesses, opportunities and threats of each conceptual policy framework version was made explicit. Furthermore, each conceptual policy framework version was validated on completeness including the check if it can effectively and efficiently be applied by the Netherlands Armed Forces and is partners. Moreover, by reflecting on the possible contributions the new policy framework could have made within the Uruzgan mission, crucial recommendations for application of water management in a future stabilisation operations was gathered and formulated. Based on the validation interview outcomes including the tips and recommendation from the experts, each conceptual policy framework version was optimised. Since the same interview questions were asked in the succeeding validation interviews, the subsequent optimised policy framework version was again validated by another expert. Finally, this resulted in the new developed *Integrated Water Management Development Framework for Stabilisation Operations*. In figure 2.1 this development-validation-optimisation loop design process is displayed. More details regarding the validation process (questions) and validation interviews (answers) of each consulted expert are presented in Appendix N.

Field Research. Obtaining personal experience and empirical information by observations within a present stabilisation operation, would have been an interesting and important source to draw on. Due to organisational reasons and the set research planning, field research was not possible. Alternatively the author attended multiple exercises of 1 Civil Military Interaction Command (1CMI-Co), a unit within the Royal Netherlands Army. These exercises were related with the application of water management and other technical methods as reconstruction activities within a stabilisation operation and civil-military interaction and cooperation. Also, the author has attended a workshop of *"Klasje Clingendael"* from the Netherlands ministry of Foreign Affairs with regards to international military, development and humanitarian operation, civil-military cooperation, diplomacy, development aid and reconstruction activities.

Case Study. What are the main recommendations for implementation of water management in stabilisation operations based on the Uruzgan experience?

To investigate and reflect on the actual implementation, performance and constrains of water management as an enabling peace mechanism or development theme in a recent stabilisation operation conducted by the Netherlands Armed Forces, the case study: Water Management in Uruzgan (NATO-ISAF) was performed. This case study is presented in chapter 6.

A case study is defined as *'an empirical inquiry that investigates a contemporary phenomenon within its real-life context, especially when the boundaries between phenomenon and context are not clearly evident'* (Yin, 2003) or *'an intensive study of a single case, where the purpose of that study is – at least in part- to shed light on a larger class of cases [.....] a spatially delimited phenomenon observed at a single point in time or over some period of time'* (Gerring, 2007). Since only one specific case is studied, the results are not reliable for a statistical analysis (King et al., 1994). A single case study is however suited for exploratory and theory-building research (Yin, 2003). Also, because a case study is embedded in a real life context it allows the discovery of unexpected and unwritten aspects (Cuppen, 2012).

When doing a case studies, validity needs to have special attention (Yin, 2003). Validity is achieved by using multiple sources of evidence, through checking conclusions with experts, and by making each step of the process traceable (Cuppen, 2012). Therefore, a wide variety of academic papers, articles and evaluation reports plus in-depth interviews are used. By application of the search terms: "3D Approach", "Uruzgan Mission", "Water Management in Afghanistan", and "Water Management in Peacebuilding" multiple papers and reports were gathered in the online databases of ScienceDirect, Google Scholar, the ministry of Defence and the Delft University of Technology. A basic understanding on the subject was quickly achieved through summarising the literature in mind-maps. Based on the consulted literature and experts, a socio-hydrological causal relationship diagram was developed which explains how water management served as a development and peace instrument in the mission.

Unfortunately, there was a very limited amount of literature available regarding the application of water management in Uruzgan. To check the developed socio-hydrological system of Uruzgan and to obtain the missing but needed in-depth knowledge regarding the performed water management projects and their security contributions, theme four within the semi-structured interviews was devoted to the Uruzgan mission (see Expert Consultations & Validation Judgments section). Only a small number of persons have been involved in the application of water management in Uruzgan. Fortunately, the following consulted experts have: Bgen. C.J. Matthijssen; Bgen. N. Tak; Col. G. van Cooten; Maj. P. Cremers; G. J. Lucius; H. Post; F. Koolhof and P. van den Berg. By reflecting on the possible contributions the new policy framework could have made within the Uruzgan mission, crucial recommendations for application of water management in a future stabilisation operations was gathered as a part of the validation interviews. Within the interviews, also the generalisability of the case study findings are evaluated. Of ach interview, a report is developed by the author. These are checked and corrected by the consulted experts. Also, their permission is received to publish the corrected interview reports as a part of this master thesis report. In Appendix N, the interview reports are presented.

The important findings, gained experiences and concluded lessons learned for future application of water management in stabilisation operations are included in the case study: Water Management in Uruzgan (NATO-ISAF), presented in chapter 6. Based on the fundamental characteristics of the Integrated Approach, the IWRM framework and identified water diplomacy best practices and water cooperation mechanisms, the application of water management in the Uruzgan mission was evaluated. As a result, crucial recommendations for application of water management in future stabilisation operations were formulated. Thereby, sub research question 1E was answered. Furthermore, these outcomes resulted in fundamental specific design criteria for the development of the new policy framework.

Design Process. Based on the general design criteria stated by Johnson et al. (2013) and Daalen et al. (2014) and the specific design criteria following from studying the Integrated Approach, the Integrated Water Resources Management framework, water diplomacy best practices and water cooperation mechanisms and the case study: Water Management in Uruzgan, the new policy framework is designed iteratively. More details regarding the applied design methodology is elaborated in section 2.4.1.

PART II

Analysis

'Water is, by its nature, an interdisciplinary resource by which the dispute only can be resolved through active dialog among multiple disciplines.'

Aaron Wolfe, 1998

'In places where we are trying to strengthen democracy and the rule of law, our military efforts should support and be seen to support this overall effort. Where we are trying to win over the population for a more peaceful and stable order, our developmental instruments should support and be seen to support the overall effort.'

Ben Bot, 2006

'The Royal Netherlands Army is fighting for peace and freedom. In order to serve and protect the Netherlands, its people and interests we fight when called upon because we are the only ones who can do it. We protect the weak, help where possible and build where others are not yet able to. We do this in the world, both nationally and internationally with civilian and military partners.'

Mart de Kruif, 2014

3

Integrated Approach

Current civil-military stabilisation operations in (post-)conflict areas or fragile states are complex (Gabriëlse, 2007; Grandia, 2009). Their complexity is caused by the fact that multiple stakeholders are acting in a complex, problematic, unstable and underdeveloped arena. Moreover, most violent conflicts and crisis have often multi-dimensional causes and symptoms. In addition, they are often associated with deep-rooted actor-contrasts regarding, values, issues and interests (Ramsbotham et al., 2011; Berg, 2015). Therefore, successful stabilisation operations demand: continuity; coherence; and a long-term civilian and military collaborative engagement. Thereby, the focussed is on creating, maintaining and enhancing stability and socioeconomic objectives according to a flexible plan with set boundaries. Within conflict transformation and crisis prevention, stabilisation operations should be as civilian as possible, only applying the necessary military means to support the civil planning. Due to the military ability to act in hostile and unsafe environments, military assets are crucial in the initial stage (Gabriëlse, 2007; AIV, 2009; Berg, 2014; Tak, 2015; Matthijssen, 2015; Lucius, 2015; Chubbs, 2015).

For resolving the underlying root-problems within the (post-)conflict areas or fragile states, multiple civilian- and military actors need to synchronise their efforts. In order to do so, the Integrated Approach is developed by the Netherlands government. ***The Integrated Approach can be regarded as an modular framework, for the planning and execution of civil-military operations, with the aim to create coherence between the activities. By coordination or collaboration between the involved crisis management organisations, sustainable conflict transformation towards Security, Prosperity and Freedom is aimed to be achieved*** (Ministerie van Buitenlandse Zaken, 2014).

The Integrated Approach is an optimisation developed from the lessons learned from the applied 3D Approach in the Afghan province of Uruzgan. In chapter 6, the 3D Approach is discussed. Most deployments of the Netherlands Armed Forces are within NATO, EU and UN mandates. Therefore, their Comprehensive Approaches are first briefly presented in paragraph 3.1. The characteristics of the Integrated Approach (IA) are elaborated in paragraph 3.2 and its six implementation phases, corresponding activities and decision-making moments are discussed in paragraph 3.3. As a result, sub research question 1B is answered: What are the characteristics of the Integrated Approach? Paragraph 3.4 discusses the complexity of the Integrated Approach in relation to stabilisation operations. In order to tackle these complexities, a wide range of essential success factors are presented in paragraph 3.5. Paragraph 3.6 concludes with crucial design criteria for inclusion in the new policy framework.

3.1 Comprehensive Approaches of NATO, UN and EU

The North Atlantic Treaty Organization (NATO), the United Nations (UN), the European Union (EU) and multiple partner-nations use the terminology Comprehensive Approach for the planning and execution of civil-military operations. Although the term suggests another approach, the Comprehensive and Integrated Approaches are rather similar. Since NATO is a military organisation and the UN and EU civilian ones, the main difference can be found in the origins of the organisations. The fact that the approaches of the EU and UN are aimed at conflict- and crisis prevention is regarded as the most significant difference (Coning, 2008; EU, 2013). This distinguishes it from the Netherlands Integrated Approach and NATO's Comprehensive Approach, which are aimed at crisis management operations (Vogelaar, 2013; Matthijssen, 2014).

NATO is primarily a military organisation that possesses a few civilian capabilities. The UN and EU are civil organisations that depend on the military assets of their member states. Since neither military, nor civilian organisations alone are capable of ensuring long-term stability, peace and sustainable economic development, they are most effective by joining forces through cooperation (EU, 2013; Kasselmann, 2011; CCOE, 2012; Vogelaar, 2013; Harston, 2013; Matthijssen, 2014). This is also stated by NATO's previous Secretary-General, Anders Fogh Rasmussen:

> *'NATO needs to work more closely with our civilian partners on the ground and at a political level, especially the European Union and the United Nations'* (Matthijssen, 2014).

NATO's Comprehensive Approach is defined as (CCOE, 2012):

> ***'NATO's Comprehensive Approach is the synergy amongst all actors and actions of the International Community through the coordination of its political, development and security capabilities to face today's challenges including complex emergencies'***.

By means of the following six phases, NATO's Comprehensive Approach is executed by means of NATO's Crisis Response Planning (CCOE, 2012):

1. Indications and Warnings (Situation Awareness)
2. Assessment
3. Response Option Development
4. Planning
5. Execution
6. Transition

UN's en EU's Comprehensive Approach can be summarised as: shared analysis, shared programs and shared evaluations (Coning, 2008; EU, 2013). UN's previous Secretary-General, Kofi Annan first described the UN concept of the Comprehensive Approach as:

> *'An integrated mission is based on a common strategic plan and a shared understanding of the priorities and types of programme interventions that need to be undertaken at various stages of the recovery process. Through this integrated process, the UN system seeks to maximise its contribution towards countries emerging from conflict by engaging its different capabilities in a coherent and mutually supportive manner'* (Coning, 2008).

The Comprehensive Approaches of NATO, the UN and EU should effectively coordinate the overarching process of civilian and military actors engaging at various levels by covering the whole spectrum of crisis response. This will involve a variety of governmental and non-governmental organisations, first responders, members of the private sector and members of local communities, all working together to meet one overarching goal. In addition, it can be regarded as an umbrella term for describing the purpose of civil-military interaction focussed on long-term efforts of the international community in which their efforts align and harmonise through coordination and cooperation. Ideally, it combines short-term crisis response and stabilisation with long-term development assistance and reconstruction programs (Kasselmann, 2011; Vogelaar, 2013).

An important strength of the civilian-oriented UN and EU Comprehensive Approaches, is the wide range of political strategic measures available regarding all DIME domains (Diplomacy, Information, Military & Economic, consult Appendix G for more information). Imposing sanctions or stimulating cooperation are just two examples. Another UN and EU strength is their wide range of bilateral and multilateral, member states and international networks to gather and exchange information (Harston, 2013; Koninklijke Landmacht, 2014b). The fact that political compromises between member states are made, results in the fact not the "best" but "sufficient" actions are executed. This is the most significant weakness of the Comprehensive Approaches of the UN and the EU (Matthijssen, 2014).

The potential benefits of the Comprehensive Approach are vital for successful missions. Many challenges still exist in implementing the Comprehensive Approach, like: goal ambiguity; high uncertainty with rapidly evolving events in the theatre of operations; time pressure; and high risks. Also, disparate mandates or goals, diverging organisational cultures and operational styles provide challenges in forming, leading, aligning, and collaborating within the Comprehensive Approach (Kasselmann, 2011; Vogelaar, 2013). These are also the main challenging factors regarding successful implementation of the Integrated Approach. In paragraph 3.5, the identified success factors to overcome these challenges are discussed.

3.2 Characteristics of the Integrated Approach

The complexity of contemporary conflicts, with their numerous and varied underpinning root-causes, calls for a multidisciplinary-, sustained-, and long-term oriented sustainable effort (Ramsbotham et al., 2011; Berg, 2015). In order to be effective in stimulating security, prosperity, and freedom in fragile states and conflict areas by comprehensive crisis management, a coordinated approach in the areas of defence, diplomacy, governance, development aid assistance and cooperation, police, judiciary, and trade is needed to reach sustainable conflict transformation. The Netherlands International Security Strategy and Development Assistance & Cooperation Strategy form the pillars of the Integrated Approach. Within the Integrated Approach, the focus is not just on the conflict phase itself, but also on stabilisation, normalisation, and prevention by means of socioeconomic development, local and host-nation capacity building and reconstruction acts. Thereby, the conditions are shaped for lasting results, sustainable development, self-reliant and independent regions. To accomplish stabilisation and normalisation, the numerous military and civil public and private actors involved must incorporate all available diplomatic, military, and development instruments in a coherent and flexible manner from the most earliest possible moment (Ministerie van Buitenlandse Zaken, 2014; Matthijssen, 2014; Berg, 2014; Tak, 2015; Matthijssen, 2015; Lucius, 2015).

The Integrated Approach aims to create coherence between the activities by coordination or collaboration between the involved civilian and military crisis management actors and organisations. By means of cooperation based on a common desired end-state, duplications of scarce resources and efforts are aimed to be avoided, mutual information sharing is ensured, synergies identified, and friction reduced (Kasselmann, 2011; Goor et al., 2012 ; Harston, 2013; Ministerie van Buitenlandse Zaken, 2014; Matthijssen, 2014; Homan, 2014). In order to reach sustainable conflict transformation towards security, prosperity and freedom, the Integrated Approach has the following six implementation phases (Ministerie van Buitenlandse Zaken, 2014):

1. Orientation
2. Analysis & Assessment
3. Integrated Action Possibilities
4. Planning & Preparation
5. Execution
6. Evaluation

Compared with NATO's Crisis Response Planning (see paragraph 3.1), the Integrated Approach shows strong similarities. This forms a solid basis for effective and efficient cooperation between the Netherlands and NATO.

By the Netherlands government, the Integrated Approach is regarded an operational manual and modular framework for the planning and execution of civil-military operations in fragile states and conflict zones. Initially, the aim of the Integrated Approach was to ensure cooperation only between Netherland ministries and their involved departments. However, it is also a practical guiding tool for creating efficient and effective cooperation with the host-nation government, international organisations, civil society partners and other relevant actors. It needs to be emphasised that the Integrated Approach is a process. It is not a goal in itself but a guidance for strategic decision-making, mission planning, and mission execution within the different stages of the conflict (Ministerie van Buitenlandse Zaken, 2014; Matthijssen, 2014; Homan, 2014; Goor et al., 2012).

Based on a shared vision of the situation, the joint mission goal(s) and campaign plan development themes will be formulated and agreed upon in cooperation with the involved participants. Coherent planning is desirable in order to mutually reinforce the objectives and activities of the Netherlands government, the host-nation government, non-governmental actors, international organisations, and partner nations. Due to the wide range of actors involved including their diverging values and interests, the actors objectives and activities should at least not be contradicting (Ministerie van Buitenlandse Zaken, 2014; Matthijssen, 2014; Homan, 2014; Goor et al., 2012).

The Integrated Approach does not guarantee success, but its absence will certainly guarantee failure (Vogelaar, 2013). Thus, the Integrated Approach is a crucial asset to enable stakeholders for joint goal formulation. Moreover, it is a platform for constant dialogue to determine the most desirable and most viable form of interaction, planning and actions. Consequently, it serves as a transition management and cooperation tool within civil-military stabilisation operations. In the next section, its six implementation phases will be discussed.

3.3 Implementation of the Integrated Approach

The Integrated Approach is a modular framework for the planning and execution of civil-military operations (Ministerie van Buitenlandse Zaken, 2014). In table 3.1, its six implementation phases are explained. This explanation can suggest its implementation is a linear approach with strict defined boundaries. In reality although, these phases have less strictly defined boundaries (Cremers, 2014; Matthijssen, 2015).

Phase:	**Activities:**
1: Orientation.	**Aim:** Early detection of instability or conflict. **Input from:** Netherlands diplomatic office network, intelligence services, local partners, non-governmental organisations, and the private sector. **Activities:** - Sharing of information and intelligence. - Early warning meeting.
Publication of the Letter of Notification: the Netherlands government informs the Dutch Parliament that it has received a request regarding a military or civil-military contribution.	
2: Analysis & Assessment.	**Aim:** Based on the executed integrated analysis and assessment, formulation of strategic common goals. **Input:** Netherlands diplomatic office network, intelligence services, local partners, non-governmental organisations, the private sector, and international organisations. **Activities:** - Analysis of: causes of conflicts or fragility including the motives and interests of the (conflict-)actors. - Assessment: is involvement by the Netherlands appropriate, wanted or necessary?
3: Integrated Action Possibilities.	**Aim:** Jointly (in cooperation with all of the involved Netherlands ministries and possible other partners) answering the question what the Netherlands can do in order to promote recovery of safety and stability in the area of instability or conflict. **Input:** results from the made analysis and assessments (phase 2). **Activities:** - Developing a set of coherent instruments and activities, aimed to achieve the strategic common goals. The development activities and resources of the participating actors should be synchronised. - Find synchronisation connection with international organisations, the host-nation, local partners and non-governmental organisations.
Publication of the Parliament 100 Letter: decision-making moment of the Netherlands government including informing the Dutch parliament if, and so, how the Netherlands will contribute in the deployment.	

4: Planning & Preparation.	**Aim:** Alignment of the planning and preparing for the operation based on the selected instruments and activities. **Input:** Results from the Integrated Action Possibilities (phase 3) and political arenas. **Activities:** - Setting baseline conditions. - Jointly preparing civil and military personal for the deployment. - Making agreements for synchronisation with local, national and international civil-military partners including governmental organisations, internationals organisations, non-governmental organisations and (local) public and private partners. - Joint analysis and assessment of the current degree of safety and development. - Coherent planning of the activities.
5: Execution.	**Aim:** Working towards achieving the strategic common goals by constant measuring the activity effects including implementing the needed adjustments. **Input:** Field situational awareness reports, local population, host-nation government, Netherlands diplomatic office network and the Intelligence services. **Activities:** - Gaining, maintaining and sharing the situational awareness reports (is a continues process). - Coherent execution of the planned activities. - Verification if the activities contribute to the strategic goals based on inputs from the local government and its population. If not, the activities need to be adjusted.
Mid-term Evaluation regarding the contributions of the Netherlands deployment.	
Decision-making moment Netherlands government regarding extension of continuing the Netherlands deployment.	
6: Evaluation.	**Aim:** Analysis if the mission plan and its activities contributed in restoring security and stability. Also, the lessons learned for future contributions are identified. **Input:** Field situational awareness reports, local population, host-nation government, Netherlands diplomatic office network and the Intelligence services. **Activities:** - Aligning evaluations, performing final analysis and identification of best and worst practices. - Facilitating (external) assessment regarding the efficiency and effectiveness of the Netherlands deployment.
Post-mission Evaluation.	

Table 3.1: Integrated Approach implementation phases (Ministerie van Buitenlandse Zaken, 2014; Lucius, 2015).

After the Orientation phase (phase 1), the Netherlands government informs the Dutch Parliament by means of the Letter of Notification that it has received a request regarding a military or civil-military contribution. Typically these requests are made by NATO, the UN, EU, a coalition of the willing, partner nations or the host-nation government (Ministerie van Buitenlandse Zaken, 2014; Lucius, 2015).

After phase 3, Integrated Action Possibilities, the Parliament 100 Letter is published. This letter from the Netherlands government addressed to the Netherlands Parliament under Article 100 of the Constitution, describes precisely that the government has taken the political decision to participate in Operation X, at the request of Organisation Y, for the reasons A, B C and D, taking into account Risks I, II and III, with the deployment of the partners and resources Alpha, Bravo, Charlie according the Command Structure P. Before its publication, the Netherlands government selects one or a combination of the options generated within the phases 2 and 3. Approval of the Dutch Parliament is not needed, but desirable nevertheless. By means of this approach, the government remains always responsible for the actual deployment and can be held accountable for, by the parliament (Ministerie van Buitenlandse Zaken, 2014; Lucius, 2015).

Within the Integrated Approach phases 1 until 3 and before the publication of the Parliament 100 Letter, national and international partners are consulted. This is an important process because the why, how, who and what of the mission are also explained in the Parliament 100 Letter. Early involvement and consultation of possible partner nations, the host-nation authorities and population, international organisations, development organisation, (local) knowledge institutes and (local) private enterprises is thus not a barrier.

This is however regarded as an essential requirement in order to gain support for the mission in the public and political arenas. Based on agreements of confidentiality, essential knowledge can also be shared resulting in synchronisation of possible activities and better mission options before the actual deployment. (Berg, 2014; Lucius, 2015; Matthijssen, 2015). This is just one of multiple factors contributing to a successful implementation of the Integrated Approach. In paragraph 3.5 more significant success factors of the Integrated Approach ware being explained. Beforehand, the complexity of the Integrated Approach in relation to stabilisation operations are discussed in the next paragraph.

3.4 Complexity of the Integrated Approach in relation with Stabilisation Operations

Decision-making process are not linear, they start with a problem and reach a solution via subsequent steps (Enserink et al., 2010; Bemmel et al., 2014). Within the Integrated Approach methodology, coordination or cooperation between all the military and civilian actors that will be involved in short-, medium- and long-term, is a precondition for successful and efficient stabilisation operations. Moreover, in order to transform a post-conflict area from stabilisation towards normalisation by means of creating and maintaining long-term orientated stability and socioeconomic development, continuity and coherence between the short-, medium- and long-term objectives and activities is a must. Due to the high level of problem complexity, the constant changing environment and the fact that the future cannot be predicted, a flexible plan with set boundaries is crucial (Matthijssen, 2014; Lucius, 2015; Matthijssen, 2015; Tak, 2015).

Typical involved actors within the Integrated Approach are: the Netherlands ministries of Defence; Foreign Affairs; Security and Justice; coalition partners-nations; international organisations; governmental organisations of the host-nation; (local)non-governmental organisations; and (local) public- and private actors. (Ministerie van Buitenlandse Zaken, 2014; Berg, 2014; Bemmel et al., 2014; Lucius, 2015; Matthijssen, 2015). Due to the wide stakeholder diversity including their differences in interests, objectives, political and/or strategic agendas, processes and cultures it is essential and challenging to understand each other, create a common problem-solving goal and create a coherent campaign or mission plan (Berg, 2014; Bemmel et al., 2014; Lucius, 2015; Matthijssen, 2015).

Crisis management instruments and crisis response measures pursue short-term objectives while development instruments are long-term oriented. Merging the short-term goals and deployment of military actors with the medium- to long-term objectives of most civilian development organisations is regarded difficult. However, merging these goals is very significant and a critically needed activity in order to create coherency (Goor et al., 2012; Matthijssen, 2014; Koolhof, 2014; Lucius, 2015; Tak, 2015).

Due to the unsafe environment in the initial stages, military interference and assistance are essential. Since the problems are not of military nature, neither are the long-term solutions. During the military deployment their main objective is to shape the necessary conditions, like a relative safe working environment and freedom of movement for performing governance and development related activities executed preferably by NGOs and IOs. When the level of violence reduces, IOs and NGOs in cooperation with the host-nation government and its population can gradually take over since they are better equipped in performing medium-, and long-term reconstruction and development activities (Berg, 2014; Lucius, 2015; Tak, 2015; Cooten, 2015; Chubbs, 2015).

Either because the civilian entities are not yet available, the area is unsafe, or logistics prevent civil participation, military units will facilitate short-term reconstruction and development activities. Although civilian actors are better equipped for these tasks, the conditions are such that only military actors can do the job. This requires the will to accept each other's differences in terms of agendas and capacities. In addition, multiple functions and resources needed in crisis situations are only available within the military set of capabilities. This underlines the needs for a cohered plan guided by joint objectives and consensus regarding the distribution of activities among the participating actors including the needed financial, equipment, material and labour resources (Gabriëlse, 2007; Kasselmann, 2011; Goor et al., 2012; Harston, 2013).

To respond appropriately to the evolving actor interests and positions, a broad range of plausible futures and the constant changing dynamics of the operational environment, a flexible approach is needed (Enserink et al., 2010; Berg, 2014; Bemmel et al., 2014; Lucius, 2015). As schematically explained in figure 3.1, the "Adaptive Solution Path" approach is regarded appropriate to deal with these uncertainties (Bemmel et al., 2014). To achieve the long-term acceptable situation, boundary conditions set the precondition to plan the short-, medium- and long-term orientated activities. The timelines of the involved actors including their responsible objectives and related activities will differ. Also, it is often not possible to define a specific and definite future. To avoid negative fallouts and create an agreed understanding of what and how the various goals are ideally achieved, a consistent and coherent planning based on actor cooperation or coordination is crucial. The needed flexibility and continuity are guaranteed, by formulating what the desired objective is instead of how it need to be achieved. Consequently, the responsible actor has the needed freedom to determine how this can be achieved the best during the implementation (Gabriëlse, 2007; Kasselmann, 2011; Goor et al., 2012; Harston, 2013; Lucius, 2015; Berg, 2014; Tak, 2015; Cooten, 2015).

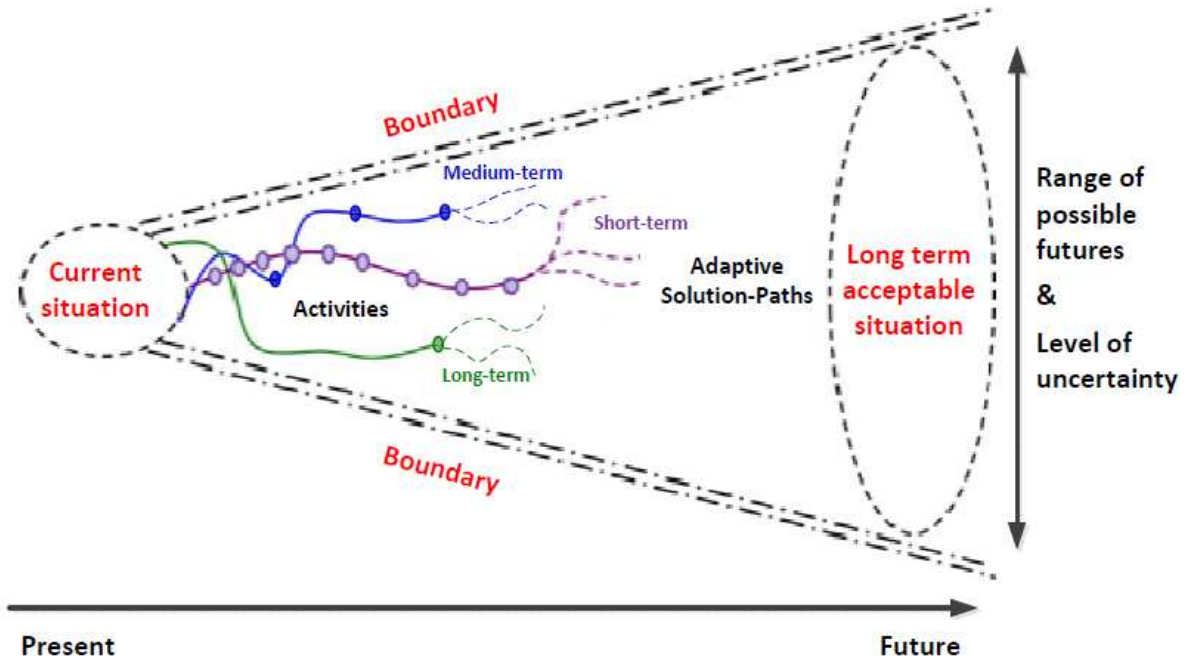

Figure 3.1: The "Adaptive Solution Path" approach (Based on: Bemmel et al., 2014; Enserink et al., 2010; adapted and supplemented by the author).

The implementing of the Integrated Approach in stabilisation operations is accompanied with a wide range of challenges and success factors. Among the list of crucial success factors are: transparency of motivation between the different partners; coordination without hierarchy; and a joint preparation that reflects the reality of what is experienced in theatre. In the next paragraph these will be discussed and explained in more detail.

3.5 Integrated Approach Success Factors

Coordination and collaboration between the armed forces, NGOs, knowledge institutes, private sector enterprises and other national and international governmental organisations will be accompanied by multiple challenges (Vogelaar, 2012). In order to tackles these challenges, a wide range of success factors are presented in this paragraph. These success factors are not area-, problem-, or actor specific, making them generically applicable. First, the success factors regarding the preparation process are presented in section 3.5.1. In section 3.5.2 the field implementation success factors are elaborated.

3.5.1 Success Factors - Preparation Process

For a large extent, the success of the Integrated Approach can be created at home. Civilian, police and military actors, as well as the diplomatic, development and humanitarian communities, should put the concept into practice through adequate mission preparation and training (Goor et al., 2012). Regarding the preparation process, the following success factors are identified:

Broad Approach. The campaign plan of a stabilisation operations need to have a multidisciplinary approach including all military- and non-military aspects of the DIME strategy (AIV, 2009; Koninklijke Landmacht, 2014b). Humanitarian assistance, economic growth and development, peace-building, security, governance as well as state-building need to be integrated within the campaign plan at an early stage. This also includes: the reintegration of ex-combatants and refugees; infrastructure; employment; agriculture; education; health; monetary policy and public finance; external finances (capital flight, debt relief, remittances); trade; private sector development and entrepreneurship; economic governance (land property rights and access to land, corruption, the management of natural resources, illegal economic activities, regional conflict factors) and horizontal inequality (Maier, 2010).

Tailored Approach. Due to the fact that the nature of a crisis is different from case to case, the problem-solving instruments need to be tailored to the local geographical-, safety-, social-, economical-, and political circumstances. Thus, there is no general replicable model for successful crisis management (Gabriëlse, 2007; Lijn, 2011; Goor et al., 2012).

Situational Awareness & Understanding. A multidisciplinary country-specific analysis regarding a full conflict assessment including the root-causes of the conflict and a political and economic analysis need to be executed at an early stage. (AIV, 2009; Maier, 2010; Koninklijke Landmacht, 2014b). Also, the political and non-military risks and consequences of actions need to be assessed (Vogelaar, 2013). Identification and understanding the local culture, the political-, and economic structures and –situations, including the crucial drivers, are of the utmost importance (Vogelaar, 2013; Berg, 2014; Tak, 2015).

Trade-offs. The objectives of socioeconomic policy and diplomacy activities in early post-conflict recovery is to avoid the negative effects aggravating the conflict. Thereby, the relapses into an armed conflict is reduced and the peace-building supported. The policy makers will face trade-offs deciding between short-term, quick and visible projects on one hand and long-term sustainable development on the other. Effective, short-term solution may not always be economically efficient in the long-term, but may be important in post-conflict situations (Maier, 2010, Government of the Netherlands, 2011; Vogelaar, 2013; Lucius, 2015). Small-scale, quick and visible activities, aimed at specific village communities are just a first step towards sustainable development activities. As soon as possible these projects should be followed by long-term development projects to enable the local authorities to increase their presence and legitimacy in the area. Within this process, economic growth and poverty reduction are important enablers in the medium- to long-term (AIV, 2009; Maier, 2010 Government of the Netherlands, 2011).

Know its Limitations. The Integrated Approach is not a universal remedy in crisis management. A mission is about achieving objectives and not about achieving the Integrated Approach. It should be an enabling tool. Peaceful coexistence of different approach of other actors based on coordination might sometimes be more effective in reaching the long-term focussed objectives. Introduce unnecessary bureaucracy, should be avoided at all times (AIV, 2009; Goor et al., 2012).

Avoid Organisational Parochialism & Establish Cooperation. In order to be successful, organisational parochialism should be avoided and sustainable cooperation between the defence, diplomacy and development actors need to be established (Gabriëlse, 2007; AIV, 2009; Bemmel et al., 2014; Matthijssen, 2014). The Collaborative Decision Making (CDM) process is an proven tool to establish successful cooperation mechanisms (Bemmel et al., 2014).

Right Mindset & Common Goals. The essential mindsets for both military and civilian personnel are flexibility, creativity, common interests, mutual respect, and sharing of information and responsibility. Thereby the focus is on providing the best possible assistance by means of a mutual agreed desired end-state. First of all, mutual understanding of the divergent perceptions, respect and trust between the participating organisations are essential precondition to establish and maintain a good working relationship for successful cooperation based on equivalence. In addition, open communication is crucial. Moreover, all relevant topics, perspectives, ideas motives and issues based on well motivated arguments should be shared among the participating actors. This includes the sharing of critical notes and be able to speak freely about each domain, while respecting the beliefs and motives of the involved actors. With this mindset, the best mission plan can be created since a willingness to cooperate is created both at the strategic and implementation levels. This will ultimately result in highly efficient crisis relief operations, fewer organisational shortfalls, fewer personnel, fewer resources, fewer financial assets, less duplications of efforts, faster help, and fewer casualties. The only precondition for this optimisation is agreement on common goals. (Kasselmann, 2011; Goor et al., 2012; Harston, 2013; Vogelaar, 2013; Matthijssen, 2014; Bemmel et al., 2014; Berg, 2014; Matthijssen, 2015).

Discuss Positions & Conditions. The participating actors need to be aware of the conditions and the position they obtain within the discussion. *'In order to make them aware of their possible contribution and position within the Integrated Approach, it is important to explain what their possible contribution in each phase can be by explaining the how's, why's and what's before an actual contribution. Therefore, these actors should be aware of each position and mandate of the other possible participating actors. Inviting people for a discussion does not mean that you can tell them what they should do. Neither you should agree on all issues, because different perspectives are an added value within the broad consultation process. Due to these discussions, you will create more certainty concerning the possession of the right and all information there is. Also, by consulting a broad range of different experts in multiple different organisation you have more brainpower to generate a wide range of better options. Considering and assessing the generated options and deciding what role you want to play within the actual implementation, is and will be the responsibility of the decision-makers of each specific possible participating organisations'* (Lucius, 2015).

Host-Nation Support & Integration. The position and support of the host- nation is very important. The ambassador of the host-nation and/or other relevant host-nation experts are ideally involved within the phases 2 until 6 of the Integrated Approach (Lucius, 2015). This will stimulate local ownership and problem solving responsibility by the local government from the early beginning. Furthermore, the common goals and implementation plan also becomes their idea, making the execution and the handover-takeover processes in phase 5 smoother.

Generic & Detailed Plans. At the high level, the plans will be generic. In the field, detailed plans to counter all imaginable crisis situations are essential. By means of civil-military expert groups manned with functional experts, the generic plans need to be transformed into detailed guiding plans for the respective military and civilian levels and domains (Kasselmann, 2011; Harston, 2013; Koninklijke Landmacht, 2014b).

"Unity of Effort" by Joint Analysis, Planning, Execution & Monitoring. Cooperation to strengthen each other through sharing and exchange of information, resources and expertise within the phases 2, 3, 4 and 5 is highly recommended. Furthermore, unity of effort is established through a joint planning and collaborative execution of the activities between the Netherlands ministries of Defence, Foreign Affairs, non-governmental organisations (NGOs), international organisations (IOs), the host-nation government, (local) knowledge institutes and (local) private sector enterprises. Especially when these actors have been active in the fragile state or conflict area, their expertise and knowledge regarding the local culture, causes of conflicts and the reasons states are fragile can be essential for making the right Analysis & Assessment in phase 2 (Gabriëlse, 2007; AIV, 2009; Kasselmann, 2011; Goor et al., 2012; Harston, 2013; Matthijssen, 2014, Homan, 2014; Tak, 2015).

'Knowing each other, before meeting each other in the field' (Berg, 2014) is an important guiding principle for success and will prevent problems in the subsequent phases. Preferably, the cooperation already starts within phase 1 or 2, since a shared analysis creates a common understanding of the problem already in the Analysis & Assessment phase (phase 2). This results in the formulation of better common goals in phase 3, with better agreements regarding the coordination of the activities, including labour and funding in phase 5 (Kasselmann, 2011; Harston, 2013). By this means, blind spots can also be better identified, scenarios developed and possible policy options and activities mapped. This should be done within a permanent dialogue team. Therefore, a joint performance of the Analysis & Assessment (phase 2), Integrated Action Possibilities (phase 3), Planning & Preparation (phase 4), Implementation & Execution (phase 5) and Evaluation (phase 6) is preferred in order to ensure similar interpretations of objectives and actions that should lead to these objectives. During the mission, the performance of the activities needs to be reviewed regularly, and adaptations made when necessary. This involves data collection by using multiple sources: observations, recordings, surveys, etc. (Kasselmann, 2011; Harston, 2013). In order to measure the effectiveness of specific activities, like the development of security or of trust among the local population, specific result indicators should be formulated prior to a mission (Government of the Netherlands, 2011; Koninklijke Landmacht, 2014b). Furthermore, the transition of responsibilities within the Implementation & Execution phase (phase 5) between the actors should be a step by step, gradual hand-over-take-over process (Goor et al., 2012; EU, 2013; Berg, 2014; Koolhof, 2014; Matthijssen, 2015).

Private Sector Involvement. *'Be careful with involving the private sector. Due to other primary interests, like making a profit, these parties can disrupt or destroy the positive contribution made by the previous actors (NGOs, ministries of Defence and Foreign Affairs) when involved in a too early stage. We also have to realise that the private sector has other purposes and meanings in non-western societies. Applicability and timing of private sector involvement is thus culture based. With regard to having a sustainable transition management including sustainable local training and capacity building, private sector involvement should not take place within the short- and medium-term activities'* (Ven, 2014).

Coordination or Cooperation with NGOs. A fundamental requirement for cooperation is the "willingness" factor of the actors. Certain humanitarian NGOs do not want to cooperate with military actors nor they want to participate in the Integrated Approach. Losing their independence, neutrality, impartiality and the fact that humanitarian aid can be used as a weapon by the fighting parties are frequently heard explanation. Also, not wanting to compromise their objectives, reputation and working conditions blocks cooperation with military and police organisations (AIV, 2009, Harston, 2013). In this situation it is advised to create and maintain a good working relationship with these actors based on informing each other on the planned activities, while they operate autonomous. By means of coordination, at least duplication of activities and spill-over effects can be prevented. Due to the overlapping aim, reconstruction and development related NGOs are more willing to cooperate with military organisations (Government of the Netherlands, 2011; Goor et al., 2012; Vogelaar, 2013; Harston, 2013; Matthijssen, 2014; Cremers, 2014; Homan, 2014).

Transparency = Trust = Cooperation. Achieving mutual trust is a prerequisite for effective cooperation. Trust demand transparency and open communication. Most civil organisations are transparent, because there donors' demand inside in how their money is spend. For a sustainable cooperation, also military actors need to be transparent in order to win the trust of their civilian partners. For military organisations, transparency is although not always possible due to security reasons. If transparency is not possible the reason need to be explained constantly, in order to ensure a trustworthy relationship (Kasselmann, 2011; Harston, 2013; Berg, 2014; Post. 2015).

Complementarity between International Organisations. To be effective, national, international and regional civilian and military contributions need to be well embedded in the international framework. Ideally they aim at the entire spectrum of long-term orientated conflict prevention, good governance, security and development (Gabriëlse, 2007).

Organisations like the UN, the EU, NATO, and the World Bank all have complementary resources, different strengths, expertise, capacities, competencies and relationships which are useful for joint operations or actions. NATO, for instance, is a military alliance, whereas the EU has diplomatic and development resources. By exchanging ideas on how to bring their resources together, mismanagement of international aid funds is prevented (Gabriëlse, 2007; AIV, 2009; Vogelaar, 2013; EU, 2013). In addition, interference can be reduced and overall performance enhanced (Kasselmann, 2011). Since their policies and actions can have significant effects on conflict or crisis situations, these actors ideally cooperate by partnerships (Government of the Netherlands, 2011; EU, 2013).

Donor & Fund Coordination. For development, you always need banks. This makes donor and fund coordination important. It is advised to include the International Financial Institutions (IFIs) like the World Bank, the EU Investment Bank and individual nations at an early stage within the problem-solving process. Always consult them at an early stage regarding their ideas and opinions in order to guarantee that they are actively involved (Keijn, 2014; Tak, 2015). Moreover, they have experience and knowledge regarding what development acts are successful and non-successful in different situations.

Early Synergy for Better Results. To strengthen each other based on actor specific knowledge, information and expertise, synchronisation opportunities need to be investigated from the beginning (AIV, 2009). From the NGO standpoint, the implementation and communication should be done separately. This to stay independent and avoid jeopardising the NGO employees' safety (Berg, 2014). Although objectives and decision-making procedures will be different, synergy should be ensured through discussing the various steps in the process of change towards the exit strategy. Therefore, the identification of what should be done, in what sequence and to what extent, including who is best suited and -equipped to deal with each challenge at what moment in time is crucial. Consequently, an early-, inclusive-, and intense dialogue between the participating actors has a high priority. Hence, a greater impact and better results can be achieved due to a clear prioritisation of activities and a clear division of labour (Goor et al., 2012; EU, 2013).

Clearly Demarcated. The Integrated Approach should be clearly demarcated and described. First, it should be clear for all participating actors what their level of interaction is during each phase (coordinate, collaborate or cooperate can differ per phase). In addition, the activities, their objectives (including the distribution of tasks, resources, responsibilities, accountability), and the joint ownership over long-term related goals should be clearly specified. This requires a strong coordination authority at home and in the field. Good ad-hoc personal relationships are also crucial (Government of the Netherlands, 2011; Goor et al., 2012; Vogelaar, 2013; Cremers, 2014).

Prioritisation & Synchronisation. Regarding activity prioritisation and synchronisation, the long- and medium-term objectives can only be formulated as situations. The short-term objectives, however, can be described as specific effects including their activities and desired end-state. These activities can be best performed by the participating organisations that have a relationship with the longer-term end-state. This process is enhanced by a regular update and revision of the campaign or mission plan (Vogelaar, 2013; Bemmel et al., 2014).

Joint Mission Preparation. Pre-deployment training and -exercises involving all participating civilian- and military actors is essential for creating a comprehensive team. This includes: trust; understanding and knowing each other's skills, drills, values, assets and limitations; and a common working procedure (AIV, 2009; Goor et al., 2012; Vogelaar, 2013; Matthijssen, 2014; Rientjes, 2015). Constantly training the various military and civilian actors for comprehensive crisis management is therefore crucial. The 1st German-Netherlands Army Crops is organising these large-scale exercises regularly. This ensures a constant flow of information-sharing. It also enables a mutual understanding of working methods and decision-making processes, creating tighter coordination and the willingness to cooperate. It does so by investigating the opportunities and limitations regarding cooperation between a broad range of actors. These actors include the security apparatus, diplomatic resources and NGOs (Goor et al., 2012; Vogelaar, 2013; Matthijssen, 2014; Cooten, 2015; Homan, 2014).

Unity of Effort & Command. Within a single area of operations, there should be unity of effort and unity of command. For the lead nation, good arrangements have to be made with all coalition partners prior to deployment (Government of the Netherlands, 2011).

3.5.2 Success Factors - Field Implementation

As a starting point, an integrated plan based on coordination and cooperation between the civilian and military organisations is needed. In order to avoid pitfall and shortfalls regarding the field implementation of the Integrated Approach, the following success factors are identified:

Civilian & Locally Owned. For implementation in the field, the management process is ideally civilian and locally owned and -performed (Matthijssen, 2014; Ven, 2014; Tak, 2015; Post, 2015).

Winning the "Hearts-and-Minds" of the local population is crucial. Being "attached" to the local population by engaging and consultation of local officials, tribal leaders, informal rulers, power brokers and other interested actors with the aim of creating and maintain a trustworthy working relationship is crucial. This is a fundamental requirement to gain their support and the interlinked control in the area of operations. Also, it makes it easier to assist the socioeconomic development and deliver peace and stability (Gabriëlse, 2007; Government of the Netherlands, 2011; CCOE, 2012; Vogelaar, 2013; Rientjes, 2015). Mentoring of local actors by civilian experts based on a long-term partnership or coaching strategy can be an appropriate tool (Government of the Netherlands, 2011). Therefore, this success factor is closely interlinked with Local Problem Ownership.

Local Problem Ownership. Local capacity building and local ownership are prerequisite for creating a self-reliant region. These are also the ingredients regarding the exit strategy, since only the local population and host-nation governmental organisations can ensure the needed transition process from stabilisation towards normalisation and, ultimately, the creation of peace, security and development. Hence, one of the very first objectives need to be the creation of local ownership and the transfer of responsibilities towards the local population or host-national governmental authorities. This demands an early involvement of the local actors (Gabriëlse, 2007; AIV, 2009; Government of the Netherlands, 2011; SWP & ZIF, 2013; Koolhof, 2014; Ven, 2014).

Work *'as civilian as possible and as military as necessary'* (Gabriëlse, 2007). For facilitating reconstruction works, military units will fulfil functions to which it is less suited than civilian organisations. Although civilian actors are better equipped for these tasks, the conditions are often such that only military actors can do the job, because: the civilian actors are not yet available; the area is considered unsafe and hostile; or logistics prevent civilian actions. This requires the will to accept each other's differences in terms of agendas and capacities. In general, civilian actors should execute civilian activities as much as possible and military forces only when there is no other civilian alternative (Gabriëlse, 2007; Kasselmann, 2011; Harston, 2013).

Do No Harm. It is of paramount importance to prevent loss-loss and tragedy-of-the-commons effects by applying the "Do No Harm" principle. External assistance and military operations will be accompanied with side effects. Therefore, stabilisation operations should be shaped in a way sensitive to the conflict minimising the negative effects at all times (SWP & ZIF, 2013; Post, 2015).

Collaborative Mindset. As mentioned in the success factors regarding the preparation process, a collaborative mindset during the field implementation is crucially as well (Kasselmann, 2011). Sharing information, harmonisation, and synchronised planning and execution of the activities should be a continuous process at all implementation levels. The consideration and prioritisation of exclusively military or -civilian efforts, ignoring interdependencies, synergies, or coordination, should be prevented at all times.

Long-term Engagement. *'To reconstruct a country toward stability, Cordaid maintains the principle that the stabilisation and normalisation period is the same as the total conflict duration. Commonly, Cordaid formulates its development policies and activities for a time horizon of 20 years'* (Berg, 2014). The objectives of supporting the local population and host-nation authorities require time and perseverance. Consequently, a long-term engagement and commitment by the donor nations and the international community is needed. Only through a long-term engagement the host-nation can strengthen its security and development capacities to and for a self-reliant and independent region. Addressing the underlying causes of conflict in order to build peaceful and long-term resilient and robust societies will be crucial (Gabriëlse, 2007; Goor et al., 2012; EU, 2013; Koninklijke Landmacht, 2014b; Rientjes, 2015). Therefore, the commitment should not be formulated with an end-date but as an end-state plus intermediate objectives (Vogelaar, 2013; Homan, 2014; Koninklijke Landmacht, 2014b). In addition, the engagement should always be measured against realistic long-term objectives combined with short-term actions. Furthermore, the resources utilised should be appropriate for the prioritised pursued objectives (Emmes, 2012; EU, 2013). In order to establish a long-term engagement, the Integrated Approach activities can be adopted within the multi-year strategic plans of the United Nations Development Programme or the Netherlands Development Assistance & Cooperation Strategy.

Use of Force. Harmful practices by the coalition forces and inflicting casualties among the local population and their belongings - also referred to as Collateral Damage - need to be avoided (Kasselmann, 2011; Vogelaar, 2012; SWP & ZIF, 2013). It is thus not about fighting. Strong kinetic military actions should only be executed when needed (Gabriëlse, 2007). Therefore, communication and agreement on the use of force - also known as the Rules of Engagement - before any kind of deployment are essential (Kasselmann, 2011; Harston, 2013; Koninklijke Landmacht, 2014b). The application of military power to gain control over an area for the purpose of defeating opposing forces, or pacification, requires force proportionate to the demands of the particular situation. As damage to the infrastructure will be detrimental for the local population, the protection of vital interests of the local population should be in the focus of both the military and civilian actors (Kasselmann, 2011).

Allocation of Funds by the Host-Nation. In order to be successful in the long-term, the country where the stabilisation operation is conducted should be responsible for spending the available monetary funds. The host-nation government is consequently empowered to become self-reliant. Only then, service delivery by the local government to the local population is stimulated, instead of reliance on service delivery through external donors. This money is provided by international donors like the World Bank and individual nations *(*Gabriëlse, 2007; Matthijssen 2014; Tak, 2015).

Based on Local Culture. All governance- and development activities, especially fundamental changes, need to be implemented gradually and with appropriate regard to the local values, interests, and social-, economical-, and political structures. It should not be based on western-centric solutions (Vogelaar, 2013; Ven, 2014; Homan, 2014; Tak, 2015; Post, 2015). Since the local population and host-nations government will need to resolve the problems, it is advised to use the existing formulated and approved local, national and international policies. Also, the public should be involvement in the design and implementation processes. Moreover, the projects should be executed by the local population and host-nation governmental organisations based on local habits an perspectives (Klein, 2014; Berg, 2014; Lucius, 2015; Post, 2015).

Civil-Military Command Structure. Since both the military aspects of the operation and the diplomatic and developmental parts of the operation need to have the appropriate attention of command, a dual command structure of military and civilian representatives running the operation jointly is crucial. The military commander and his or her civilian counterpart should speak with one voice to the outside world. The same is applicable for the involved ministers (Vogelaar, 2013; Matthijssen, 2014). Therefore, good mutual agreements are needed between the ministries involved regarding media policy, public information and public statements, in order to create and maintain support for the mission (Government of the Netherlands, 2011; Lucius, 2015).

***'Staying aligned with the key stakeholders** is important. When you want to implement a new activity during the deployment, consult all the stakeholders internal and external from the bottom toward the top organisational levels. By consulting them and include their input, it becomes also their idea. By this approach you will develop support for the implementation of your plans' (Koolhof, 2014).* This is also applicable to the cooperation between the involved governmental organisations (Government of the Netherlands, 2011).

Exit Strategy. Every activity should have an exit strategy (handover-takeover by another actor) before its implementation. This should be clearly communicated with the local population and the host-nation government. The right time to handover the responsibilities toward another actor needs to be evaluated per subject, in particular which actor should be involved at which stage of the process. This needs to be an actor that has enough resources to enable future successes and shares the same Campaign Plan Goals. Within this process, local entrepreneurship is an important aspect. In the long run, this can be taken over by larger private enterprises (Koolhof, 2014; Post 2015).

Ink Blot Strategy. Liberating an area without the follow-up of establishing and maintaining a permanent presence, only results in delivering short-term results. Based on the "ink blot" strategy elaborated in Appendix G, kinetic offensive or defensive operations should directly be followed by reconstruction activities as well as the training of native armed forces and/or policy personal (Graaf, 2010).

3.6 Design Criteria

The Integrated Approach is the civil-military planning, decision-making and execution methodology of the Netherlands government for military, and/or humanitarian deployments. This approach is generically applicable in politically unstable, fragile or falling states including their safe and non-un-safe regions. Furthermore, it is developed to prevent contradictions and create coherence through cooperation or coordination with and between the involved actors. Due to these characteristic and because this methodology is official policy and well known within the ministries of Defence and Foreign Affairs including multiple Dutch NGOs, it is selected to form one of the fundamental pillars of the new policy framework. To increase the recognisability, it is recommended to apply the same six implementation phases. Furthermore, it is advised to make the activities of each phase specific for the application of water management practices. In addition, the Adaptive Solution Path approach and Integrated Approach Success Factors will can function as crucial implementation principles. Consequently, Inclusion of the Adaptive Solution Path approach and Integrated Approach Success Factors is therefore strongly recommended.

4

Integrated Water Resources Management

All life on earth depends on water. For humanity, this includes every social system across a diverse set of economic sectors. Also, human and ecological water usage has direct or indirect effects on water quantity and quality (Radif, 1999; JØnch-Clausen et al., 2001). In a complex and increasingly interdependent world, issues such as water-, energy-, and food security are interrelated. In this light, water management serves the needs and demands of a growing diversity of central, state and municipal institutions, user groups, the private sector, NGOs and other water actors (JØnch-Clausen et al., 2001; Savenije et al., 2008).

During the 1980s, a variety of future global water-related challenges emerged. This intensified during the 1990s, resulting in the acknowledgement that future water management challenges are multidimensional. In order manage these issues in a sustainable manner, an appropriate methodology was desired to coordinate policy making. This includes the planning, implementation, maintenance, and optimisation of water systems. Since water is a flexible resource that is shared across boundaries, coordination regarding issues arising over international watercourse and basin systems need to be managed as well (GWP, 2000; JØnch-Clausen et al., 2001; Biswas, 2008; Savenije et al., 2008; Ven, 2011). As a result, the water management society developed an appropriate multi-disciplinary, multi-institutional and multi-stakeholders approach: the Integrated Water Resources Management framework (GWP, 2000; JØnch-Clausen et al., 2001; Biswas, 2008).

Within the following paragraphs, the Integrated Water Resources Management (IWRM) framework will be discussed. First, the hydrological system in relation to human and ecological water usage will be discussed in paragraph 4.1. In paragraph 4.2, the IWRM characteristics will be explained. As a result, sub research question 1C is answered: What are the characteristics of the Integrated Water Resources Management framework? Its four dimensions will be elaborated in paragraph 4.3. In order to incorporate the IWRM dimensions into appropriate water management practices and policies, three implementation principles are crucial. These are discussed in paragraph 4.4. In Appendix J important lessons learned regarding the implementations of IWRM, its strengths, weaknesses, opportunities, threats and optimisation recommendations to overcome its limitations are discussed. Through combining the Integrated Water Recourses Management framework with the Negotiated Approach (discussed in Appendix K), an optimisation is performed by the author resulting in the new developed *New IWRM Implementation Cycle*. The *New IWRM Implementation Cycle* is presented in paragraph 4.5. The chapter is concluded with essential design criteria for inclusion in the new policy framework in paragraph 4.6.

4.1 The Water Cycle

The total usable freshwater supply for ecosystems and humans is around 200,000 km^3. This is less than 1% of all freshwater resources and is only 0.01% of the earth's total water supply. This water supports forest, grazing lands and ecosystems. Some of the precipitation is stored in snow and ice or temporarily in aquifers. Most precipitation flows over the ground as surface runoff or into the ground as groundwater flow into rivers and eventually ending up in the seas and lakes. By solar energy or another heat source, water evaporates and forms clouds. Through the atmosphere water is transported inland. By the occurrence of rain, snow, sleet and hail, the hydrological cycle is closed. The natural freshwater distribution is however, uneven dispersed over the earth and human water usage influences the water cycle significantly (WWAP, 2003; UNEP, 2008).

As figure 4.1 explains, the hydrological cycle including human water usage is strongly interrelated and can be divided into the following 6 water types (Savenije, 2007; Ven, 2011):

- Atmosphere water (yellow displayed in figure 4.1) is condensed water and water stored in clouds.
- Precipitation that directly feeds back into the atmosphere through interception is defined as surface water (white). This also includes rainfall, which is directly harvested for human usage.
- Soil water (green) is the water present in the unsaturated soil zone. It is a crucial water resource since 60% of the world's food production relies on rain fed irrigation including the grazing animals. Moreover, meat production, wood, cotton and more industrial processes rely on green water.
- Surface and sub-surface water (dark- and light-blue) occurs in rivers, lakes and aquifers. There is no green water without blue water. By means of irrigation blue water is turned into green water and through drainage green water is transformed into blue water. Moreover, light blue water is strongly dependent on dark blue water. This is explained by the fact that the reason a rivers runs dry is often caused by groundwater extraction instead of surface water consumption.
- Salt water is stored in oceans and seas (orange). By means of desalination it can be used for human consumption or industrial processes.
- Humans utilise water for domestic, agricultural, energy, industrial usage and more purposes (gray displayed in figure 4.1).
- Fossil water (purple) remains sealed in aquifers. It is by definition a non-renewable groundwater resources, because it is not or slightly recharged through infiltration.

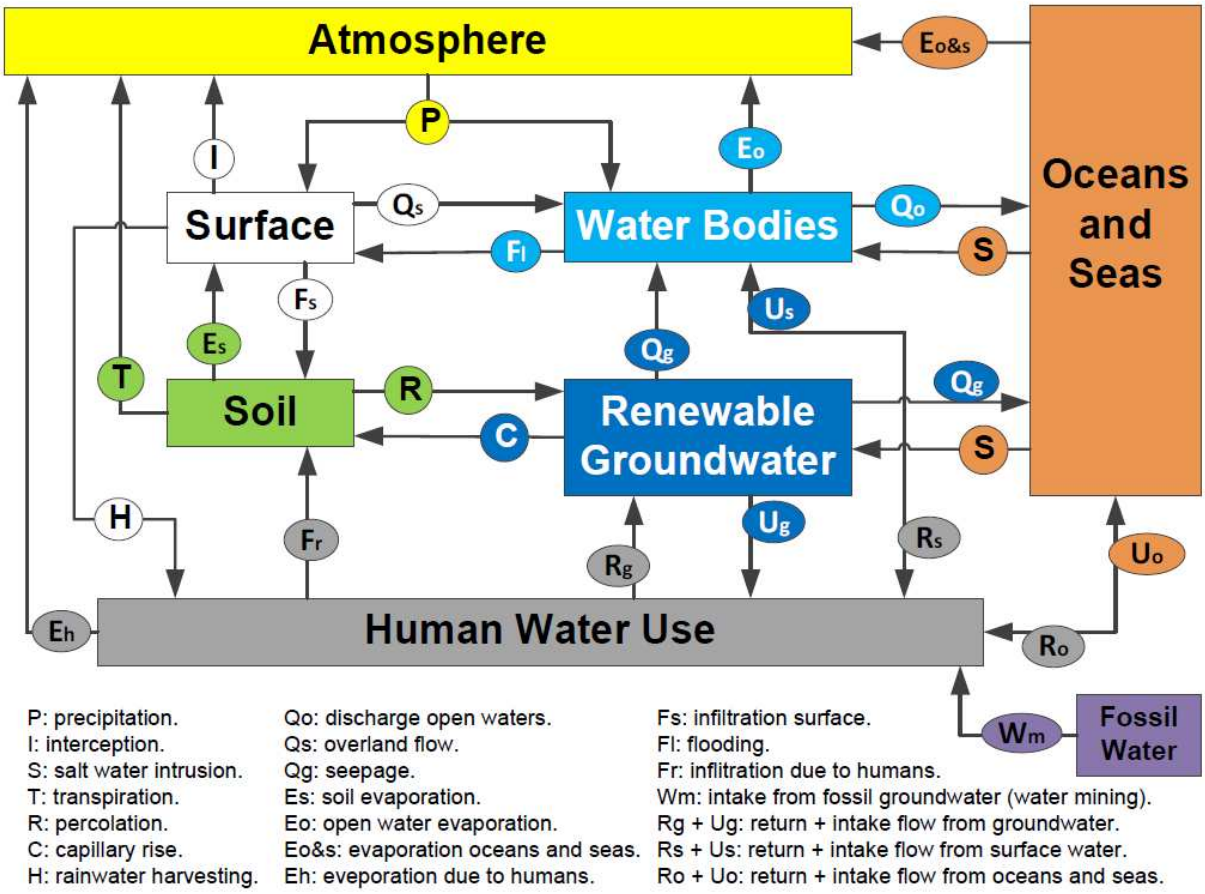

Figure 4.1: Schematisation of the Water Cycle (Ven, 2011; Savenije, 2007; optimised by the author).

Since water is a fundamental precondition for live, it has many interactions with normal day to day practices. Human water usage involves withdrawing water from lakes, rivers, groundwater aquifers or oceans. When humans use water they affect quantity, timing and quality of water availability within the entire water cycle. The human influence on the water cycle is regarded as significant (WWAP, 2003; UNEP, 2008).

8% of the total annual freshwater supply is withdrawal for human usage. Human water usage can be divided into three main sectors; Agriculture, Industry and Domestic. In figure 4.2, the amount of water used per sector in relation with the countries level of income is presented (WWAP, 2003; UNEP, 2008).

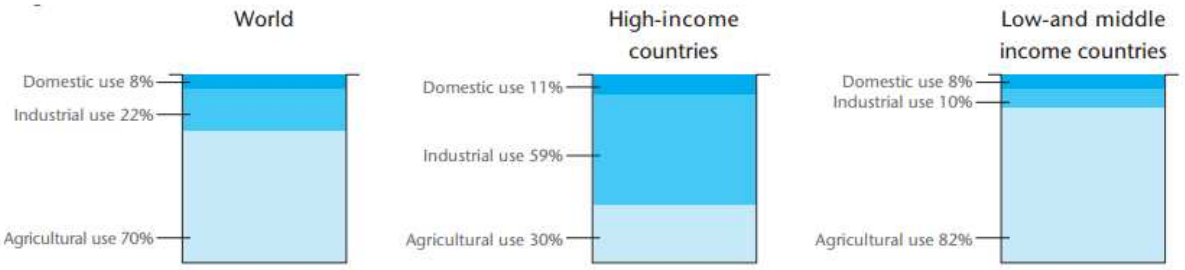

Figure 4.2: Human water usage per sector (WWAP, 2003).

On average, the agricultural sectors are consuming the largest proportion of freshwater for irrigation purposes. When water is consumed by crops, it is unavailable for water use elsewhere in the water cycle. After the agriculture product is consumed, the water stored in the product re-enters the water cycle. The industrial sector is on average the second water-using sector. 57-69% is used for hydropower, nuclear, fossil and renewable energy production, 30-40% is used for industrial processes and 0.5-3% for thermal power generation. Domestic water usage is the smallest sector and is related to support the daily lives of humans in cities in towns. It is consumed as drinking water for personal hygiene (toilets and showers), preparing dinners and cleaning. In contrast to the agricultural sector, water withdrawals by the industrial and domestic water usage sectors are mainly non-consumptive. After its usage, the water directly returns in the water cycle and is available for downstream users. When used water is inadequately treated, water quality is negatively affected. Furthermore, the water is indeed available for users downstream, but not necessarily at the appropriate time (WWAP, 2003; UNEP, 2008; ICA, 2012).

4.2 IWRM Characteristics

During the Second World Water Forum in The Hague, elaborations took place on actions and activities that may avoid an emergent water crisis and move towards long-term water security for societies including the environment. More significantly, the Forum proposed IWRM as the management approach for these issues (GWP, 2000). By the Global Water Partnership, IWRM is defined as (GWP, 2000):

> **Integrated Water Resources Management (IWRM) is a cross-sector approach designed to promote the coordinated development and -management of water, land, and other related resources. It seeks to maximise economic and social welfare in an equitable manner without compromising the sustainability of ecosystems and the environment. IWRM is based on the understanding that water resources are an integral component of the ecosystem, a natural resource and a socioeconomic good.**

Integrated Water Resources Management (IWRM) is a cross-sector approach based on the acknowledgement that water resources are an integral component of the ecosystem, a socioeconomic good and a natural common-pool, flexible and cross-boundary resource whose quantity and quality determine the nature of its utilisation. Consequently, IWRM is designed to promote sustainable development and the coordinated management of water and land resources. By seeking to maximise economic- and social welfare in an equitable manner without compromising the sustainability of ecosystems and the environment, IWRM takes into account the interests of the multiple water users in de different sectors of society. In doing so, IWRM integrates the natural and human water systems explained in paragraph 4.1, including water quantity and quality aspects as well as supply and demand. By integrating the water planning into the national economies, IWRM serves to create a resilient water management system that matches the different global water challenges of the future. Moreover, appropriate legal, institutional and financial arrangements are an important requirement to implement the IWRM framework (Radif, 1999; JØnch-Clausen et al., 2001; Savenije et al., 2008; Gourbesville, 2008; Brears, 2014;). In figure 4.3 the IWRM approach is schematically displayed.

It must be emphasised that IWRM is a process and not a goal unto itself. IWRM is a mean to an end in which trade-offs are made between different goals in a balanced way. Moreover, it is a generic framework that must be tailored to the local geographical, social, economical and political situations (JØnch-Clausen et al., 2001; Savenije et al., 2008).

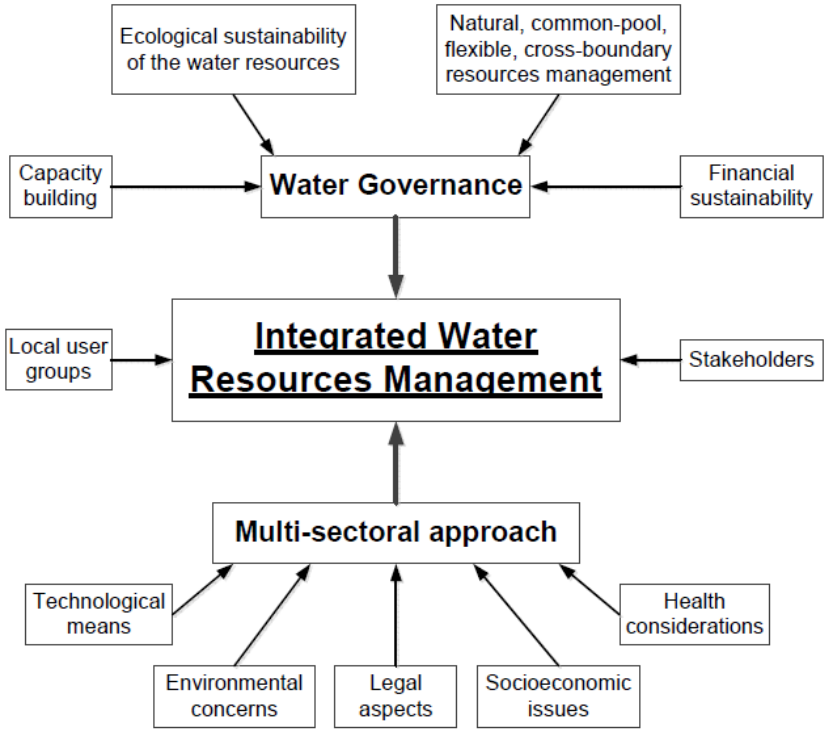

Figure 4.3: IWRM flowchart (Based on: Radif, 1999; GWP, 2000; optimised by the author).

Successful IWRM requires a coordinated development and management of land- and water use, while recognising the interconnectedness between one another. To prevent conflicts, water managers need to manage water in a sustainable and cooperative manner. Consequently, an important aspect of IWRM is the participation of individuals and communities in all aspects of water management decision-making processes. This ensures that all members of society benefit from the sustainable and equitable use of water resources. Moreover, it boosts the local decision-making and -ownership that are crucial in establishing long-term oriented environmental developments and technological innovations. In addition, this encourages water users to utilise water in a sustainable manner. Therefore, it is crucial that: awareness is created and maintained; local water managers trained; governance capacity build; information managed effectively; and scientific resources applied (GWP, 2000; JØnch-Clausen et al., 2001; JØnch-Clausen, 2004; Biswas, 2008; Savenije et al., 2008; Gourbesville, 2008).

As mentioned earlier, the IWRM framework integrated the natural and human water systems (Radif, 1999; JØnch-Clausen et al., 2001; Savenije et al., 2008; R. Brears, 2014):

The Natural System. Water availability and water quality aspects, including:

- Integration of land and water.
- Integration of surface water and groundwater management.
- Integration of quantity and quality in water resources management.
- Integration of upstream and downstream water-related interests.
- Integration of freshwater management and coastal zone management.

The Human System. Water use and demand, water pollution and development priorities regarding engineering-, economic-, social-, ecological-, and legal aspects within the PRIMO-chain[10], including:

- A holistic, institutional approach.
- Mainstreaming water in the national economy.
- Integrating water resource planning to combat poverty, hunger, disease, child mortality, illiteracy, environmental degradation and gender discrimination (UN Sustainable Development Goals).

[10] PRIMO – chain: to guarantee a well functioning water management system Policy, Regulation & Legislation, Implementation, Management & Implementation and Organisation need to be formulated and actively applied within the governance systems of the water management policies (Ven, 2011).

- Cross-sector integration in national policy development.
- Linking water resources planning to national security and trade policies.
- Integration across different management levels.
- Involvement of all stakeholders in the planning and decision-making process.

Designing appropriate compromises between these two systems will be conflicting, but sustainability plus environmental and public interests should be the leading principles within the decision-making process. Therefore, the subsidiarity principle (decision-making at the lowest appropriate authority level) is the guiding principle within IWRM (GWP, 2000; Savenije et al., 2008). When the subsidiarity principle is applied, the decisions made need to be communicated to the higher levels of authority including the particular interests of the lower levels. The high level organisations should strongly consider the lower level interests and values within their decision-making process. Therefore, active stakeholder participation in all decision-making processes at all levels is an essential aspect of successful application of the IWRM framework (JØnch-Clausen, 2004; Savenije et al., 2008; Bruijn et al., 2008).

4.3 IWRM Dimensions

The natural and human systems within the IWRM framework are characterised by the following four dimension (Savenije et al., 2008):

1. **Water Resources:** the entire hydrological cycle, including water quantity and water quality.
2. **Water Users:** all human economic-, industrial-, and social interests, including the environmental dimensions.
3. **Temporal Scale:** the temporal variation in water availability and -demand, including the physical structures for water management and control.
4. **Spatial Scale:** spatial water distribution (upstream watersheds and arid areas downstream) and the various spatial scales at which the water is managed (individual, groups, watershed, catchment, basins), including the institutional arrangements to manage water (individual users, water boards, governments, international transboundary commissions).

In figure 4.4 the relationships between the four dimensions is visualised. Each dimension has multiple issues related to governance policies and water management systems. Within IWRM, it is recommended to integrate these issues within the solutions. Due to the different perceptions and conflicting stakeholder interests, integration of these issues will be a challenge. Some even argue that this is simply impossible with the current state of knowledge (Biswas, 2008). In Appendix I each dimension is discussed in more detail.

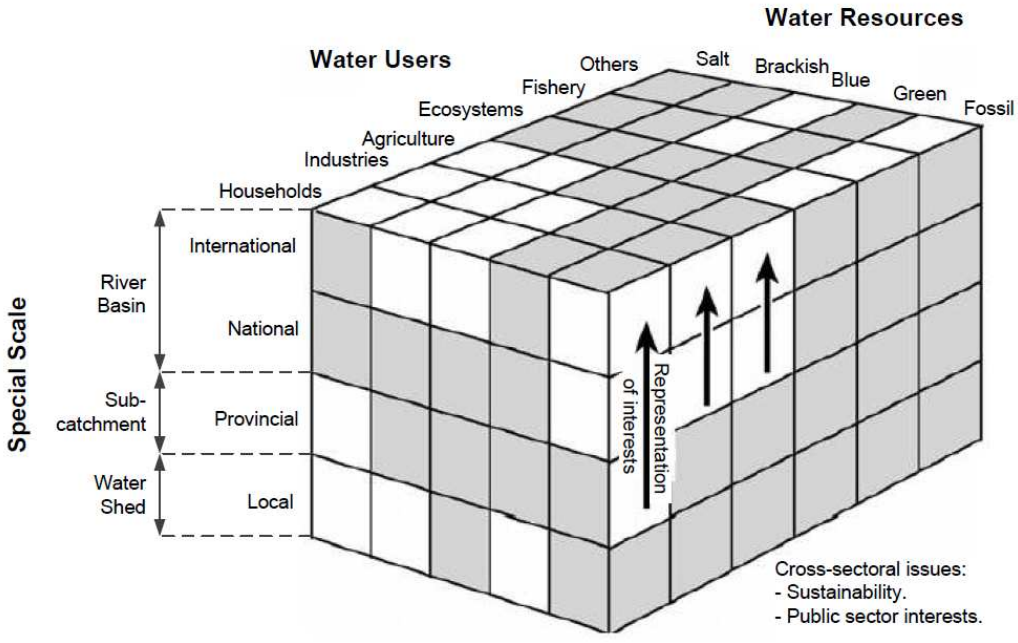

Figure 4.4: Three of the four IWRM dimensions (Savenije et al., 2008; supplemented by the author).

4.4 Crucial IWRM Implementation Principles

In order to make the IWRM framework applicable for implementation, the following three crucial principles are defined (JØnch-Clausen et al., 2001; Savenije et al., 2008; Assaf, 2010):

- **Social Equity.** Water is a basic requirement for the survival of society. This justifies the universal recognition that all humans have a basic right to water access that is of adequate quantity and quality for the sustenance of human well-being.
- **Environmental Sustainability.** The present use of the water resource should be managed in a way that sustains the present vital life-support systems, while not compromising use for future generations. Only a naturally regenerating freshwater environment is capable of supplying a sufficient quality and -quantity.
- **Economic efficiency.** Due to the increasing scarcities of freshwater and financial resources, the finite and vulnerable nature of freshwater as a resource, and the increasing demands upon it, water must be used with the maximum possible economic efficiency in order to ensure social welfare and contribute to the elimination of poverty.

In practice, IWRM deals with finding sustainable compromises between the three implementation principles. The social-, economic-, and environmental goals, will inherently conflict. The specific details of these goals will have to be balanced through negotiations, coordination, and/or cooperation processes. How to manage the sub-sectors' interests by means of a holistic cross-sectoral integration is visualised in figure 4.5.

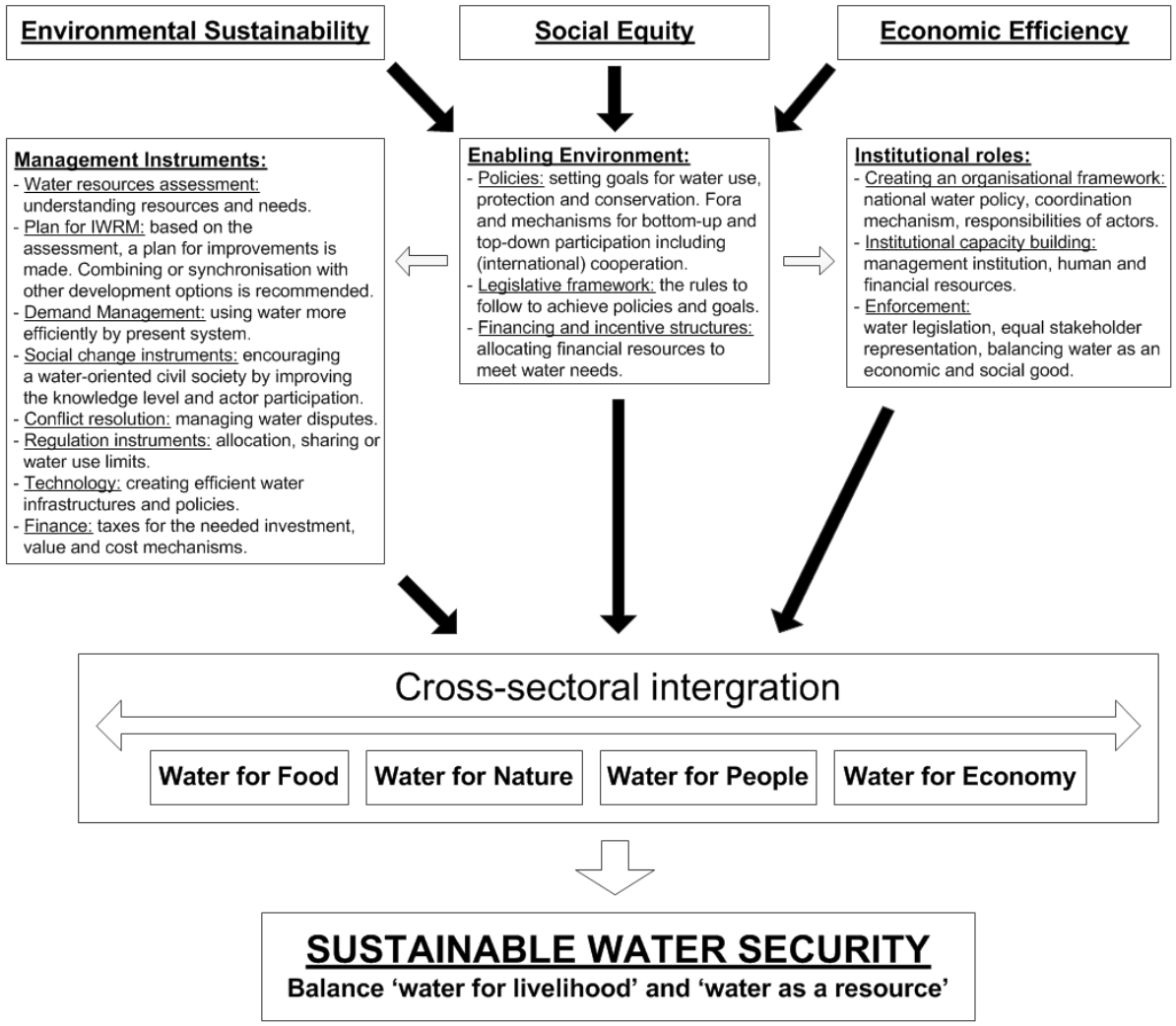

Figure 4.5: IWRM Implementation Principles for Sustainable Water Security (Based on: JØnch-Clausen et al., 2001; JØnch-Clausen, 2004; GWP, 2004; Savenije et al., 2008; Assaf, 2010; optimised by the author).

The future water challenges can only be managed by means of cooperation with all the affected water management related stakeholders, disciplines and sectors within an overall societal and development context. Just the proper use of existing technologies will minimise vulnerability, reduces water losses, increases the production and improves the productivity of water used in agriculture, electrical power generation and industrial processes. Moreover, management and planning with respect to further water exploitation should be done comprehensively taken the water demand, water quality, water safety and water supply of the multiple different purposes and functions of water into account (Mostert, 2003; Gourbesville, 2008; Mostert et al., 2008; Bruijn et al., 2008; Zeitoun et al., 2008; Savenije et al., 2008; Weinthal et al., 2011).

As displayed in figure 4.5, the ultimate goal is to create and maintain sustainable water security. Based on the level of importance water possesses within each society, water security can be achieved through allocation and prioritisation. In Appendix C an example is provided regarding the Netherlands society. Therefore, the three IWRM implementation principles are merged into the enabling environment. For a cross-sector integration, institutional roles and management instruments are also needed. In the next sections, these will be elaborated in more detail.

4.4.1 Enabling Environment

The enabling environment comprises national-, provincial-, and local policies and -legislation. These constitute the rules of the game, which enable all stakeholders to play their respective roles. The rules should promote both top-down and bottom-up participation of all stakeholders, from the (inter)national level down to the village or municipality, or from the catchment level up to the river basin level. Financial resources and investment incentive policies are crucial (Radif, 1999; JØnch-Clausen et al., 2001; GWP, 2004; Assaf, 2010).

4.4.2 Institutional Roles

The roles of institutions should be those of the activator and facilitator instead of top-down manager. The formulation of national water policies, the enforcement of water legislation, the separation of regulation from service provision, the oversight of the private sector are all important roles an institution needs to play. Governments, private companies, community-based organisations, women and disadvantaged groups should be involved. All these actors have a role to play in enhancing access to water, balancing conservation and development and managing water as an economic and social good. Institutional development is critical for the formulation and implementation of IWRM policies. Clear demarcation and matching of responsibilities, adequate coordination mechanisms, filling of jurisdictional gaps, elimination of overlaps, and create (financial)capacities for action, are all parts of institutional development (Radif, 1999; JØnch-Clausen et al., 2001; GWP, 2004; Assaf, 2010). The corresponding breakdown of actor responsibilities is displayed in table 4.1.

Type of institution:	**Roles & Responsibilities:**
National Government.	• Lead role, 'owner' of the process. • Mobilise funding. • Sets macro-economic policy environment.
Steering Committee (group with wide stakeholder representation).	• Guides the process. • Mobilise support across all water sectors and interest groups. • Guarantees qualitative output. • Monitors the implementation process.
Management Team (group of qualified professionals).	• Manages day-to-day processes for water strategy development, implementation and capacity building.
Facilitating institution, where appropriate (for example, national NGOs, Country or Regional Partnerships or local UN country teams).	• Provide neutral platform for dialogue. • Support strategy development process by providing advice and sharing knowledge. • Foster capacity building and training.

Table 4.1: Breakdown of actor responsibilities within the IWRM enabling environment (GWP, 2004).

4.4.3 Management Instrument

The IWRM ToolBox[11] or another practical and proven water management implementation instrument should be applied to assist the water managers, policy- and decision-makers in designing, planning, maintaining and optimising water management systems. The art of IWRM lies in selecting, adjusting, and applying the right mix of these tools for a given situation. The following eight categories should be within every water management instrument (Radif, 1999; JØnch-Clausen et al., 2001; GWP, 2004; Assaf, 2010):

- **Water resources assessments.** These assessments are required for informed decision-making and the collection of hydrological-, demographic-, and socioeconomic data, setting up of routine data assembly and reporting. Water resource assessments are also important to understand the hydrological system and water usage, including its needs. Assessments can be used for environmental impact assessments, planning development options, resource use and human interactions.
- **Plan for IWRM.** Based on the water resources assessment, the needed actions are planned. It is encouraged to combine or synchronise these with other development options.
- **Demand management.** The concept of demand management involves improving water usage. It requires balancing supply and demand, primarily focussing on better usage of existing supply systems or reducing excessive consumption rather than developing new infrastructures.
- **Social change instruments.** One example of this instrument is raising public awareness through media campaigns to encourage a water-orientated society. In order to implement IWRM successfully, communication of all available information is crucial. Raising awareness is a powerful instrument for improving water management practices, particularly when accompanied by opportunities for active stakeholder participation.
- **Conflict resolution.** This is vital, since conflicts are always present in the management of water resources. Therefore, dispute resolution tools must be in place. Regulator instruments are frequently involved in resolving water resource conflicts.
- **Regulation instruments.** Regulations generally include pollution control, service provision, and water- and land use. Mostly, this involves water allocation and water sharing agreements or water usage limitations. Regulatory instruments are frequently combined with economic instruments such as pricing, tariffs, subsidies and other market tools to provide incentives for all water users to preserve water, use it efficiently, and avoid pollution. Also, it can encourage self-regulation, for example by transparent benchmarking and product labelling.
- **Technology.** This involves research and development of both new- and traditional technologies for efficient water supply infrastructures. Additionally, it includes the creation of efficiency guidelines for water usage by both domestic and non-domestic users (household, agricultural, industrial, etc).
- **Finance:** The general population, governments, the private sector, and donors can invest in implementing IWRM. Allocation of financial resources could be done through a mix of regulation and market instruments based on valuation of the costs and benefits. Furthermore, financial conflict resolution tools could provide guidance in issues of upstream versus downstream or sector versus sector and humans versus nature.

4.5 The New IWRM Implementation Cycle

The Global Water Partnership considers the Integrated Water Resources Management framework as the strategic approach to coordinate, develop, and manage water, land, and other related resources along interstate basins, including trans-boundary-, national-, and local water systems. It is focussed on the entire water cycle and takes into account the interests and values of all water users.

[11] By means of http://www.gwp.org/en/ToolBox/TOOLS/ (last consulted on 20-09-2014), the IWRM ToolBox, can be consulted. Partially this ToolBox is included in the *New IWRM Implementation Cycle* presented in paragraph 4.5.

By definition, IWRM appears to be a holistic approach but in reality its vagueness is its main weakness. Since the performance of the IWRM road map is difficult to measure, its level of effectiveness and efficiency at the operational level regarding the implementation on the macro- and meso-scale are disappointing (Biswas, 2008). In Appendix J important lessons learned regarding the implementations of IWRM, its strengths, weaknesses, opportunities, threats and optimisation recommendations to overcome its limitations are further discussed. Through combining the Integrated Water Recourses Management framework with the Negotiated Approach (discussed in Appendix K), an optimisation is performed by the author resulting in the new developed *New IWRM Implementation Cycle*. The *New IWRM Implementation Cycle* is presented in figure 4.6 and explained in detail in Appendix L.

Based on the subsidiarity principle and the fact that water management should always serve the population, the needs of the local community including its public and private actors is always the starting point of the *New IWRM Implementation Cycle*. Since a constant level of situational understanding is crucial, Block A is the starting point of every phase. Therefore, it has a central and phase independent position within the new implementation cycle. Blocks A, B and C are derived from the Negotiate Approach and the phases 1 to 7 from the IWRM framework. Active stakeholder involvement is crucial in optimising water management systems. To obtain the essential feedback, Blocks B and C are an integral component of the phases 1, 2, 4 & 5. In addition, bottom-up and top-down approaches tailored to local circumstances are created by this integration. In practice, the *New IWRM Implementation Cycle* is guided by completing the following seven phases:

1. Process Goal Definition.
2. Commitment Building.
3. Gap Analysis.
4. Negotiated Process & Strategy Formulation.
5. Action Plan Definition.
6. Action Plan Implementation.
7. Monitoring & Evaluation.

Balancing and making trade-offs between the ecological-, social-, and economic goals and interests in a practical, scientifically sound way is common practice. Therefore, the three IWRM implementation principles as explained in paragraph 4.4 are crucial in every phase. Due to the many involved actors and the changing hydrological and water usage conditions, flexibility is the second crucial implementation principle. In order to ensure a continuous optimisation process with active stakeholder participation, the new implementation cycle is a closed loop. After phase 5, new parties can be invited through horizontal and vertical up-scaling. Probably, no region will ever complete the entire *New IWRM Implementation Cycle*, since the system is an evolving process. This is caused by a continuation of substantial exogenous changes in the natural and human water systems or because needed reforms for optimisation are identified. As a consequence, the implementation cycle as described in figure 4.6 must be repeated at regular intervals. When substantial changes are involved, it is advised to repeat the process by starting at phase 1, including block A. This is necessary in order to deal with new or additional social-, economical-, management-, and infrastructural needs and priorities.

The depth intensity of each phase depends on the current development stage at the project location and the set goals. Some of the components may already be in an advanced stage, while others may have developed hardly yet. It is logical, but not always necessary, to start with the creation of a policy and instrumental frameworks, followed by the specific management instruments. However, in fragile states and development countries, it is often better to start somewhere, working as far as possible within the existing arrangements, rather than waiting for the more-wide ranging reform measures to be completed (Lucius, 2015). Experience shows that the implementation processes are facilitated by (T. JØnch-Clausen, 2004; GWP, 2009; UNEP, 2012):

- Political determination, often motivated by a need to address urgent- and high-profile issues.
- A clear distribution of roles and responsibilities among the stakeholders.
- Highly motivated "champions" or crucial drivers maintaining commitment throughout the process.

- Exchange of knowledge and experience between all actors at various stages of the process.
- Setting clear milestones for the agreed upon development strategies and strategic activities.
- Monitoring and evaluation of the progress and optimising those activities when they do not perform accordingly to the set achievements.

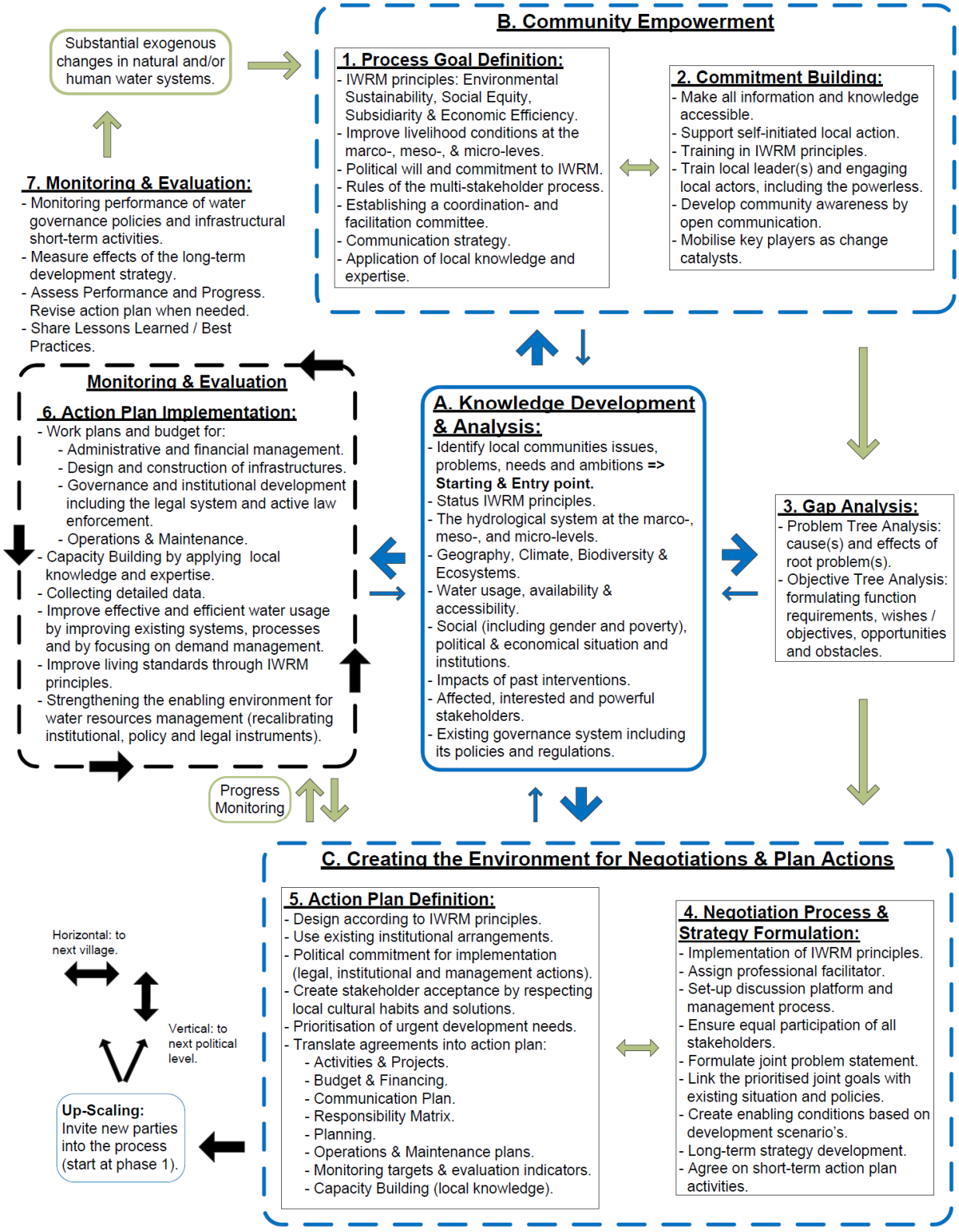

Figure 4.6: The new developed *New IWRM Implementation Cycle* (Developed by the author, based on: JØnch-Clausen, 2004; GWP, 2004; Both ENDS et al., 2011; UNEP, 2012; Both ENDS, 2013).

4.6 Design Criteria

The Integrated Water Resources Management (IWRM) framework is a cross-sectoral approach designed to promote the coordinated development and -management of water, land, and other related resources. Through its implementation principles: Social Equity; Environmental Sustainability; Economic Efficiency and Subsidiarity, sustainable water security is aimed to be achieved. Since sustainable water security is crucial in preventing and resolving water conflicts, it is recommended to include these four principles in the new policy framework. Furthermore, the new policy framework need to be applicable in every geographical environment. Therefore, it is advised to represent each function water possesses in a society in the new policy framework. For example by the themes: Water for Food (agriculture and fishery); Water for Nature and Ecosystems; Water for People and Households; and Water for Economy and Industry. For the planning and implementation of water management projects, it is strongly recommended to apply the developed *New IWRM Implementation Cycle.* For the creation of robust and sustainable water security, it is advised to include the following water management design principles:

- Building With Nature.
- Retain-Store-Discharge
- Reduce-Reuse-Recycle.

5

Water Diplomacy & Cooperation Best Practices

Water is a cross-boundary, common-pool and flexible resource. Most of the time there is sufficient water, its only utilised for the wrong purposes (Kleijn, 2014). Due to the broad variety of critical functions water possesses within each society including the ecosystem, cooperation between its multiple users is a must. By means of water diplomacy, water conflicts or issues related with water quality and water quantity are managed peacefully for centuries (Islam et al., 2013).

In this chapter, water diplomacy best practices and water cooperation mechanisms relevant for application in stabilisation operations are discussed. As a result, sub research question 1D is answered: Which water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices can be applied in stabilisation operations? Effective de-escalating water cooperation mechanisms will be discusses in paragraph 5.3 and significant water diplomacy and water resolution best practices are summarised in paragraph 5.4. The chapter is concluded with essential design criteria for inclusion in the new policy framework in paragraph 5.5. Beforehand, the contemporary applied water diplomacy framework will be explained in paragraph 5.1 and the effectiveness of cooperation mechanism over freshwater disputes is discussed in paragraph 5.2. In Appendix M actual water diplomacy practices are explained in a nutshell.

5.1 Water Diplomacy Framework

Natural, societal, and political processes and variables interact on one network. Therefore, many contemporary water management issues are regarded as complex problems (Savenije et al., 2008; Islam et al., 2013). By means of figure 5.1 the competitions, interconnections and feedbacks among the natural and societal processes within the political domain are visualised. Together, these three domains create the water management network. Because population growth, economic development, and climate change are imposing pressure on the water resource, conflicts between the three domains occur (Savenije et al., 2008; Ven, 2011; Islam et al., 2013). Also, within the natural and societal domains conflicting issues are common practice. Within the natural domain, the interplay among the three variables water quantity (Q), water quality (P), and ecosystems (E) can lead to conflicts. The interdependencies and multiple interests between the social values and cultural norms (V), assets including economic and human resources (C), and governance institutions (G) can lead to conflicts within the societal domain. (Savenije et al., 2008; Islam et al., 2013).

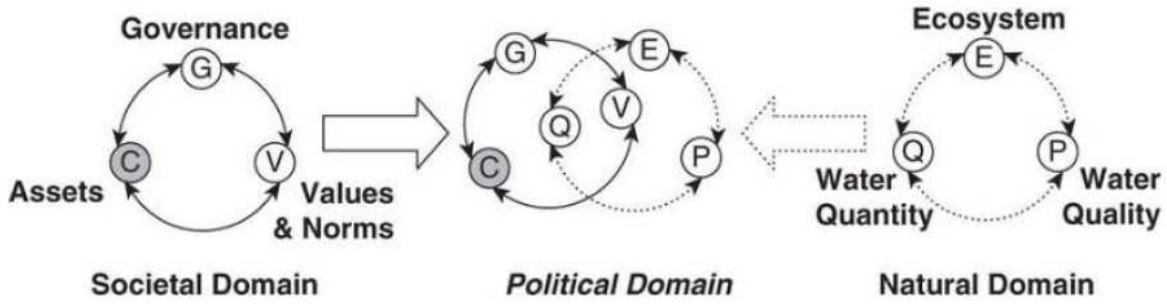

Figure 5.1: Interactions between the natural and societal processes within the political water domain (Islam, 2013).

Since water is a cross-boundary, limited, common pool and flexible resource essential for each stakeholder (household, farmers, the environment and public, private and industrial users) within a society, competition over freshwater resource is common practice. Due to the different political perspectives and socioeconomic interests of the involved actors, there will be disagreement about the norms. Moreover, the complexity of the interrelated systems contributes to the fact that water issues are accompanied with non-objectifiable information. Furthermore, water management includes nearly all public and political interests, has multiple scales and crosses multiple physical, disciplinary and jurisdictional boundaries. All these factors makes problem solving regarding water issues, a challenge (Wolf, 1998; Mostert, 2003; Savenije et al., 2008; Islam et al., 2013). Therefore, contemporary water management issues are regarded as "wicked"[12] problems: there is no optimal or best engineered solutions and neither they can be solely regarded as natural objectives, social issues or political disputes. Wicked problems are thus practically impossible to resolve by the use of reductionist or traditional system engineering methodologies (Rittel et al., 1973; Bruijn et al., 2008; Islam et al., 2013).

To solve water management problems, integration of the three domains which are presented in figure 5.1 is a widely recognised need (Savenije et al., 2008; Islam et al., 2013). In addition, since water management problems are local content and context driven, water management interventions need to be tailored for each specific location. Due to the differences in societal processes, natural settings and political contexts, one intervention that works in one watershed may not be applicable in another. Therefore a flexible and explicit framework is needed which takes into account the societal, political and natural domains (Savenije et al., 2008; Ven, 2011; Islam et al., 2013). In this context, the Water Diplomacy Framework (WDF) is regarded the most appropriate approach in modern water diplomacy because the WDF is based on non-zero-sum negotiations and bridging scientific knowledge with contextual stakeholder understanding and objectives (Islam et al., 2013). Figure 5.2 summarises the WDF and in table 5.1 its significant elements are compared with the confessional water conflict resolution theory. The WDF is based on managing water in networks by regarding it as a flexible resource. Consequently, the following three mindsets are crucial:

1. **Water networks are open and continuously changing as a function of the interactions among the natural, societal and political forces.** Sustainable solutions are most likely to be found through a negotiated and joint problem-solving approach that blends science, actors interests and politics. In order to do so, active involvement of all interested actors especially local ones, is crucial. This can be accomplished by the adaptive local learning and constructive conflicts approaches. Thereby, context-specific information is captured which is essential in developing the most appropriate regarded solution (Ven, 2011; Islam et al., 2013; Kleijn, 2014).

[12] Wicked problems, its properties (Rittel et al., 1973):

1. Due to the diverging actor perspectives, there is no definitive formulation of a wicked problem.
2. Wicked problems have no stopping rule, since the process of solving the problem is identical with the process of understanding its nature.
3. Solutions to wicked problems are not true-or-false but good-or-bad, since the effected actors judge the outcomes based on their interests.
4. There is no immediate and no ultimate test of a solution, because the full range of consequences are difficult to identify upfront.
5. Every solution is a "one-shot operation", therefore making every attempt significantly important and leaves traces which cannot be "undone".
6. There are no enumerable set of potential solutions, nor there is a well-described set of permissible operations that may be incorporated into the plan.
7. Every wicked problem is essentially unique. There is no principle, standard or solution that fits all problems.
8. Wicked problems are often symptoms of other problems.
9. Wicked problems can be explained in numerous ways. Every actor selects the explanation that fits his / here intentions the best.
10. Decision-makers do not have the right to be wrong, because the consequences of the generated actions matter to those actors who are affected by the actions. Thus, it is not the aim to find the truth but to improve some characteristics of the world people live is.

2. **Water network management must account for interactions, uncertainty, non-linearity and feedbacks.** Based on historical statistical data, forecasts are made and applied for the design of water management systems. Since it is not possible to predict the exact impact of climate change, these forecast are accompanied with a certain level of uncertainty. By adding scenarios which describe multiple possible futures, more robust and resilient water management infrastructures can be developed. Also, adaptable and flexible technical designs and governance policies are crucial in making and keeping communities water resilient (Ven, 2011; Islam et al., 2013).
3. **Water network management must be adaptive and use non-zero-sum approaches to negotiations.** Water allocation by means of the win-lose methodology has been a dominant approach in the past. More powerful actors "win" and gain control over the resource, while less powerful parties "lose" and only having access to water if more powerful nations, groups, water owners or others permit it. The emergence of non-zero-sum or mutual gains negotiations theories over the past few decades, has challenged this win-lose logic by offering a value-creating alternative. This mutual gains approach allows groups with conflicting goals to achieve their own goal simultaneously. Joint fact-finding, the discovery of interlocking trade-offs, mutual commitments and an adaptive approach to manage uncertainty can maximise joint gains. (Bruijn et al., 2008; Ven, 2011; Islam et al., 2013).

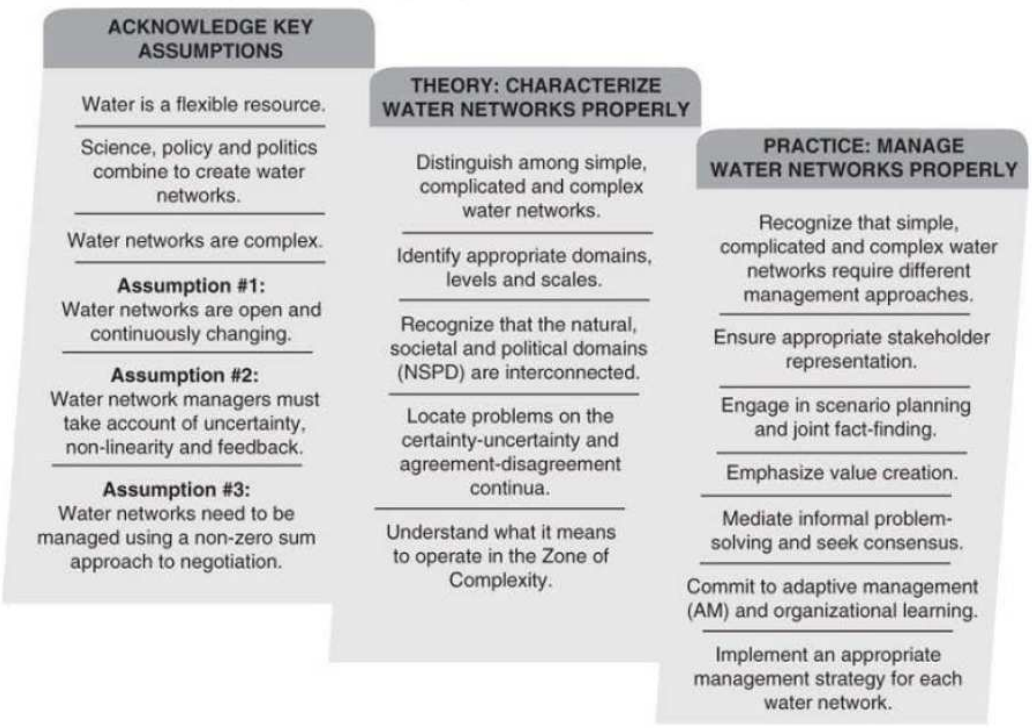

Figure 5.2: Summary of the Water Diplomacy Framework (Islam et al., 2013).

	Water Diplomacy Framework:	**Conventional water conflict resolution theory:**
Domains & Scales	Water crosses multiple domains (natural, societal, political) and boundaries at different scales (space, time, jurisdictional, institutional).	Watershed or river-basins falls within a bounded domain.
Water Availability	Virtual or embedded water, blue and green water, technology sharing and negotiated problem-solving that permit re-use can create flexibility in water for competing demands.	Water is a scarce resource. Competing demands over the fixed availability will lead to conflict.
Water Systems	Water networks are made up of societal and natural elements that cross boundaries and change constantly in unpredictable ways within a political context.	Water systems are bounded by their natural components; cause-and-effect relationships are known and can be modelled.

Water Management	All stakeholders need to be involved at every decision-making step including the problem framing. Heavy investments in experimentation and monitoring are crucial for adaptive management. The process of collaborative problem-solving needs to be professionally facilitated.	Decisions are usually expert-driven; scientific analysis precedes participation by stakeholders. Long-range plans guide the short-term decisions. The goal is usually optimisation, given competing political demands.
Crucial Analytic Tools	Stakeholder assessments, joint fact-finding, scenario planning and mediated problem-solving are the crucial tools.	Systems engineering, optimisation, game theory, and negotiation support- systems are most important.
Negotiation theory	The Mutual Gains Approach (MGA) to value creation; multiparty negotiation. Mediation as informal problem-solving are vital to effective non-zero-sum negotiation.	Hard bargaining by prisoner's dilemma-style game theory, principal agent theory, decision-analysis (Pareto optimality), theory of two-level games.

Table 5.1: Crucial elements of the Water Diplomacy Framework compared with the confessional water conflict resolution theory (Islam et al., 2013).

5.2 Water Conflicts & Cooperation

More and more countries are facing a severe water shortage. Consequently, the amount of literature warnings of possible future water wars is growing (Mitchell, 2006; Wolf, 2007; ICA, 2012). In contrast, historically there is only one recorded water war and in the 20th century no war has been fought over freshwater due to water scarcity (Wolf, 2007). In the last century only seven minor armed skirmishes have been reported between ethnical groups, tribes, water-user groups or countries spread out over five different basins (Wolf, 2007; Bliek, 2015). However, recently there have occurred several interstate-river and groundwater-sharing disputes, each with their own political conflicting interests, scales and dimensions. An event related to changing water volumes or water quality between the up- and downstream user groups is the classic water conflict example. Hereby, long-term environmental protection versus immediate water needs for agriculture, urban areas, energy, industries and healthcare. The significant majority of these conflicting interests does not cross the critical threshold of becoming violent. Due to the sheer size of its vital functions in every society, its interrelation with other needs and the nature of the problems, long-term solutions that go beyond the interests of a particular stakeholder or country prevail (Michell, 2006; Swain, 2011; Bliek, 2015). This is confirmed by the fact that in the last century 145 water related treaties were signed, resulting in an total of 400 to 600 water cooperation related treaties within 270 non-conflictive basins (Wolf, 2007; Bliek, 2015). Most of these freshwater sharing and exploitation disputes are addressed based on comprehensive water management through bi- or multilateral negotiations and agreements ranging from the UN until tribal level (Swain, 2011). Figure 5.3 indicates the scale and type of water conflicts and the cooperation spectrum by which the conflicts are resolved (Wolf, 2007).

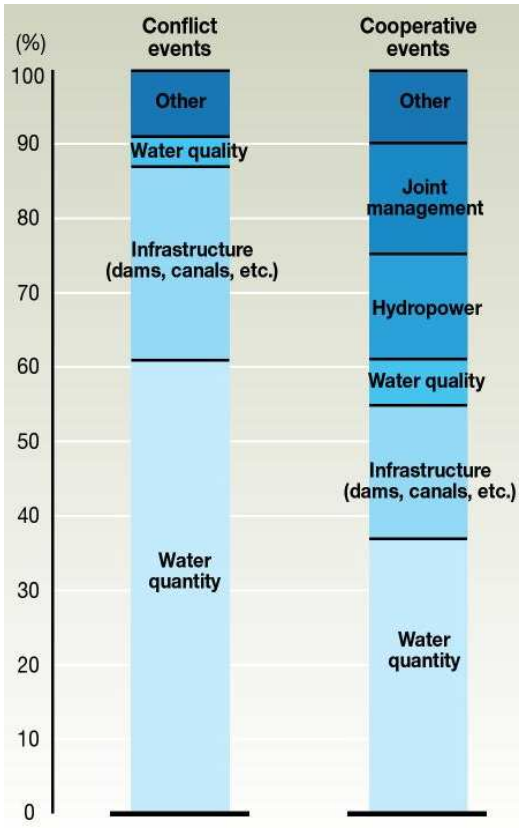

Figure 5.3: Water conflicts and cooperation (Wolf, 2007).

Today, most enemies around the world have a water-related agreement in place or are in the process of negotiating one. Thereby, the "baskets of benefits" principles which creates a positive sum of joint gains is crucial (Wolf, 2007).

Once transboundary water management systems and/or intergovernmental basin commissions are established through treaties or agreements, they turn-out to be very resilient and effective over time even when conflicts are waged over non-water related issues (Mostert, 2003; Wolf, 2007). International water disputes have proven to act as a cooperation unifier on the long-term, especially when strong governance institutions are established. In addition, water wars are neither strategically rational, hydrographically effective nor economically viable at this moment. Until now the shared interests and interdependencies between nations and water-users have prevailed over armed conflicts regarding water resources (Wolf, 2007). As a result, it can be concluded that water acts as a cause of dispute and as a cooperation unifier.

5.3 Water Cooperation Mechanisms

Multiple nations and user groups share and utilise the same freshwater resource (Mitchell, 2006). Due to the sheer size of its vital function in every society, its strong relationship with other needs and the nature of the problems, long-term solutions based on cooperation that go beyond the interests of a particular stakeholder or country have prevailed (Swain, 2011; Bliek, 2015). This is confirmed by the fact that in the last century 145 water related treaties were signed resulting in an total of 400 to 600 water cooperation treaties within 270 non-conflictive basin (Wolf, 2007; Bliek, 2015). Once cooperation mechanisms, like: water management governance systems and/or basin commission with legally binding water treaties are established, they turn out to be very resilient and effective over time (Mostert, 2003; Wolf, 20707).

By reflecting on multiple studies with regards to the development of international water management over time, the following de-escalating and water cooperation mechanisms strategies have proven to be effective:

- Create and maintain a well and trustful working relationship with and between the involved actors is crucial for decision-making processes. (Mostert, 2003; Bruijn et al., 2008; Enserink et al., 2010; Ven, 2014; Post, 2015). Involving the main environmental, public and private water stakeholders that may be effected by means of clear and open communication, is an effective strategy to reach sustainable agreements (Mostert et al., 2008).
- The possible solutions are strongly influenced by and depending on the participating stakeholders, their issues, the geographical possibilities and limitations and the available knowledge and financial recourses. Hence, each situation requires a different cooperation mechanism (Mostert et al., 2008).
- Bilateral and multilateral cooperation by joint interstate basin commissions where national water management issues can be discussed, has proven to resolve water issues for each of the participating nations over the long-term (Michell, 2006; Weinthal et al., 2011). Water commissions and treaties institutionalize cooperation and build trust among the parties through data collection and sharing. Also, it provides a venue for conflict resolution (Weinthal et al., 2011). The International Commissions for the Protection Rhine (ICPR), is regarded as an successful example (Mostert, 2003). Three aspects are crucial in its success (ICPR, 2015):
    1. All up- and downstream nations who effect and are effected, are ICPR members.
    2. Legally binding water usage agreement are adopted and enforced by the European Union. This includes water quality (pollution), water quantity (low waters), water safety (flooding), climate change effect including adoption measures and environmental protection (ecology).
    3. The investments needed to increase the water quality are shared among the ICPR member states.

  History of collaborative projects, good political relations and a high level of economic development positively influences cooperation. In contrast, rapid environmental change, rapid population growth, asymmetric economic growth, major unilateral development projects, the absence of institutional capacity and hostile relations are facets challenging water commissions (Wolf, 2007).
- A common goal is the starting point for cooperation (Post, 2015). Common goals, problems and interests translated into joint objectives and an action plan should be created and communicated among the affected actors and stakeholders in order to increase the effectiveness of cooperation.

- Cooperation is maintained because stakeholders interests are interlinked with each other. By means of the PRIMO[13]-chain, the level of actor independency can be increased.
- In order to prevent a constant conflict over water, fair, efficient and wise agreements for all stakeholders are needed. Also, ideally all actors should benefit or at least obtain the status-qua from the comprehensive and cooperation focussed approach (Bruijn et al., 2008; Zeitoun et al., 2008). A non-zero-sum approach in which mutual gains are created is regarded as the best approach. Value creation by joint fact-finding and collaborative adaptive management results in agreements who are viewed as fair by those affected, efficient by those who have to pay for them, and wise by those with the expertise to judge them (Bruijn et al., 2008; Islam et al., 2013). Mutual or all-gains negotiations require the assistance of a neutral facilitator or mediator to manage the problem-solving process. In Appendix M more information is provided regarding the role of a neutral facilitator.
- Making acceptable and workable compromises, will be common practice in every multi-actor decision-making process. Each actor will behave strategically, but it is crucial that one actor thus not affect the core values of another actor (Bruijn et al., 2008).
- When water is viewed as a fixed pie, water allocation always results into conflicts. Cooperation is optimised when water is regarded as a flexible resource which can be shared and applied multiple times for different functions by a wide range of actors (Islam et al., 2013).
- International freshwater management is effective when up- and downstream nations across international, national and sub-national levels situated within the basin are involved in the problem-solving process. Also, NGOs, the private sector and individual water users should be involved in the process and functionally be interlinked regarding the needed governance, infrastructural investments and operations management (Mostert, 2003; Savenije et al., 2008; Gourbesville, 2008).
- The focus of policymakers and engineers should not be on increasing water supply or reducing flooding. Instead they should focus on balancing water demand with the water supply, managing flood risks with integrated protection systems and the management of the river basin as a whole (Mostert, 2003; Gourbesville, 2008). Hence, problem-solving should be focussed on all aspects within the water network, particularly: the societal, political and natural domains (Islam et al., 2013).
- To make equitable sharing of water resources possible, upstream users have to give in some of their potential water benefits to downstream users. This right is established by the UN Watercourses Convention in 1997. Moreover, all the water users should realise that they depend on each other, now and in the further which justifies the individual short-term losses (Salman, 2007; Savenije et al., 2008).
- The local level institutions are crucial and should be the core organisation within water management (Savenije et al., 2008). The Dutch water authorities or waterboards are an good example of this principle.

5.4 Water Diplomacy and Resolution Best Practices

This paragraph reflects on the multiple lessons learned regarding conflict resolution in relation with water diplomacy and resolution best practices. Multiple water disputes ranging from Europe, the Middle East, Africa and North America are studied and evaluated. The important findings are summarised and elaborated below:

- *'Most of the time there is sufficient water, but only utilised for the wrong purpose'* (Kleijn, 2014).
- Since exclusion, favouring or belittle actors is a root-cause of conflict, equal actor treatment is essential. In addition, never exclude actors from water usage (Kleijn, 2014).
- To prevent conflicts, water problems should never be shifted in space to neighbours downstream and in time to the future (Ven, 2011).

[13] PRIMO – chain: to guarantee a well functioning water management system Policy, Regulation & Legislation, Implementation, Management & Implementation and Organisation need to be formulated and actively applied within the governance systems of water management policies (Ven, 2011).

- In order prevent decision-making deadlocks, a multi-issue game instead of an one-issue game is recommended in the multi-actor decision making literature (Bruijn et al., 2008) In stabilisation operations although, this is not the right approach. Especially in beginning, water issues and their possible solutions should not be made into a multi-issue game connected with political and social sensitive issues. Keep it with water! (Lucius; 2015; Post, 2015).
- In order to ensure credibility of the water diplomacy efforts, all actors and stakeholders - low or highly interested and those with a low or high producing or blocking power - need to be identified and adequately represented in the problem-solving process. This includes individuals and groups who will be affected by the new or changing decisions. At least the interested actors that play a role in the decision-making process and implementation should be represented. Also, by including all relevant actors the full range of perspectives and all available local knowledge from the population and knowledge institutes / universities can be used. This will enhance the creation, implementation and optimisation of acceptable solutions (Bruijn et al., 2008; Ven, 2011; Islam, 2013; Kleijn, 2014).
- In protracted conflicts in which water is an underlying source of tension, water needs to be explicitly addressed in the peace agreement. This will strengthen its durability and reinforcing transparency plus credibility among the parties (Weinthal et al., 2011).
- In politics every bill is paid sooner or later. Past decision-making thus influences the current problem-solving process. Therefore, knowing the past issues, outcomes and lessons learned will be helpful in making the current problem-solving process more effective and efficient (Ven, 2011; Onancan, 2014).
- At the start, the problems and goals should be formulated broadly so the effected actors sufficiently feel recognised and can connect to the problem formulation (Bruin et al., 2008).
- Hard bargainers withhold information, push less powerful stakeholders out, make their negotiating partners uncomfortable, offer few concessions and decline requests to cooperate. This undermines relationships and makes negotiations difficult. Also, when agreements are reached but trust has been lost, implementation is difficult, time consuming and more costly (Islam et al., 2013).
- Long-term goal-oriented actions and projects are difficult to sell. Therefore, the long-term objectives need to be connect with the direct and short-term effects in order to increase the political will. Since political unwillingness to cooperate is the main blocking power for cooperation mechanisms, short-term wins for "selling" the project are essentials to include in order to be able to realise the long-term development effects (Bruijn et al,. 2008; Klein, 2014; Berg, 2014).
- Attracting citizens, NGOs and the private sector for cooperation based on public–private partnerships results in a broader support, thereby ensuring long-term cooperation between the multiple water users (Gourbesville, 2008; Zeitoun et al., 2008; Feitelson, 2002).
- The cost-sharing principle has proven to be an effective tool to resolve environmental pollution issues (Feitelson, 2002; Haddadin, 2002; Michell, 2006). Benefit-sharing projects like hydropower and flood protection have resulted in cooperation among water and non-water issues (Zeitoun et al., 2008).
- Nations often have the tendency to claim complete control over the water resource on their territory. Framing the issues and demands only as a national security interest, stimulates conflicts and deadlock positions (Feitelson, 2002; Mostert, 2003; Michell, 2006; Swain 2011). The view of water issues should be a matter of interstate basin management including social, economical and environmental cost and benefits (Feitelson, 2002; Islam, et al., 2013).
- Joint data collection and information exchange between nations, communities and regions helps in creating dialogue, trust and innovations. This brings stakeholders from the entire region together to coordinate their actions. This supports again a broader regional network of conflict de-escalation and promotes agreements (Haddadin, 2002; Michell, 2006; Zeitoun et al., 2008; Gerlak et al., 2011).
- Specific nations should not have a veto by which a domination strategy can be applied. Also treaties should not strongly be in favour for only one actor or nation, poor or wealthy. If so, no long-term cooperation will be accomplished (Feitelson, 2002; Zeitoun et al., 2008).
- Allocation of domestic water has priority over agricultural usage (Haddadin, 2002; Feitelson, 2002).

- The application of game theory as a soft negotiation approach is effective in increasing mutual awareness of each other's problems and understanding the possible benefits of cooperation. Also missed and hidden stories determining the issues of the conflict can be discovered and communicated within the game. Especially when the stakeholder "plays" not himself but another stakeholder. Also, the creation of a shared visions and common interest can be included. Herby it is important to notice possible low-level conflicts which limits conflict resolutions at a higher levels (Haddadin, 2002; Zeitoun et al., 2008; Zeitoun et al., 2010).
- Every water conflict is different. They vary in intensity, location, amount of hostility and are dynamic over time. In order to make cooperation possible the gaps in culture, power, resources and perspectives should be overcome or respected. Intercultural understandings can be enhanced through sharing of information and by collaboration, like; developing adaptable plans together and joint actions such as joint ownership of infrastructures (Zeitoun et al., 2008; Kim, 2012; Islam, et al., 2013).
- Some actor relations may be so poor that the parties themselves are not able to manage their disputes. In this situation external involvement will be required for arbitration and/or a conflict resolution (Zeitoun et al., 2008; Islam et al., 2013). A professional neutral facilitator is better able to navigate the pushes and pulls of a complex multiparty negotiation than when the parties operate on their own. Involving a neutral facilitator early in the process will help building consensus in a constructive and timely manner (Islam et al., 2013). It is crucial that the facilitator does not take sides, but stays neutral (Islam et al., 2013; Kleijn, 2014). Consult Appendix M for more information.
- Crowding-out of stakeholders should be avoided at all times. In order to reduce the complexity, grouping the stakeholders based on their values and interests when ten or more actors are participating is advised (Mostert, 2003; Savenije et al., 2008; Gourbesville, 2008; Enserink et al., 2010).

5.5 Design Criteria

Within the Water Diplomacy Framework, problem-solving is focussed on all aspects within the water network. The interaction between the social, political and natural domains are integrated through water governance. Water governance has proven to be an effective de-escalating and cooperation unifier between hostile actors over the long-term. Therefore, it is advised to include water governance including its best practices in the new policy framework. Thereby, the following aspects are crucial:

- To ensure long-term cooperation between the multiple water users, all public and private up- and downstream actors who effect and are effected need to be included in the governance system.
- Legally binding water usage agreement need to be formulated and enforced. This includes water quality (pollution), water quantity (low waters), water safety (flooding), environmental protection (ecology) and the climate change effects including adoption measures.
- Cost- and benefit-sharing has proven to be an effective cooperation and governance tool. Thereby, a common goal is the starting point for cooperation, like: joint data collection and information exchange. Cooperation is maintained when stakeholders interests are interlinked with each other. By means of the PRIMO-chain, the level of actor independency can be increased. However, because every water conflict is different each situation requires a different cooperation mechanism.

Since exclusion, favouring or belittle actors is a root-cause of conflict, equal actor treatment is essential. In addition, never exclude actors from water usage. Also, in (post-)conflict areas water issues and their possible solutions should not be made into a multi-issue games connected with political and social sensitive issues. Keep it with water! In the problem-solving process actors should not claim complete control over the water resource on their territory. To prevent water conflicts, water problems should never be shifted in space to neighbours downstream and in time to the future. In addition, fair, efficient and wise agreements for all stakeholders are needed. Because long-term goal are difficult to sell, it is advised to connect them with the direct and short-term effects. It is recommended to included these best practices as fundamental implementation principles.

6

Case Study: Water Management in Uruzgan

'The aim of every stabilisation operation is to decrease the level and number of violent conflicts and shape the conditions for a self-reliant society including rebuilding the host-nation governmental organisation' (Cooten, 2015). This is accomplished through sustainable, long-term orientated socioeconomic development accompanied with short-term reconstruction acts. Thereby the incentives of the armed insurgency fuelled by public dissatisfactions are significantly reduced by implementation of the DIME strategy (Diplomatic, Information, Military & Economic). Therefore, a safe environment is a crucial precondition. (Royal Netherlands Army, 2003; Koninklijke Landmacht, 2014a; Lucius, 2015; Post; 2015; Berg, 2014). More information regarding the aim of stabilisation operations, its characteristics and methodologies are presented in Appendix G. As a result, sub research question 1A is answered: What are the characteristics of Stabilisation Operations?

From 2006 until 2010, the Royal Netherlands Armed Forces was lead nation regarding the NATO-ISAF stabilisation operation in the Afghan province of Uruzgan. Within this military and humanitarian mission, water management reconstruction and development activities were performed within the applied 3D Approach: Defence, Development and Diplomacy (LTO, 2009, LTO, 2010; Lijn, 2011; Government of the Netherlands, 2011; LTO, 2012; Berg, 2014; Lucius, 2015; Post, 2015; Tak, 2015). The case study: Water Management in Uruzgan (NATO-ISAF mission) presented in this chapter, examines how water management was applied in a recent stabilisation operation including its security and development contributions. Since this subject was never studied and evaluated before, crucial new knowledge for developing the new policy framework was created. Consequently, the three enabling peace mechanism characteristics water management possesses were identified during the case study: Water as Enabler, Water for Conflict Resolution and Water for Cooperation. Furthermore, by means of the case study, sub research question 1E is answered: What are the main recommendations for application of water management in a stabilisation operation based on the Uruzgan experiences?

In multiple reports, the Uruzgan mission is thoroughly evaluated. Therefore, only essential background information is discussed in paragraph 6.1. The applied mission strategy, the 3D Approach, is elaborated in paragraph 6.2. In paragraph 6.3, water and its relation with the conflict causes in Uruzgan province are elaborated. At the start of the mission, water was identified as a crucial need. During the engagement, water was lost and rediscovered as an important development theme. This process and its causes are discussed in paragraph 6.4. At the start of the case study, a socio-hydrological causal relationship diagram was developed which explains how the water cycle and the social, economical, development and security systems of Uruzgan province are interlinked by human water usage. In paragraph 6.5 the socio-hydrological system of Uruzgan is presented and explained. Furthermore, which water management reconstruction acts and development activities were applied as a development and peace instrument within the 3D Approach including their performance are discussed in paragraph 6.5. Their contributions to the overall security level including the conclusions how water management served as an enabling peace mechanism in the Uruzgan mission is studied and concluded in paragraph 6.6. Based on the multiple lessons learned gained within the Uruzgan mission and the main characteristics of the Integrated Approach, the IWRM framework and the identified water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices, the application of water management in the Uruzgan mission is evaluated in paragraph 6.7. Paragraph 6.8 concludes this chapter by presenting crucial and specific design criteria for the application of water management in future stabilisation operations.

6.1 Characteristics of Uruzgan - Afghanistan

In this paragraph essential background information of Uruzgan province is provided. First, its geography is discussed in section 6.1.1 followed by its demographics in section 6.1.2. Its hydrology and climate are crucial in understanding the application of water management. Consequently, this subject is presented in section 6.1.3. The causes for the unstable and violent situation in Uruzgan is discussed in section 6.1.4.

6.1.1 Geography

Uruzgan is a rural, arid and mountainous province with hot summers and cold winters. During the Netherlands deployment it was populated by tribal groups of mostly poor subsistence farmers. With an area of 28.522 km^2 (approximately 70% of the Netherlands) the province is situated in the centre of Afghanistan (Royal Dutch Embassy Kabul, 2006). In figure 6.1, its location is visualised through a green circle.

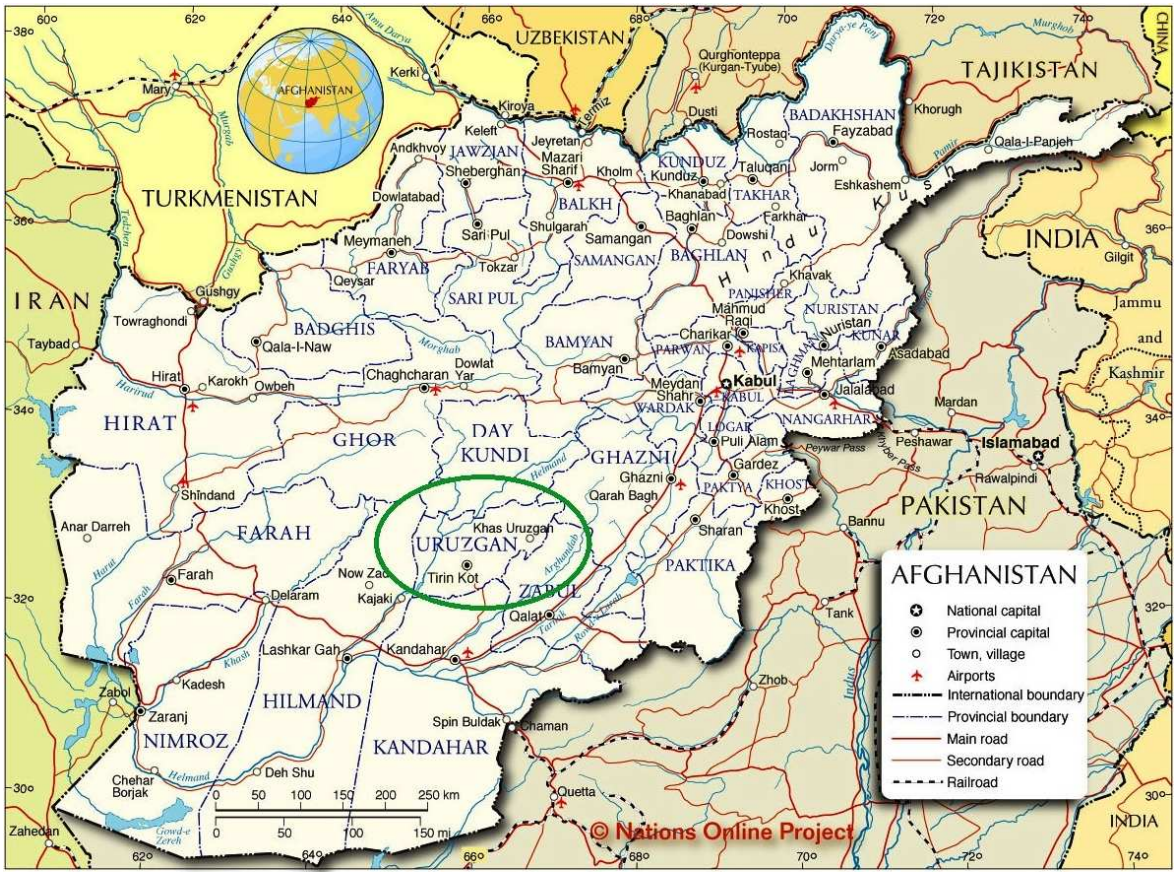

Figure 6.1: Map of Afghanistan, Uruzgan Province circled green (Nations Online, 2014).

6.1.2 Demographics

In 2005, the reported population in the province was estimated on approximately 375.000 inhabitants, distributed along 45.000 households. The majority, approximately 200.000, lived in or within the near surroundings of the capital Tarin Kowt. The various tribes can be grouped into the following three main ethnic groups (Royal Dutch Embassy Kabul , 2006; CIA, 2014; LTO, 2012):

- Pashtuns; are an eastern Iranian ethnic group, Sunni Muslims and with 91% the largest ethnical group in Uruzgan. Also they make up the majority of the Taliban and the current Afghan government and consist of the following tribes; Popalzai, Achakzia, Nurzai, Barakzai, Hotak, Khogiani, Thoki.
- Hazara; are Persian-speaking group, mainly Twelver Shia Muslims and with 8% the second largest ethnical group in Uruzgan.
- Kuchi; are nomadic Pashtuns who form with 1% the third-largest ethnical group in Uruzgan.

When the Dutch arrived in 2006, Uruzgan province was controlled mainly by the local tribes and Taliban groups. The provincial governor, appointed by the national government of Afghanistan, was only controlling a couple of the large provincial cities (LTO, 2010).

6.1.3 Hydrology & Climate

Uruzgan is situated within the upper part of the Helmand Basin. The Helmand Basin is the largest basin system in Afghanistan. It covers the southern half of the country and has a total area of 386.000km^2. 78% (321.000km^2) is situated within Afghanistan. The remaining 20% lies in Iran and 2% in Pakistan (USGC, 2008). It's main water resources are the Sia Koh mountains in Herat province, the Parwan mountains northwest of Kabul and the Sistan mountains between Iran and Afghanistan. The rivers in the Helmand Basin are fed by melting snow water from the high mountains and infrequent precipitation events. Great fluctuations in streamflows are recorded due to the limited permanent snow available. High runoff peaks are recorded in the early summer. Without sufficient dams and reservoirs, the basin system is susceptible to floods and droughts (USGC, 2008).

Months:	**Gazib** [Q = m3/s]:	**Yakhdam** [Q = m3/s]:	**Tarin** [Q = m3/s]:	**Total** [Q = m3/s]:	**Average** [Q = m3/s]**:**
October	41	11	5	57	19
November	47	14	7	68	23
December	47	14	8	69	23
January	48	14	9	81	24
February	67	26	12	105	35
March	186	86	25	297	99
April	360	171	40	571	190
May	286	93	17	392	132
June	119	27	7	153	51
July	58	13	8	79	26
August	34	9	5	48	16
September	35	9	4	48	16
Annual Average	**111**	**41**	**13**	**165**	**55**

Table 6.1: Mean discharges of the river system in Uruzgan province [Q = m3/s] (USGC, 2008).

Knowing the magnitude and time distribution of the streamflows and understanding its consequences is essential for goods water management. Regarding Uruzgan province, an analysis is performed to understand its hydrological characteristics. The main conclusions are:

- Uruzgan drains it water resources from three rivers; the Helmand River (Gazib), Kay River (Yakhdam) and the Tirin River (USGC, 2008).
- As displayed in table 6.1, the discharge fluctuations over one year are high. The lowest discharge is recorded in August and the highest in April (USGC, 2008).
- Due to the presence of water, most of Uruzgan inhabitants are living adjacent to one of the three rivers in the so-called "green zones". As displayed in figure 6.2, the larger cities of Uruzgan are located in these vegetated areas (Post, 2015).

Figure 6.2: Geographical characteristics of Uruzgan province (Government of the Netherlands, 2011).

- Flood events in March, April and May are common, due high river discharges in combination with an insufficient flood protect systems (Post, 2015).
- For water supply regarding irrigation purposes, river influenced long distance open irrigation channels and Karez systems (subsurface channels) are frequently used (Post, 2015). In Appendix D, the characteristics of a Karez system are explained.
- The groundwater is a safe drinking water source. Their annual recharge is approximately 20-30 mm/year (Post, 2015).

Approximately 75% of the province is covered with mountainous or semi-mountainous terrain. Over a horizontal distance of 200km (southwest to the northeast), the elevation accounts ±2000m (from ±1000m until ±3000m). The additional 25% is considered as flat terrain (CIA, 2014). Due to the geography and location of Uruzgan, dry and tropical summer events occur but with temperate winters (KNIM, 2014; CIA, 2014). The average precipitation is 200-300 mm/year and is unevenly distributed. During the summer period, the amount of precipitation can be neglected (KNMI, 2014: CIA, 2014, Post, 2015). In table 6.2, more detailed information is listed regarding the average monthly rainfall by season and average seasonal temperature in the capital of Uruzgan, Tarin Kowt. The average potential evaporation is 1600 mm/year. During the summer months of July and August the average potential evaporation is approximately 225 mm/month (Post, 2015).

Season:	Average Rainfall [mm/month]	Average Temperature [^{0}C]
Summer	0 - 10	26 / 27 (max. + 38 in July)
Fall	0 -10	10 / 11
Winter	31 - 40	-2 / -1 (min. -3 in January)
Spring	21 - 30	12 / 13

Table 6.2: Average monthly rainfall and seasonal temparature by season at Tarin Kot (AIMS, 2004).

6.1.4 Causes of instability

Uruzgan province has historically been unstable and violent. Since the beginning of the Afghan War in 2001, the situation has rapidly escalated (Fishstein, 2012). From that time, the Taliban has capitalized on local poverty and fragmented tribal structures to foment support for their armed insurgency (LTO, 2010). At the beginning of the engagement, Uruzgan province was one of the most underdeveloped areas in the world. The lack of stability, governance and development in Uruzgan province finds its root-causes in: Taliban and other fundamentalist suppression; and insurgency from outside the province supported from within; competing tribal militias; presence of drugs and its related criminal organisations; access to land and water resources, personal grievances; and injustices perpetrated by the Afghan national government (Royal Dutch Embassy Kabul, 2006; Lijn, 2011).

Political, social and economical dissatisfactions accompanied with the lack of better prospects facilitated the breeding ground for the armed insurgency. In 2006 its economy was primarily driven by agriculture and husbandry. Almonds and Poppy were the main crops. Poppy is the basic element in the production of opium and was also one of the main source of income of the Taliban and local tribes at the start of the Uruzgan mission. (Royal Dutch Embassy Kabul, 2006; Bemmel et al., 2010).

Due to the high level of complexity caused by the various aggressive- and non-violent actors involved in an unstable, problematic, and underdeveloped arena, the 3D Approach was applied (Gabriëlse, 2007; Grandia, 2009; LTO, 2010). In the next paragraph the mission strategy will be elaborated further.

6.2 Mission Strategy - 3D Approach in Uruzgan

Settling the causes of instability and local conflicts requires addressing the interwoven causes together. Therefore, the objective of the stabilisation operation was to combat growing instability and improve the security of the region by developing its security, political and economic infrastructures (Royal Dutch Embassy Kabul, 2006; Gabriëlse, 2007; Grandia, 2009; LTO, 2010; Bemmel et al., 2010; Uhm, 2012).

Within this strategy, counter insurgency operations (COIN) were executed. Resolving local root-sources of conflict, including poor governance, a weak economy, and deficient infrastructure, were equally important. By providing an alternative for the local population through socioeconomic development and establishing a government-controlled safe environment under rule of law, it was expected that the broad support among the local population for the insurgency could be reduced (Royal Dutch Embassy Kabul, 2006; Gabriëlse, 2007; Grandia, 2009; LTO, 2010; Bemmel et al., 2010; Uhm, 2012). The 3D Approach put this startegy into practice. By means of figure 6.3, this philosophy is illustrated.

The philosophy of the 3D Approach (Defence, Diplomacy and Development) is simply, long-term security and stability cannot be achieved through diplomacy, development or defence alone. Instead, these three "D's" must be addressed in concert because (Gabriëlse, 2007; Lijn, 2011):

- Security and stability are necessary preconditions for sustainable development.
- Security and stability will make diplomacy and development projects more effective.
- Long-term stability and security cannot be maintained without diplomacy and development.

Within the Uruzgan mission Uruzgan, the 3D Approach was firstly implemented on a large scale. For each "D" the focus was on (Gabriëlse, 2007; Grandia, 2009; Lijn, 2011):

- **Defence** (Safety & Stability): creating and maintaining security and stability through the presence and operations of the Dutch military forces and assisting the Afghan government in developing its own security institutions (army and police).
- **Diplomacy** (Governance): focussing on good governance by improving the local-, regional-, and national government, implementing rule of law and preventing conflicts.
- **Development** (Socioeconomic Development): directed at improving the socioeconomic perspectives for the local population through economic assistance and restoration of physical works, such as roads, bridges, schools, irrigation systems, and energy supply. Moreover, non-physical aspects, such as education, gender equality, and the economy were also included in this D.

Within the 3D Approach the goals of each "D" are seen as overlapping and best managed and addressed with integrated practical solutions. This generally takes the form of a project, such as an irrigation system (development), which has been requested and supported by the local community and authorities (diplomacy) and is implemented with the support of troops (defence). On a larger scale, by eliminating sources of conflict, such as unequal access to irrigation water, through diplomacy and development, the need for defence will diminish. In this way, the 3D Approach promotes long-term stability since ownership is exchanged between the military and (local) civilian actors throughout the duration of the mission. As a result, the military, diplomats, and development actors need to understand and trust each other in order to cooperate or coordinate their activities effectively (Lijn, 2011).

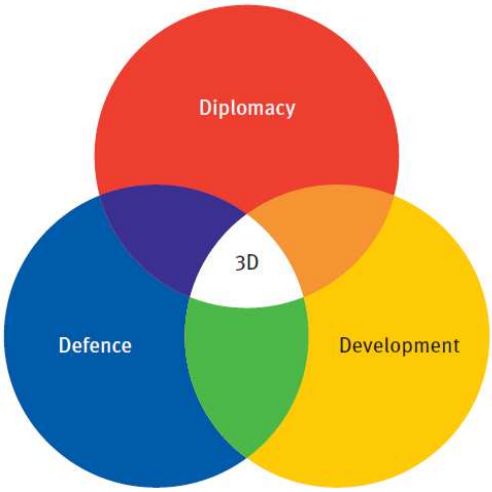

Figure 6.3: Illustration 3D Approach (Lijn, 2011).

Winning the "hearts-and-minds" and making the insurgents obsolete through eliminating its breading grounds was the leading strategy of the 3D Approach applied by the Task Force Uruzgan (TFU). In order to prevent the post-conflict country from sliding back into war or an armed insurgency, the 3D Approach is aimed to achieve long-term stability by integrating Development, Diplomacy and Defence efforts into one mission. The ultimate goal is a self-reliant country accompanied with a decent and well-working governance system (Gabriëlse, 2007; Grandia, 2009; Bemmel et al., 2010; Uhm, 2012).

'Families are forced by the Taliban to cooperate with them. As an example; their son was forced to fight against the Dutch forces. The Dutch did not respond by fighting hard against the Taliban, because than also that family who was forced to fight, would be favouring the Taliban instead of the Dutch while at the same time the Dutch are present to enhance the security and prosperity for that same family. Therefore, the primary aim was not to kill the Taliban forces, but make them irrelevant by the reconstruction operations, increase security, establish trustworthy relationships and increase the welfare and independency by education and economic development. Of course, when needed the Dutch fought against the radical insurgents force' (Uhm, 2012).

Fur successful implementation of the 3D Approach, its reconstruction acts and development activities implemented by the provincial administration, (local) NGO´s and the PRTs needed to be complementary and accordingly to the ISAF mandate and the Afghanistan Development Strategy (Royal Dutch Embassy Kabul , 2006). Because the 3D Approach relies on identifying sources of conflict and finding ways to successfully address them, this approach could not simply be imposed on the local population. Instead, implementation was a process in which the population defined their own problems and devised their own solutions, with structure and support provided by the Netherlands Armed Forces. This adaptation to the local conditions was termed 'Afghanisation' by the Dutch (Lijn, 2011). The justification for this strategy was two-fold (Lijn, 2011):

1. Although adjusting working methods to the Afghan context may slow the speed of development, local support is necessary to find good and lasting solutions.
2. By making and implementing their own policies including the management and executing their own projects, local ownership will foster institutional knowledge and skills.

Due to the multifaceted character of the 3D Approach, its implementation also required an integrated effort. The Dutch operation accomplished this by using two interdependent military and civilian resources (Grandia, 2009; Lijn, 2011):

- **Battle Groups**, which were responsible for training the new Afghan security force (police and army) and the kinetic offensive- and defensive military operations. It consisted of infantry, artillery, logistics, military police, reconnaissance, intelligence, army engineers, special forces, and airpower units.
- **Provincial Reconstruction Teams (PRTs)**, which were responsible for the diplomacy and development parts of the 3D Approach. These teams consisted of military CIMIC[14] specialists and functional specialists (reserve officers with a specific civilian expertise) with expertise in engineering, agriculture, military- and police unit capacity building. To strengthen the diplomacy and development aspects through peace building, diplomacy and sustainable development, employees of multiple NGOs and the ministries of Foreign Affairs where included within the PRTs. Furthermore, CIMIC specialists and army engineers from the Australian Armed Forces were also included in PRTs from the beginning of the mission.

The aim of the PRTs was to create long-term stability through development and by expanding the legitimacy of the Afghan Central Authority within the entire province. In order to realise these goals, the PRTs relied on the Battle Groups to secure the province by conducting counterinsurgency operations and gathering essential intelligence. The development and diplomacy efforts were focussed on the following reconstruction aspects: rule of law, healthcare, education, agriculture, private sector enterprise, water- and energy security, crucial infrastructure development, gender equality, media and communication (LTO, 2010; Government of the Netherlands, 2011; LTO, 2012). Thereby, water management was identified as a crucial challenge and opportunity to foster regional stability (Royal Dutch Embassy Kabul, 2006). In the following paragraphs the application of water management and its contribution to security and development will be elaborated thoroughly.

[14] CIMIC: Civilian-Military Cooperation: CIMIC staff is specially trained to interact with IOs, GOs, NGOs, the local authorities (administrative and / or religious), the local population and actors in the private industry (Koninklijke Landmacht, 2014b).

6.3 Water & Conflicts, its Relationship in Uruzgan

Across of Afghanistan, more than 80% of the population is practicing cultivation and agriculture. Irrigated agriculture accounts for more than half of the country's Gross Domestic Product (GDP). Also, it the primary source of income for the majority of Afghanistan's rural communities and is crucial in its food security policy. Since the cultivation of agricultural products relies upon artificial irrigation, the Afghan population is heavily dependent the water resources (Elp, 2012).

Historically, most insurgencies occur in agrarian societies where disputes over land and water rights are among the most important drivers of the conflict. (Joint Chiefs of Staff, 2013). Regarding Afghanistan, this is also the situation: *'Despite decades of conflict, most Afghans see drought as the most threatening to their lives and livelihoods'* (Elp, 2012). Since agriculture was the main economic driver in Uruzgan, skirmishes regarding the distribution of irrigation water did occur on a small scale, thereby decreasing the overall security level (LTO, 2009; Post, 2015). These skirmishes occurred between ethnic settlements, tribal groups, communities, villages, farmers and other water users in Uruzgan province. The lacking institutional authority to make and enforce water allocation rules in combination with up- and downstream water usage, water quality and water quantity allocation and the power distribution regarding water management decision-making were the most common water related conflicts. (Elp, 2012; Post, 2015).

Uruzgan's predominantly dry climate, the high fluctuations in average seasonal rainfall (presented in table 6.2) and the high fluctuations in monthly discharges of the main rivers crossing Uruzgan (presented in table 6.1) are causing an irregular pattern of water inflow. In combination with the absence of appropriate water storage facilities, a partly functioning water distribution system for irrigation and domestic usage, and insufficient flood protection infrastructures, flood and draught events occurred on a regular bases (Elp, 2012; Post, 2015, Matthijssen, 2015). These floods and draughts significantly contributed to the water conflicts all over Afghanistan (Elp, 2012).

> *'In Uruzgan not the amount of water was a problem, the unequal distribution of in- and outflow during the year was a problem although. Additionally, water reservoirs were limited present, resulting in water scarcity in the dry periods'* (Matthijssen, 2015).

Due to drought, mismanagement, weak water governance and damaged water systems, access to safe drinking water was a major problem in the rural and urban areas of Uruzgan. Furthermore, during more than two decades of conflict, the water resource was heavily damaged by military activities, refugee movements, and over-exploitation in the absence of any local governance system. This resulted in widespread environmental degradation that poses an immense threat to future livelihoods (UNEP, 2003). In addition, the poor security situation combined with a minimum governmental control before the Uruzgan mission started, created ongoing and often violent conflicts between the local tribal groups, anti-government elements, drug related criminals, the local government, and the Taliban (LTO, 2009, LTO, 2010; Government of the Netherlands, 2011; LTO, 2012; Elp, 2012). Moreover, the Taliban forced the local households and farmers to cultivate poppy. Poppy is the raw material for heroin and functioned as the main source of income for the Taliban forces in 2006 (Mansfield, 2006). The poppy cultivation was connected to powerful actors and its socioeconomic structures were directly influencing water-related conflicts (Elp, 2012).

Since the majority the Afghan farmers rely on irrigation water, the Afghan government addressed water resource management as an essential first step in rebuilding rural communities. Furthermore, appropriate water management is regarded as a high priority to tackle poverty within the Afghanistan Development Strategy (Government of Afghanistan, 2009; Elp, 2012). Before the start of the mission, the following water related reconstruction activities and development priorities were identified (Royal Dutch Embassy Kabul, 2006):

- **Agriculture & Irrigation.** Agriculture is the main economic activity in Uruzgan province. Due to severe droughts over the past six years and in view of labour shortages, existing traditional systems and infrastructure are in decline. The province's potential for irrigation is high. Therefore, assisting in the reconstruction and upgrading of irrigation systems is advised.
- **Healthcare & Drinking**. Healthcare is seen as a priority by the population. In most areas the population has no or limited access to clean drinking water. In order to increase the healthcare situation in Uruzgan province, a constant provision of clean drinking water has a high priority.

6.4 Water Management in Uruzgan: Identify - Loss - Rediscovery

Due to Uruzgan's arid climate and agriculture-based economy, water is a scarce and vital resource. Access to it was a source of conflict between farmers and tribes (Elp, 2012; Post, 2015). This status made water management an important focal area for the Task Force Uruzgan (TFU) and its Provincial Reconstruction Team (PRT) from the beginning of the mission (Royal Dutch Embassy Kabul, 2006; Tak, 2015).

> *'From day one of the mission in 2006, I had a water management expert in my PRT. Every day he went out to consult local farmers and the Afghan ministry of Rural Rehabilitation and Development (MRRD). Also, water management reconstruction projects were realised, like constructing riverbank protection. Apparently this approach was "lost" and rediscovered later on'* (Tak, 2015).

As mentioned in the quote, water management was "lost" as an important reconstruction activity and development priority for approximately two years, because[15]:

- Water management was not prominently presented in the civilian and military campaign plan.
- In the first two years, the focus of the PRT was too much on short-term, quick impact projects. This explains the absence of a coherent, long-term orientated water management development plan.
- Due to the dynamics of the operation, the importance of water management as a development activity did not have a constant level of awareness.
- For multiple PRT rotations, only non water-management 1CMI-Co functional specialists were present.

A coherent and continues focus on long-term stability- and socioeconomic objectives, while executing short-term quick impact projects is crucial. In doing so, they must adhere to a flexible "step by step" development plan with set boundaries (AIV, 2009, Bemmel et al., 2010; Tak, 2015). In order to create the needed long-term focussed "Unity of Effort" between de Dutch military and civilian governmental actors, multiple NGOs and the government of Afghanistan, the Uruzgan Campaign Plan (UCP) was developed during the mission by PRT rotation 6 and published in 2008 (Bemmel et al., 2010; Berg, 2014). Within the Uruzgan Campaign Plan, water management was embedded through the three Reconstruction & Development themes: Healthcare, Agriculture & Rural Development and Infrastructure & Natural Recourses (Bemmel et al., 2010).

Due to the presence of a 1CMI-Co water management Functional Specialist within PRT rotation 8, water management was rediscovered as an important reconstruction activity and development priority at the end of the Dutch engagement in Uruzgan in 2009 (Post, 2015). This resulted in the Quick Scan Water Management Uruzgan, followed by the execution of multiple water management related reconstruction projects and development activities in 2009 and 2010. A summary of the Quick Scan Water Management Uruzgan is presented in box 6.1. In the next paragraph the executed water management development activities and their results will be elaborated in more detail.

[15] Conclusions are made by the author based upon consultation of: Bemmel et al., 2010; Berg, 2014; Post, 2015; Tak, 2015).

Summary of the Quick Scan Water Management Uruzgan

Conclusions:

- No coordination between villages in same watersheds regarding water distribution, maintenance, knowledge and management.
- Irrigation efficiency is approximately 35%.
- No / minimum maintenance of irrigation channels / aqueducts and attached structures.
- The long distance aqueducts in the dry regions run out of water in the summer season.
- Irresponsible discharges of groundwater with engine pumps. This can result in an ecological disaster since there is a risk more water is extracted than naturally can be recharged.
- Lack of sanitation facilities.
- The irrigation channels are used as sewers, as a source of drinking water and for personal hygiene / ablution.
- Water Balance: a lot of water is spoiled or not used and discharged. It seems to be possible to extend the cultivated and irrigated area with 50-100%.

Recommendations:

- Perform a watershed analysis. The more detailed research and survey project should be executed in order to collect measured field data regarding hydrology, geology and hydrogeology including the parameters evaporation and transpiration. This data should be made available for further analysis and optimisations by others.
- Prevent the construction of new wells equipped with engine pumps for irrigation.
- Develop (and educate) a maintenance program for existing drinking water pumps, micro-hydroelectric power plants and structures.
- Stimulate use of groundwater for drinking water and sanitation.
- Construct new hand water pumps for common use (when nonexistent in a radius of 500m).

Possible Short-term Solutions (< 1 year):

- Re-establish Water shura's (meetings).
- Refurbishment of irrigation channels (aqueducts) and attached structures (e.g. inlet works).
- Reconstruct the collapsed Karez Systems.

Possible Mid-term Solutions (1 - 5 years):

- Harvesting rainwater by constructing dams and reservoirs fir irrigation purposes.
- Introduce the Keep, Store, Discharge principle to infiltrate and recharge ground water table.
- Prevent flooding events downstream areas.
- Build new Karez Systems (subsurface channels, see Appendix D).
- Improve efficiency of existing irrigation systems (e.g. by introducing drip irrigation).
- Extend crop type by increasing the cultivated and irrigated areas.
- Start construction sanitation facilities and the use clean drinking water to improve health and quality of life.

Box 6.1: Summary of the Quick Scan Water Management Uruzgan (Post, 2015).

6.5 Water Management activities within the 3D Approach

The population of Uruzgan dependents on agriculture for its food and income. Good water management is thus an essential need (Government of the Netherlands, 2011). Despite Uruzgan's dry climate and agrarian economy, water resources were underdeveloped due to the insecurity in most rural areas. There was although an informal and nongovernmental community orientated water management system in place during the stabilisation operation (LTO, 2010; Post, 2015). In addition, 87% of Uruzgan's population had no direct access to an adequate safe supply of drinking water and sanitation. Also, most water resources were contaminated by a wide variety of sources, water-resources management and regulation was insufficient, only small basic water related infrastructures were present and no policy instruments were in place to anticipate on seasonal draughts and flooding (USGC, 2008). These conditions had created ongoing and sometimes violent conflicts between the present local governmental authorities, Taliban, tribal groups, criminal organisations and other insurgents (LTO, 2010; Government of the Netherlands, 2011; LTO, 2012). In the past, water scarcity and the unequal distribution in Uruzgan had resulted in small skirmishes, thereby contributing to a decrease of the overall security level (Post, 2015). Through applying the 3D Approach and borrowing from the Netherlands national water management policy, the PRTs worked to address these pressing problems.

At the start of the case study, a socio-hydrological causal relationship diagram was developed which explains how the water cycle and the social, economical, development and security systems of Uruzgan province are interlinked by human water usage. By consulting the experts Matthijssen (2015), Lucius (2015), Post (2015), Berg (2014) and Kleijn (2014) the causal relationship diagram was optimised. The final version is presented in figure 6.5. Based on the in figure 6.5 presented socio-hydrological system of Uruzgan, the application of water management as a development and peace instrument within the 3D Approach is elaborated in box 6.2.

The PRTs and NGOs have invested heavily in the water management system of Uruzgan. From 2006 until 2010 the PRTs did put a considerable amount of effort into small-scale local projects throughout Uruzgan. Also, the multiple present development NGOs: GTZ, ADA, ZOA, Cordaid, AUSAID, USAID and the Community Development Councils (CDCs) of the National Solidarity Programme (NSP) implemented sizable water management projects. The locations of these projects are displayed in figure 6.4. Together, all these efforts resulted in the following impacts (LTO, 2009; LTO, 2010; Government of the Netherlands, 2011; LTO, 2012; Rietjens, 2015, Post, 2015):

- 150 new wells were constructed including the installation of hand and mechanical water pumps in the districts of Tirin Kot, Deh Rawud, and Chora. Thereby serving 2,100 households with the access to safe and clean drinking water. In addition, 600 wells were repaired in this area.
- 69 wells are completed and two water supply reservoirs were constructed in the districts of Khas Uruzgan and Deh Rawud
- 97 projects were executed to improve sanitation facilities.
- 15 micro-dams including their riverbank protection works were constructed.
- 10 micro-hydroelectric power plants were constructed.
- 3 bridges were built.
- 5 water reservoirs for rainwater harvesting purposes were constructed.
- 50 subsurface channels (Karez systems) including their distribution channels were reconstructed.
- 160 gabion walls as riverbank protection and flood protection structures were constructed.

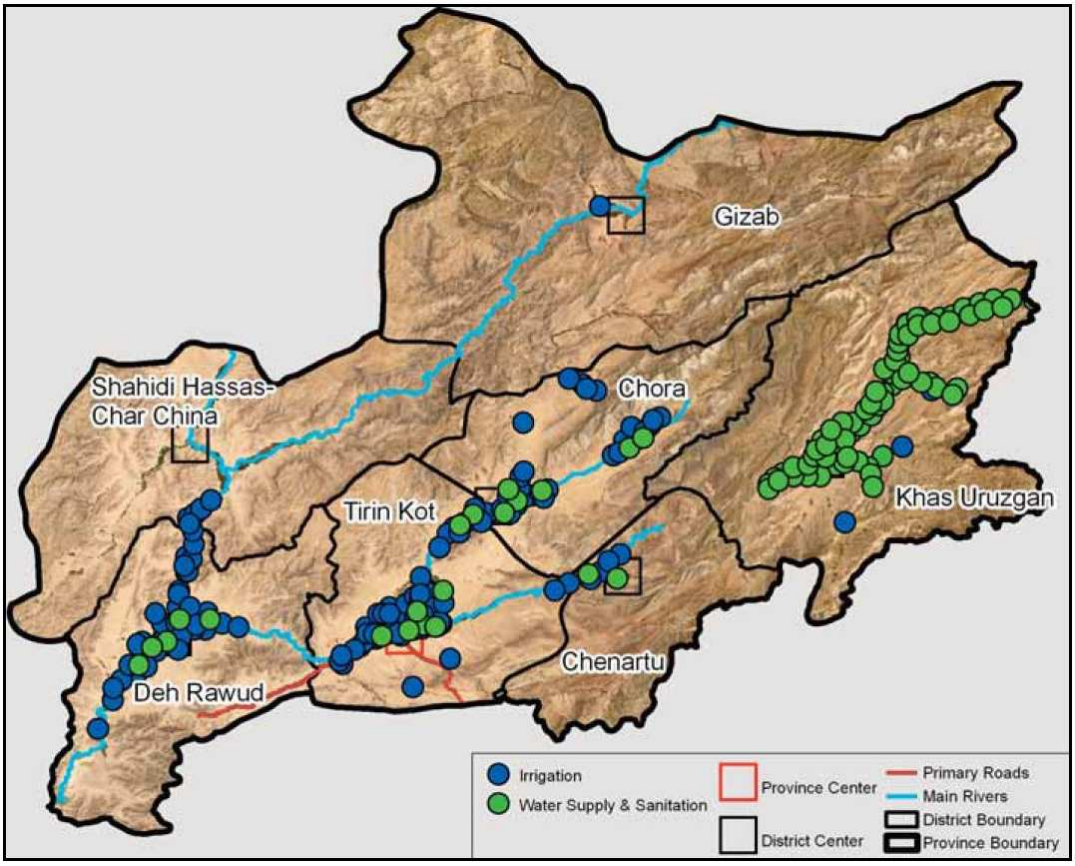

Figure 6.4: Location of water management projects executed in Uruzgan from 2006 until 2010 (LTO, 2010).

- 130 small-scale irrigations systems were (re)constructed or improved in the districts of Tirin Kot, Deh Rawud, Chora and Khas.
- Fishing ponds were constructed to introduce fish farming.
- Helophyte filters were introduced at waste water outlets as an ecological water purification system.
- As an alternative for the cultivation of Poppy, saffron was introduced. On the world market, Saffron has a higher value in comparison to Poppy. Therefore, Saffron can serve as an alternative crop to households seeking to boost their income. Moreover, Saffron production requires a lower water quantity per unit of surface area compared to Poppy cultivation. In total 281 farmers in Tirin Kot, Chora and Deh Rawud successfully planted, harvested and sold Saffron over the last two years of the Dutch engagement in Uruzgan.
- Since most crops in Uruzgan are perennial, it can take at least two years or more to see success. Besides Saffron, vegetable wheat seeds, fruit trees, and more seeds and trees were distributed for agricultural, reforestation, and nature conservation purposes.
- To improve the local agriculture economy, projects were undertaken to offer microfinance, help with marketing and provide training on operational farming, water management and maintenance.

Due to these projects, the access to and usage of more and cleaner drinking water as well as better sanitation facilities increased. Furthermore, improved irrigation and an increase in crop diversity resulted in increasing farmers' crop yields. Consequently, wheat and corn available for sale at the market increased (Government of the Netherlands, 2011; LTO, 2012). Regarding the maintenance aspect and local ownership, ZOA runs a shop where residents can purchase spare parts to repair hand pumps (LTO, 2012).

Improving the infrastructures by reconstruction- and construction projects is the visible aspect of water management. To have a continuation of sustainable development, a well working water governance system that includes all aspects of the PRIMO-chain[16] is even more important (Ven, 2014; Post, 2015). In addition, a low absorption capacity and an underdeveloped administrative system makes sustainable development a long-term process. (Gabriëlse, 2007). This situation is also applicable regarding water management in Uruzgan. The PRTs, including the multiple involved NGOs, therefore supported the provincial administration and local communities in solving water distribution conflicts peacefully. This was pursued through dialogue, while simultaneously increasing local problem ownership by facilitating and organising "water shura's" (Post, 2015). Within these meetings the Mirab's - the tribal or community based water managers responsible for equitable allocation of water between the farmers, maintenance and water dispute reconciliation - were the crucial actors (Epl, 2012; Post, 2015). Furthermore, the tribal and governmental stakeholders were actively involved in all reconstruction processes (LTO, 2012; Post, 2015). Multiple water shura's (meetings) were organised on the following issues (Post, 2015):

- *'Getting to know each other: under the motto if you know who your neighbours are in the same (sub)basin, it is easier to approach each other with questions or to help each other.'*
- *'Exchange of knowledge and information about how the multiple Mirab's do their work and which problems they encounter.'*
- *'Making agreements on water allocation and supply to each other's areas.'*
- *'Understand the main water sources that provide the province with water.'*
- *'Familiarise the Mirab's and farmers with the new Water Act of Afghanistan.'*
- *'Define projects that are important for the whole (sub)basin, like: increasing the water supply in dry periods, water retention in wet periods for water usage in dry periods, preventing floods and water quality issues.'*
- *'Familiarise the Mirab's and farmers with the public funding programs.'*

[16] PRIMO-chain: to guarantee a well functioning water management system Policy, Regulation & Legislation, Implementation, Management & Implementation, Organisation need to be formulated and actively applied within the governance systems of the water management policies (Ven, 2011).

By sub-basin, these meetings were first conducted with each actor group separately. In these meetings the actors discussed their issues with the PRTs regarding domestic and irrigation water usage and supply, as well as their ideas for solutions. Afterward, meetings with all the stakeholders were organised. In these meetings, water management policies were developed and (re)construction projects planned. Thereby, the PRTs served as facilitators by providing technical expertise, organisational support and mediation. The implementation of the resulting water management policies and most projects were performed by the provincial governmental authorities, local communities and NGOs with financial and technical support from the PRTs (LTO, 2010; Post, 2015). In addition, water management trainings regarding the distribution and maintenance techniques was carried out in local communities. The aim of these trainings and the water shura's was to create local ownership and re-establish the Mirab's position within the water governance system (LTO, 2012; Post, 2015). Thereby, the preconditions were created to ensure sustainable long-term development towards equitable water allocation, allowing the local population to optimise the drinking water- and irrigation systems on their own. Nevertheless, water scarcity was - and still is - a crucial issue in all districts of Uruzgan (LTO, 2012).

While the Dutch engagement ended in 2010, the Australian and American partner forces continued the stabilisation operation in Uruzgan. Since this research is focussed on the Netherlands' contribution in Uruzgan, the assessment regarding the application of water management in Uruzgan stops here. The following paragraph discusses how these water management activities contributed to the overall safety situation in Uruzgan province within the period2006 until 2010.

Water Management as a development and peace instrument in Uruzgan province - Afghanistan

At the start of the case study, a socio-hydrological causal relationship diagram was developed which explains how the water cycle and the social, economical, development and security systems of Uruzgan province are interlinked by human water usage. By consulting the experts Matthijssen (2015), Lucius (2015), Post (2015), Berg (2014) and Kleijn (2014) the causal relationship diagram was optimised. The final version is presented in figure 6.5. In this box, the application of water management as a development and peace instrument within the 3D Approach in relation with the in figure 6.5 presented socio-hydrological system of Uruzgan is elaborated.

As figure 6.5 explains, water usages strategies such as collaboration, individual strategic behaviour and/or bilateral coalition are an essential chain within the entire water system. Also multiple causal relationships exist between the water cycle and the social, economical, development and security systems. Since the economy of Uruzgan is mainly based on agriculture, investing in irrigation distribution infrastructures, water quality and usage policies including additional investments in the agricultural sector will result in a higher crop yield. Consequently, this will result in a higher farmers income which is accompanied by an higher level of independence for the farmer and it community. In combination with the increasing security level and other development focal points, a higher governmental control is established.

Through governmental investments in the society due to taxes, the loop is closed. This positive feedback loop thus results in increasing the level welfare and decreasing the dissatisfaction level of the society in political, economical, social and security related issues. By means of this strategy, water management serves as a development and peace instrument since it contributes in reducing the motives and support of an (armed) insurgency. As a counter strategy, the insurgents can increase the amount of violent actions against the local population, NATO-ISAF troops and the Afghan government including its army and policy units. Maintaining a high security level and increasing trust toward and with the local population by having a strong military and police force present which acts appropriately against the insurgents, is considered as a crucial precondition for successfully implementing the 3D Approach. As a control mechanisms, strict law enforcement actions, education and mutual problem understanding regarding water related problems can be implemented. At the same time collaboration over the water resources through water governance can be promoted and stimulated by different reconstruction acts and development projects.

Mutual trust between all the stakeholders, except the armed insurgents, was the crucial ingredient within the entire 3D Approach process (Post, 2015). Although the development projects were executed in cooperation or coordination with the local community, the Afghan government and NGOs at the end of the mission, the PRTs could still steer the process significantly by means of prioritising the kind of projects or strategies. These leverage factors are presented as "Stimulation by development projects" and "Stabilisation Force (NATO-ISAF)". "Climate Condition", "Religion", "Tribes" and "OMF" activities were difficult to influence external factors (red displayed in figure 6.5).

Box 6.2: Water Management as a development and peace instrument within the 3D Approach.

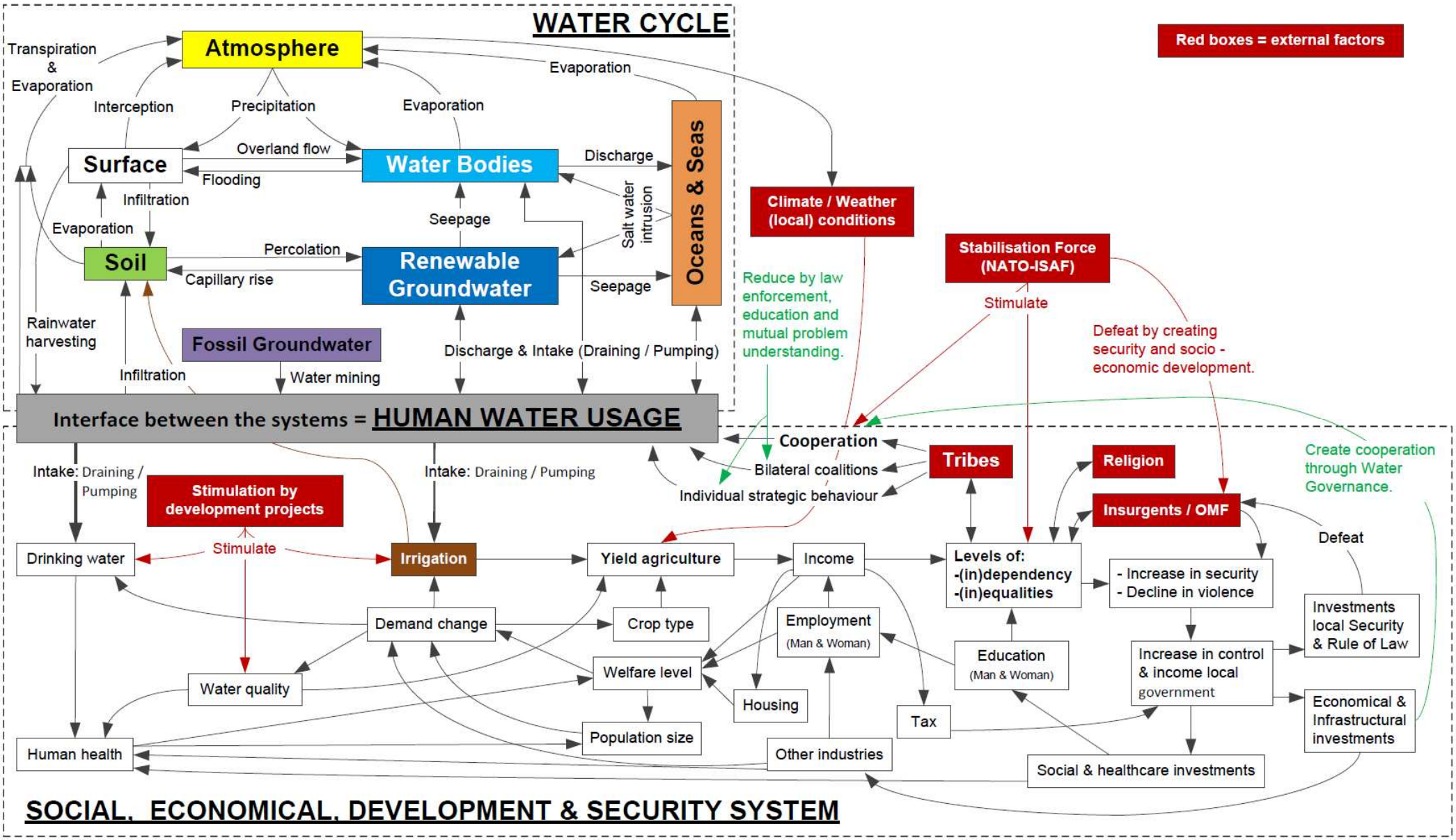

Figure 6.5: Causal relationship diagram of the water cycle, human water usage and the social, economical, development and security systems of Uruzgan province - Afghanistan.

6.6 The Security Contributions of Water Management

From the start in 2006, the 3D Approach was heavily criticised by other coalition partners. However, when the political decision was taken to withdraw the Dutch troops from Uruzgan in 2010, the 3D Approach was considered successful (LTO, 2012). Due to the water management reconstruction acts and development activities, the local population had access to more and cleaner drinking water. Also, irrigation systems have improved substantially, resulting in better harvests (Government of the Netherlands, 2011; LTO, 2012). As figure 6.5 and box 6.2 explains, these water management projects are strongly related with public health and Uruzgan's agriculture-based economy. Based on the following socioeconomic parameters, these projects made a substantial contribution in (LTO, 2010; LTO, 2012):

- Growth of the agriculture sector, which is attributed to the expansion and improvement of the irrigation systems.
- Increased trade, including a substantial growth in the amount and diversity of agricultural products.
- Improvements in public health, which is directly related with the increased access to safe drinking water and use of sanitation facilities.
- Growth of several cities in Uruzgan through urban migration, ascribed to improved infrastructure and an increased level of security and socioeconomic development.

How water management reconstruction and development efforts contributed to the overall security situation in Uruzgan province is discussed in section 6.6.2. Before, the security improvement process is explained in chronological order in section 6.6.1.

6.6.1 Security Improvements - The Process

The simultaneous implementation of defence-, development-, and diplomacy activities resulted in an expansion of the Afghan Development Zones (ADZs)[17]. Throughout the mission, these "ink blots" gradually increased in number and size due to the implementation of the Shape - Clear - Hold - Build strategy. The military operations were prepared (Shape) in such a way that after the operation had taken place (Clear) a direct physical security was maintained (Hold) in order for reconstruction projects to proceed (Build) (Government of the Netherlands, 2010).

The initial size of the ink blot, or ADZ, was restricted because the number of ISAF troops and Afghan police and army units were insufficient to cover the entire province. A detailed map of Uruzgan province is displayed in figure 6.6. At the beginning of the mission, the limited availability of supporting enablers also restricted the size of the ADZs. Therefore, the initial ADZs were only situated in the densely populated centres of Deh Rawud (RD) and Tirin Kot (TK). Consequently, there was no stabilisation force present in the majority, but sparsely populated area of Uruzgan. It the other districts American-, Australian-, and Dutch special forces were active as reconnaissance units to gather intelligence, improve situational awareness, disrupt insurgency activities outside the ink blots, and to detect insurgents who were planning to carry out attacks. In order to expand the ink blots, forward operating bases (FOBs) and patrol bases (PBs) were established at new tactical positions. In the wake of heavy fighting between ISAF and the insurgents, the ink blot was expanded to the district of Chora (CH) in 2007 (Government of the Netherlands, 2011).

[17] The Afghan Development Zones (ADZs) played a crucial role in the strategy of the TFU. The ADZs strategy is based on the in Appendix G elaborated "Ink Blot" strategy. An ADZ is an area where specific improvements in security, reconstruction and governance are established, maintained and increased through an integrated and concentrated sustained development approach by all relevant local and international military and civilian actors. It starts with establishing and consolidating an ADZ, through disrupting the opposing militant forces (OMF), followed-up by creating a permanent foothold to provide the essential needed security. In order to win the "hearts-and-minds" of the local population and to improve their confidence and trust in the government of Afghanistan and the international community, safety acts, reconstruction activities and development projects were executed. Subsequently and phased over time, multiple ADZ were created, thereby enlarging the area of control within the province step by step (Gabriëlse, 2007; Bemmel et al., 2010; Rientjes, 2014).

When the ink blot increased, the insurgency managed to regain its influence in the parts of northern Deh Rawud. This relapse was temporary. By the end of 2007, the ink blot encompassed the areas around Tirin Kot, central parts of the Chora district and the southern part of Deh Rawud. The northern part of Deh Rawud was added to the ink blot in the spring of 2008 (Government of the Netherlands, 2011).

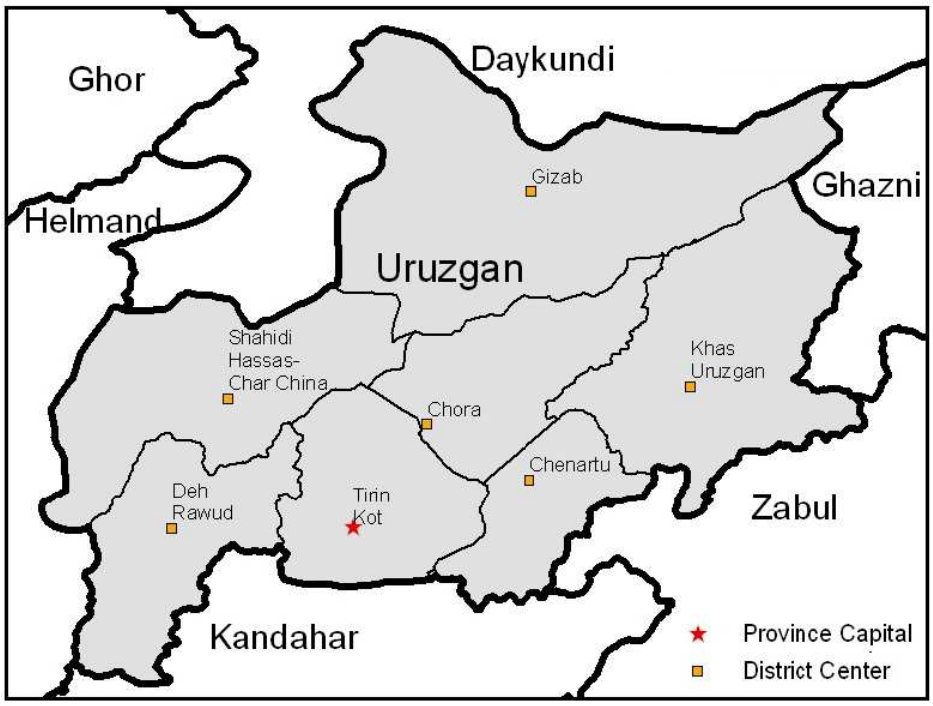

Figure 6.6: Uruzgan province, Afghanistan (LTO, 2009).

The expansion of areas controlled by the Afghan National Security Forces (ANSF) and ISAF forces triggered the insurgency in 2008 to go on the offensive. Due to the upcoming parliamentary election, the attacks of the armed opposition groups (AOGs) increased through the use of improvised explosive devices (IEDs). As the Afghan military and police added more units and gained more experience, additional security assets became available and the security situation within the ink blots improved again. This resulted in a drop of AOG attacks and the amount of IEDs in 2009 and 2010. This process is displayed in figure 6.7. (LTO, 2010; Government of the Netherlands, 2011; LTO, 2012). In 2009 and 2010, the ink blots grew even further. Eventually, the American and Australian forces took over control of the entire province in 2010. When the Netherlands engagement ended, the Taliban was weakened and displaced from long-held areas, but they were by no means defeated in Uruzgan (Government of the Netherlands, 2011; LTO, 2012).

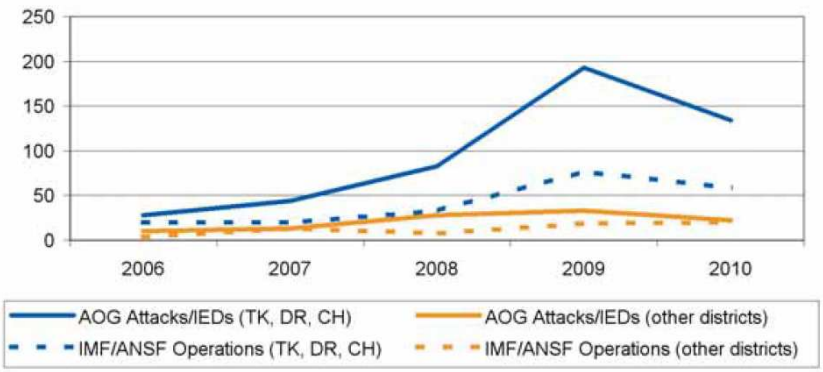

Figure 6.7: AOG Attacks/IEDs vs. IMF/ANSF Operations in Uruzgan (LTO, 2010).

As explained by figure 6.8, this strategy resulted in an expansion of Afghan governmental controlled areas. In 2010, approximately 55% of the province was considered under the control of the Afghan government. However, this control was fragile. Furthermore, holding urban district centres proved to be far more easier than controlling the rural areas that make up the majority of each district. The socioeconomic development activities were not restricted to the ADZ. Disadvantaged tribes, those that settled outside the ADZ and who often supported the Taliban, were actively approached in order to improve their socioeconomic situation by means of development projects, with the aim that they would reduce their support for the Taliban. In this context, water management projects were executed in the "uncontrolled" areas, too (Government of the Netherlands, 2011, LTO, 2012).

Within the ink blots, the Afghan population had an acceptable level of security [18] and freedom of movement. This, in combination with the reconstruction- and development activities, gave a significant boost to the local economy. Education, healthcare, governance, and infrastructure also saw substantial improvement. Infiltration of the ink blot by the insurgents occurred, resulting in a small number of heavy attacks. When the overall level security increased, the United Nations Assistance Mission in Afghanistan (UNAMA) and the United Nations Development Programme (UNDP) arrived in Uruzgan. In the same period, approximately 40 development NGOs arrived, too. Consequently, more funds became available. This resulted in a rapid increase in the amount of short-, medium- and long-term oriented development activities. Consequently, the areas that until 2010 had not yet become part of the ink blot, started to benefit from the development projects (Government of the Netherlands, 2011, LTO, 2012).

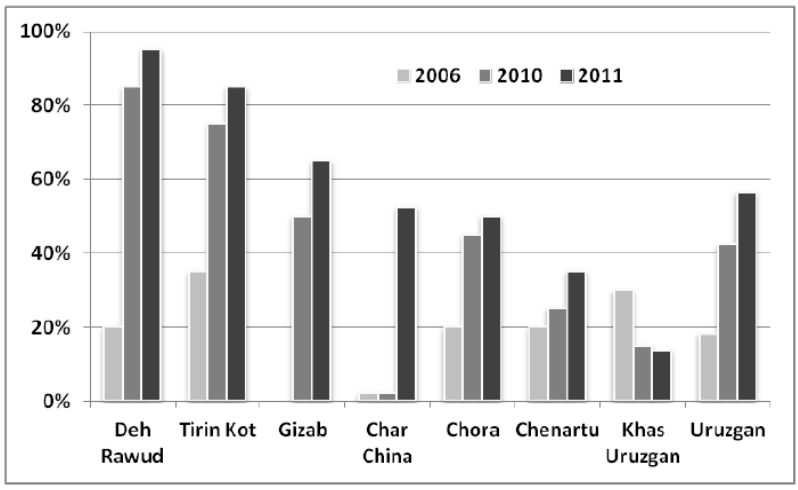

Figure 6.8: Areas under Afghan governmental control in Uruzgan province per district (LTO, 2012).

6.6.2 Water Management as an enabling Peace Mechanism in Uruzgan

Inside the Afghan Development Zones, water infrastructural projects and allocation agreement contributed directly in increasing the living standards of a large portion of the local population (LTO, 2010). Outside the ADZs or ink blots of control, water management has proven to be an effective enabler in creating relationships with the local population. More significantly, through organising and facilitating the "water shura's" (water meeting), armed skirmishes over water allocation issues were prevented. In additional, the re-establishing of a water governance systems was initiated (Post, 2015).

> *'Water can be used as weapon. In Uruzgan, good water management is also a common interest and thus a key factor in solving conflicts'* (Post, 2015). As a result, **Water for Conflict Resolution** emerged.

> '*Based on my Uruzgan experience, yes, I am suggesting that water management did contribute in increasing the safety and stability in the region. This presumption is based on the fact that in every region, "safe" and "un-safe", water was always an issue we could start a conversation about with the local population resulting in interesting outcomes. Like: there was the idea under the local population that neighbours were" stealing" their water. This could turnout in an armed conflict, since every local has a weapon. By organising water shura's (meetings) these issues were discussed and did not result in an escalation. Furthermore, in additional water shura's re-establishing of a water governance systems was initiated. Water was and is thus an important issue, but a scientific funded relation if only proper water management contributed to the overall safety and stability in the region, is difficult to confirm'* (Post, 2015). As a result, **Water as Enabler** emerged.

> *'The cooperation with the local population went well. At the end of my rotation I even received the names of the local water managers, called Mirab's. In the beginning of my rotation, they did not what to reveal themselves for personal safety reasons. Due to the importance of water, the Mirab's are key persons and therefore protected against any actor the local population does not trust'* (Post, 2015). As a result**, Water for Cooperation** emerged.

[18] Security, is not as straightforward concept. In this situation security includes the level of safety the government provides for its inhabitants, protecting the human right through applying the rule of law. In order to establish long-term security it is essential to resolve the underlying root-causes of violence and insecurity in an area (LTO, 2010).

Although the effects of the water management projects on the overall security level have not been measured directly, their contribution as a crucial enabling peace mechanism is explained through the following parameters (LTO, 2010; LTO, 2012):

- Since mainly the local population executed the projects, the water management projects contributed to raising the level of employment and hence decreasing unemployment in the communities of Tirin Kot, Deh Rawud and Chora.
- Negotiations over water issues contributed to a decline of inter-tribal conflict and violence.
- Decline in development project vandalism and thievery indicate local ownership.
- Increase of government-controlled areas.

A significant contribution regarding the application of water management, was at the start of expanding the ink blots. Since water is an essential resource to survive in Uruzgan, water issues were always discussible with the local actors in every region, "controlled" or "uncontrolled". This opened-up a conversation about the problems and possible solutions to which the military commander might contribute to through reconstruction and development efforts. By listening to their needs, small reconstruction activities were initiated. Delivering on commitments made and providing communities with tangible improvements, for example the construction of an irrigation system or a well, helps to build a relationship of trust between the local population and the stabilisation force. Trust is crucial in cooperation and cooperation is crucial in sustainable water management, as well as in increasing the level of security in counterinsurgency operations. When a trustworthy working relationship was established by doing what you have promised to do, reconstruction activities started in cooperation with the local inhabitants (Post, 2015). This enabled commanders to increase their area of influence through initiating a dialogue about water with the local population in areas that were not under his control. By executing reconstruction activities in these areas outside the area of control, ISAF Forces and Afghan government security forces increased their area of control or the ink blot, step by step.

To increase the security level by socioeconomic development, the Netherlands Armed Forces, the Netherlands ministry of Foreign Affairs, and multiple NGOs executed a substantial amount of water-related reconstruction acts and development activities over a period stretching from 2006 until 2010. Compared with the other development activities, water projects were the most appreciated and desired by the local population. Within four years, a substantial amount of reconstruction and development was executed within the Afghan Development Zones (AFDs) that were located mainly in the district centres. Outside these centres, access to drinking water remained limited and of poor quality when the Dutch stabilisation operation in Uruzgan ended. In 2010 residents of Uruzgan reported that access to drinking- and irrigation water was still their most pressing need (LTO, 2012).

6.7 Evaluation & Conclusions

Compared with the other development activities, the executed water projects were the most appreciated and desired by the local population of Uruzgan province (LTO, 2012). Consequently, it can be concluded that water management was a highly valued development and peace instrument within the Uruzgan stabilisation operation.

In this paragraph, first the three identified water management peaces mechanisms will be concluded section 6.7.1. Based on the multiple lessons learned gained within the Uruzgan mission by the Netherlands Armed Forces and the main characteristics of the Integrated Approach, the IWRM framework and the identified water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices, the application of water management in the Uruzgan mission is evaluated and discussed in section 6.7.2.

6.7.1 Conclusions: Water Management as an enabling Peace Mechanism in Uruzgan

Water can be used as a weapon, but it's also a common interest. In Uruzgan, both were applicable. Due to Uruzgan's arid climate and agriculture-based economy, water was valued as a vital resource by the local population. Water scarcity for irrigation and drinking was regarded as a root-cause of conflict between farmers and tribes. Consequently, water scarcity issues were a significant political, social and economical dissatisfaction among the local population. Accompanied with the lack of better prospects, insufficient water management contributed to the breeding ground of the insurgency. This status made water management an important focal area for the Task Force Uruzgan. Thereby, the application of water management in Uruzgan shows similarities with the Dutch national "polder model", which is based on collaborative consensus building through dialogues with the involved and effected actors. At the start of the mission, the water management infrastructures and governance systems were poorly developed. Thereby, resolving the pressing water problems through reconstruction acts, water management directly contributed to eliminating the breeding ground of the armed insurgency. Furthermore: the water management reconstruction activities; education and training of the local farmers in water management practices; and the organised water shura's with the aim of re-establishing the authority of the Mirab's (local water managers), all increased the level of local ownership. Due to higher crop yields, increasing employment and access to safe drinking water and sanitation, the overall standard of living increased. More significantly, due to the created local ownership the preconditions were shaped to resolve future water scarcity- and allocation issues through dialogue and cooperation by the stakeholders themselves. But above all, all the water management activities provided hope for a better future.

Due to its vital function for human survival in every society, water functions as the enabling mechanism to create trust and cooperation between the local population and the stabilisation force (Post, 2015). Consequently, it can be concluded that water management was a highly valued development instrument "enabling peace mechanism" within the Uruzgan stabilisation operation. Based on Kleijn (2014), Onencan (2014), Ven (2014), Berg (2014), Lucius (2015), Matthijssen (2015), Post (2015), Tak (2015) and Cooten (2015), the following three distinguishing enabling peace mechanism characteristics water management possesses emerged and are formulated based in the case study findings:

- **Water as Enabler.** Ground warfare is characterised by capturing or defending land. In both circumstance, commanders use the landscape in their advantage. Because water is a basic need, water has proven to be a discussable issue in every region in Uruzgan, safe and un-safe. By starting the discussion over water issues, the situational understanding related to water and non-water issues is improved. Due to this situational understanding, water management reconstruction activities can be discussed and executed in cooperation with the local population. Thereby, essential development activities are performed. More importantly, this enabled the commander to increase its area of influence through initiating a dialogue about water with the local population in the areas that were not under his control. By executing reconstruction activities in these areas outside the area of control, ISAF Forces and Afghan government security forces increased their area of control or the ink blot, step by step. Thereby water management contributes to security, prosperity and freedom since the breeding grounds of the insurgency; political, social and economical dissatisfactions are eliminated through water management reconstruction acts including its significant contributions to socioeconomic development.
- **Water for Conflict Resolution.** By means of water diplomacy, water conflicts including its destabilising effects were prevented. Organising water meetings in areas where water issues such as quantity and quality were discussed have proven to be successful in de-escalating conflicts over water and stimulating mutual actor problem understanding. Furthermore, one of the most significant root-causes of conflict; water scarcity and other pressing water problems, can be made discussible.
- **Water for Cooperation.** By facilitating water meetings between the local water users, water issues and possible solution are made discussible and can be resolved through actor cooperation. Thereby, the foundation is created for resilient, local oriented and cooperative water governance systems.

Due to the high importance, good water management and governance is a common interests in every society. Furthermore, when actors are dependent or interrelated due to cooperation mechanisms, violent conflicts are unlikely to occur. Especially when costs and benefits of the water resources are shared equally between up- and downstream users. Since common interests are the starting point for cooperation, water can be used as the enabling cooperation mechanism.

Generally, in every region where water is an issue, water management can be applied as a conflict prevention or enabling peace mechanism through the above explained distinguishing characteristics water management possesses.

6.7.2 Evaluation & Discussion

After four years of implementing the 3D Approach during the Uruzgan mission, a significant number of conclusions are drawn. In Appendix H an overview of important lessons learned gained during the Uruzgan mission are presented. Based on these multiple lessons learned and the main characteristics of the Integrated Approach, the IWRM framework and the identified water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices, the application of water management in the Uruzgan mission is evaluated and discussed in this section.

Application of the Do No Harm principle. In general, the 3D Approach was regarded as effective among the local population and authorities, NATO coalition partner forces and NGOs (LTO, 2012). Thereby, the Do No Harm principle (see paragraph 3.5) was well used at the end of the mission with regards to the executed water management activities. However, before the Dutch deployment in Uruzgan the Karez systems (an underground water distribution system) were destroyed by NATO-ISAF forces because they were also used as hiding places and storage facilities for weapons by the opposing military forces. As a consequence, water supply to villages and farmland was cut off, resulting in the creation of water scarcity and local water conflicts. More importantly, the support for the armed insurgency increased in these regions since the public dissatisfactions increased and trust in the NATO-ISAF forces and Afghan government decreased. Therefore, it is strongly recommended to include the Do No Harm principles at a prominent position in the new policy framework.

Absence of a Water Assessment. Due to the absence of a proper hydrological and water usage assessment in combination with the focus on short-term projects in providing basic water needs in the first 2 years of the mission, approximately 200 water wells were (re)constructed incoherently. Since a coherent long-term-focussed water management development plan was missing and hydrological and water usage knowledge absent, the long-term effects of possible water management activities could not thoroughly be analysed. As a result, by "doing good things" in the short-term (e.g. providing a safe drinking water supply through the construction of water wells), water scarcity a possible root-cause of future conflict was created[19]. This underpins the need for a coherent long-term-oriented framework that includes short- and medium-term activities that are planned and designed based on a sufficient set of hydrological and water usage data. To create water security and prevent conflicts, the short- and medium-term activities need to be planned accordingly and coherently with the long-term development objective based on realistic scenario's and a sufficient set of hydrological and water usage data (paragraph 3.5 and 4.5).

No Long-term Engagement. A continuation of the mission would have resulted in more socioeconomic development and more secure areas under control of the Afghan government (LTO, 2012). Since water management is by definition long-term orientated, the mission duration of 4 years was too short to execute fundamental and sustainable water management development activities. Concluding, a long-term engagement accompanied with a step by step exist strategy of responsibility to the host-nation is crucial.

[19] Overuse of the wells resulting in depletion of the groundwater table will trigger renewed conflict over water resources. This becomes especially problematic where mechanically powered pumps are introduced.

Since, sustainable and long-lasting solutions can only be established by strengthening the local capacity, local ownership, full participation and active involvement of the national and regional host-nation governmental organisations including the local population is essential. Therefore, the creation of local problem ownership right from the start, is recommended (paragraph 3.5). Since long-term goal-oriented actions and projects are difficult to sell in the political arena, it is advised to connect the long-term objectives with the direct and short-term effects in close cooperation with the host-nation (paragraph 3.5 and 5.4).

3D Approach Limitations. Already during the mission, limitations of the 3D Approach emerged (Gabriëlse, 2007; Matthijssen, 2014). First of all, the 3D terminology suggests it has a limited scope. Therefore, NATO-ISAF introduced SGD: Security, Governance & Development. This covers the intent of the mission better, since the concept of security is a broader concept than defence suggests. The same can be concluded regarding governance, since governance is more comprehensive than diplomacy (Matthijssen, 2014). In addition, the safety-, stability-, security-, governance-, and socioeconomic development activities should have been aligned better. This requires coordination, interaction, and cooperation between the civilian, military, and police components. In addition, military forces had limited expertise in reconstruction and stability issues. Thus, civil-military interaction and collaborative decision-making are essential for successful stabilisation operations (Gabriëlse, 2007; Travers et al., 2007; Lijn, 2011; Goor et al., 2012). Furthermore, the implementation of the 3D Approach was not comprehensive enough, caused by (Lijn, 2011; Berg, 2014):

- The 3Ds have different capacities and speeds.
- The 3Ds have different time horizons. Defence is short-term focussed, while Development and Diplomacy are focussed on achieving long-term effects.
- The different ministries involved have different-, inflexible-, and conflicting rules.
- The development and defence approaches have different directions. Defence is top-down, whereas Development is more bottom-up.

Also, the support from the Netherlands parliament for the mission can be characterised as a passing political interest that demanded visible results within a shorter timeframe. In combination with an incoherent planning, the quick impact projects turned out to have a small effect especially with regards to the long-term goals. *S*ome short-term projects had even negative long-term consequences (Graaf, 2010; Lijn, 2011; Uhm, 2012).

A tailored Integrated Approach. To overcome the 3D Approach limitations, it was optimised into the Integrated Approach (see chapter 3). By means of the "Leidraad Geïntegreerde Benadering" the Integrated Approach was embedded as official Netherlands governmental policy in 2014 (Ministerie van Buitenlandse Zaken, 2014; Matthijssen, 2014). However, the Integrated Approach only partially includes specific success factors to overcome the listed 3D Approach limitation. Therefore, it is recommended to apply the Adaptive Solution Path approach elaborated in paragraph 4.4. In addition, to create better results a tailored approach and early synergy between all involved stakeholders through joint analysis, goals setting, strategy development, decision-making, planning, execution and monitoring is advised. A conceptual basis including an open and continuous adaptable framework is therefore desirable. Thereby, its limitations need to be clearly communicated. Furthermore the campaign plan needs to be clearly demarcated regarding actor responsibilities and should included prioritisation and synchronisation of activities between the involved actors (paragraph 4.5).

Cooperation and Coordination. Because the Defence, Foreign Affairs and NGOs employees shared the same goals, the cooperation and coordination during the field deployment between these actors was sufficient (Post, 2015). The Netherlands Government (2011) states it has funded a water management assessment of Uruzgan that was performed by a consortium comprising: Royal Haskoning; Deltares; Delft University of Technology; and the Confederation of Netherlands Industry and Employers VNO-NCW. This assessment was not, however, brought to the attention of PRT rotation 8 (Post, 2015). As a result, the hydrological and water usage situational awareness and understanding was insufficient. Therefore, complementarity, transparency and trust is needed between the involved organisations.

6.8 Design Criteria for Future Application

Based on the previous eventuation and conclusion chapter, this final chapter of the case study: Water Management in Uruzgan, presents the recommended design criteria regarding the applications of water management in future stabilisation operations.

It is strongly advised to integrate the three enabling peace mechanisms characteristics: Water as Enabler; Water for Conflict Resolution; and Water for Cooperation into the new policy framework (see section 6.7.1).

Water Management should be prominently visible in the campaign plan by having its own "Water Management Reconstruction & Development Theme". Thereby the in Uruzgan occurred "lost" of water management as a crucial development theme will be prevented,

Include scenario development to study how water management can serve as a peace mechanism. Understanding the system is crucial. Therefore it is advised to study and develop strategies how water management can serve as a peace mechanism in the mission area. A causal relationship diagram, like the socio-hydrological system of Uruzgan province presented in figure 6.5, was very useful during the case study.

To prevent conflicts and create water security, the short-term activities need to be planned accordingly and coherently with the long-term development objectives. This underpins the need for a coherent long-term-oriented framework that includes short- and medium-term activities that are planned and designed based on realistic scenarios and a sufficient set of hydrological and water usage data.

Hydrological- and water usage data are needed from the start. A proper assessment of the hydrological situation including the current and future water usages, was not performed at the start of the Uruzgan mission. To prevent conflict and create water security such an assessment and analysis is essential. This should include:

- Analysis and assessment of the geology and hydrology at the basin level: topographical and geological geology of the basin (altitudes); soil type and characteristic; meteorological data regarding the area (precipitation, evaporation and transpiration); natural wells; surface water discharges; water levels; river- and other infrastructural dimensions including those of groundwater reserves.
- Water usage per community or per users: water in and out of systems (irrigation drainage systems); their sources (well positions and their level of operations; and maintenance) and water quality.

Include an Impact & Assessment Plan. Thereby, the contributions water management activities have in respect to the security, healthcare and socioeconomic development are made specific. Consequently, scientific solid conclusions can be made, if or if not, water management directly contributes to increasing the overall security and development levels. Furthermore, the activities can be adjusted and optimised during the mission.

Inclusion of the following Success Factors in the new policy framework following from the Evaluation & Dissection section presented in section 6.7.2, is recommended:

- To gain and increase trust of the local population and decrease the support for the armed insurgency, the Do No Harm principles should have a prominent position.
- A long-term engagement accompanied with a step by step exist strategy of responsibility to the host-nation is crucial. Thereby, local problem ownership is regarded as the fundamental exit strategy.
- Since long-term goal-oriented activities are difficult to sell in the political arena, long-term objectives should be connect with the short-term projects in close cooperation with the host-nation by applying the Adaptive Solution Path approach.
- To be effective and efficient from the start, a broad and flexible portfolio which describes possible effective water management activities is needed.
- To create better results, a tailored approach and early synergy between all involved actors through joint analysis, goals setting, strategy development, decision-making, planning, execution and monitoring is advised. Thereby, its limitations need to be clearly communicated. Furthermore the campaign plan need to be clearly demarcated regarding actor responsibilities and should included prioritisation and synchronisation of activities between the involved actors.

7

Design Criteria New Policy Framework

In the Analysis phase the research objective is explored and essential knowledge obtained regarding Stabilisation Operations, the Integrated Approach, the Integrated Water Resources Management (IWRM) framework and which water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices can be applied in stabilisation operations. Based on the design objectives formulated in paragraph 2.2, important recommendations for inclusion in the new policy framework emerged. Furthermore, the case study: Water Management in Uruzgan reflects the application of water management in a recent stabilisation operation conducted by the Netherlands Armed Forces. As a result, crucial recommendations for implementation of water management in future stabilisation operations were formulated.

In this chapter the most significant design criteria for the new policy framework are summarised. First, general design criteria for a policy framework are presented in paragraph 7.1. In paragraph 7.2, the specific design criteria for a comprehensive, coherent, strategic and integrated policy framework following from the Integrated Approach, the Integrated Water Resources Management framework, water diplomacy best practices and water cooperation mechanisms and the case study: Water Management in Uruzgan, are summarised. As a result, sub research question 1 is answered: What are the fundamental design criteria for the comprehensive, coherent, strategic and integrated new policy framework?

7.1 General Design Criteria

In this paragraph, important general design criteria for a new policy framework are presented.

Holistic. Ideally, a policy framework is designed holistic and integrates planning, decision-making and implementation of the system interests (Johnson et al., 2013). Thereby, the activities in each phase are presented in the desired level of detail.

Flexible. Since requirements will change over time, a policy framework should be designed based on fundamental "pillars" with a flexible "skin" (Johnson et al., 2013).

Structure. The complex system or process need to be explained by a clear structure to ensure a good performance (Daalen et al., 2014). Providing clarifying examples can also be used to ensure a good understanding (Post, 2015). Guiding questions and distinguishing phases used in military planning, decision-making and execution policies can be very effective in creating the desired clear structure.

Stakeholder involvement. Since multiple stakeholders will be influence by the new policy framework, they are ideally involved in the design process. As a result, implementation will be smoother since it is a broad supported. Also, innovative solutions can be created since more knowledge with different viewpoints are mobilised and can be included (Bruijn et al., 2008; Johnson et al., 2013).

KPIs. To measure the performance of the new policy framework and its activities, the formulation of key performance indicators is essential (Daalen et al., 2014).

Ethical obligations. Ethical considerations and responsibilities are an integral part of the design process. A policy framework need to be designed within the boundaries of the law (Daalen et al., 2014).

Ideal Design. An ideal design is scientifically sound, neutral and accepted by all actors through unifying different perspectives in the new policy framework (Daalen et al., 2014).

Robust. Experience shows that during the development and implementation processes some of the assumptions underlying the design can be incorrect. Therefore, a good design involves recognising constraints and producing solutions that are robust and failure proof. More specifically, errors should be admitted resulting in corrections for a better policy framework (Johnson et al., 2013).

7.2 Specific Design Criteria

In this paragraph the specific design criteria for a comprehensive, coherent, strategic and integrated policy framework following from the Integrated Approach, the Integrated Water Resources Management framework, water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices and the case study: Water Management in Uruzgan, are summarised.

Water management as a Peace Mechanism. It is recommended to include the conflict prevention and conflict resolution potential water management possesses in the new policy framework through the pillars: Water as Enabler; Water for Conflict Resolution; and Water for Cooperation (chapter 6).

Include Scenario Development: How can water management serve as a peace mechanism? Understanding the system is crucial. Therefore it is advised to study and develop a strategy how water management can serve as a peace mechanism in the mission area. By means of causal relationship diagrams, it is advised to visualise, validate and optimise the scenarios (chapter 6).

Prominently Visible. Water management should be prominently visible and well included in the campaign plan by having its own "Water Management & Governance" development theme (chapter 6).

Use the Integrated Approach as the Fundamental Pillar. Multiple issues are the root-cause of conflicts. Therefore, a joint execution of defence, development and diplomacy activities is required to transform the (post-)conflict area toward a self-reliant region. The Integrated Approach is based on these pillars. Furthermore, the Integrated Approach is the civilian-military planning, decision-making and execution methodology of the Netherlands government for military and/or humanitarian deployments. This approach is generically applicable in politically unstable, fragile or falling states including their safe and non-un-safe regions. Furthermore, it is developed to prevent contradictions and create coherence through cooperation or coordination with and between the involved actors. Due to these characteristic and because this methodology is official policy and well known within the ministries of Defence and Foreign Affairs including multiple Dutch NGOs, it is selected to form one of the pillars of the new policy framework. To increase the recognisability, it is recommended to apply the same six implementation phases (chapter 3). Furthermore, it is advised to make the activities of each phase specific for the application of water management practices in stabilisation operations.

Making the Integrated Approach Water Specific. For applying water management as a peace mechanism, the activities of each Integrated Approach phase needs to be made water specific, through:

- By including the Integrated Water Resources Management (IWRM) implementation principles: Social Equity; Environmental Sustainability; Economic Efficiency and Subsidiarity, sustainable water security can be created (chapter 4).
- The new policy framework needs to be applicable in every geographical environment. Therefore, each function water possesses in a society need to be represented in the new policy framework. For example by the themes: Water for Food; Water for Nature; Water for People; Water for Economy; Water for Industry and Water Governance (chapter 4).
- Local water problems including the hydrological and geographical condition differ per location. As a result, each water management problem-solving instruments need to be tailored (chapter 4). To be effective and efficient from the start, it is recommended to develop a broad and flexible portfolio which described possible effective short-, medium- and long-term water management technical projects and management policies, plus methods how to assess their impacts and effectiveness (chapter 6).

- For the planning and implementation of water management activities in the mission area, it is strongly recommended to apply the new developed *New IWRM Implementation Cycle* (chapter 4).
- The water management activities should be planned and designed based on realistic development scenarios of the host-nation and a sufficient set of hydrological, geographical and water usage data (chapter 4, 5 & 6).
- For the creation of robust and sustainable water management systems and water governance structures, it is advised to include the following water management design principles in the new policy framework: Building With Nature; Retain-Store-Discharge; Reduce-Reuse-Recycle; the PRIMO-chain (chapter 4).

Integrate the following Success Factors:

- Regarding water conflicts: exclusion, favouring or belittle actors are the conflict root-causes. Consequently, never exclude actors from water usage. Equal actor treatment is thus an essential success factor. Furthermore, in the problem-solving process actors should not claim complete control over the water resource situated on their own territory (chapter 5).
- In (post-)conflict areas water issues and their possible solutions should not be made into a multi-issue games connected with political and social sensitive issues. Keep it with water! (chapter 5).
- To prevent water conflict, water problems should never be shifted in space to neighbours downstream and in time to the future. Also, fair and wise agreements for all stakeholders are needed (chapter 5).
- To gain and increase trust of the local population and decrease the support for the armed insurgency, the Do No Harm principles should have a prominent position (chapter 6).
- A long-term engagement accompanied with a step by step exist strategy of responsibility to the host-nation is crucial. Thereby, local problem ownership is regarded as the fundamental exit strategy Consequently, the projects need to be performed in cooperation with the host-nation authorities and its population (chapter 3 & 6).
- To ensure long-term cooperation between the multiple water users through water governance, all public and private up- and downstream actors who effect and are effected need to be included in the governance system (chapter 5).
- Cost- and benefit-sharing has proven to be an effective de-escalating and cooperation governance tool. Thereby, a common goal is the starting point for cooperation, like: joint data collection and information exchange. Cooperation is maintained when stakeholders interests are interlinked with each other. By means of the PRIMO-chain, the level of actor independency can be increased. Because every water issue is different, each situation requires a different cooperation mechanism (chapter 5).
- To create better results, a tailored approach and early synergy between all involved stakeholders through joint analysis, goals setting, strategy development, decision-making, planning, execution and monitoring is advised. Thereby, its limitations need to be clearly communicated. Furthermore the campaign plan needs to be clearly demarcated regarding actor responsibilities and should include prioritisation and synchronisation of activities between the involved actors (chapter 3 & 6).
- Include the DIME (Diplomacy, Information, Military, Economic) and Ink Blot strategies (chapter 3 & 6).

Prevent water conflicts and create water security. Long-term goal are difficult to sell in the political arena. Therefore, it is advised to connect them with the direct and short-term effects (chapter 5). Furthermore, to prevent conflicts and create coherence, the short- and medium-term activities need to be planned accordingly with the long-term development objectives. Therefore, it is recommended to integrate the "Adaptive Solution Path" approach in the new policy framework (chapter 3).

Include an Impact & Assessment Plan. Thereby, the contributions water management activities have in respect to the security, healthcare and socioeconomic development are made specific. Consequently, scientific solid conclusions can be made, if or if not, water management directly contributes to increasing the overall security and development levels. Furthermore, the activities can be adjusted and optimised (chapter 6).

PART III

New Policy Framework

'Using opportunities in the perception domain instead of thinking in threats in the kinetic domain.'

Pieter van Ingen, 2015

8

Integrated Water Management Development Framework for Stabilisation Operations

The new developed *Integrated Water Management Development Framework for Stabilisation Operations* is displayed in figure 8.1 and will be thoroughly elaborated in this chapter. In Appendix A, a more detailed versions is presented. Thereby, this chapter provides the answer to sub research question 2:

> **How can the Integrated Approach be extended to a comprehensive, coherent and integrated policy framework for the application of water management and water diplomacy as a peace mechanism in stabilisation operations.**

In combination with chapter 9, Fundamental Implementation Principles and chapter 10, Civilian-Military Interaction the main research question is answered:

> **In what manner is water management applicable as a peace mechanism in the complex and dynamic environment of stabilisation operations?**

In section 11.1.11 the strengths, weaknesses, opportunities and threats of the new policy framework following from the validation interviews are summarised and presented.

Within the new policy framework the short-term quick impact reconstruction projects, medium-term transition activities and long-term water management development objectives are interlinked, planned and executed based on the "Adaptive Solution Path" approach (see paragraph 9.8). Based on this integrated strategy all activities are coherent and flexible planned with all participating actors accordingly with the development scenarios of the host-nation. By integrating the "Water management as a Peace Mechanism" and "Prevent water conflicts and create water security" specific design criteria (see paragraph 7.2), water management is made applicable as a conflict prevention and enabling peace mechanism in stabilisation operations, though:

- Water as Enabler.
- Water for Conflict Resolution.
- Water for Cooperation.

In the General Design Criteria (see paragraph 7.1), it is recommended to design the new policy framework: with a clear structure; holistic by integrating the planning, decision-making and implementation stages; and flexible but robust with fundamental "pillars" and a flexible "skin" since requirements will change over time. To create the recommended holistic and robust policy framework with a clear structure, the six implementation phases of the Integrated Approach are serving as the fundamental backbone of the new policy framework. The six implementation phases of the Integrated Approach are included through the "Activities" pillar. In paragraph 7.2, Specific Design Criteria, the motivation is elaborated. Another specific design criteria recommends to make the Integrated Approach water specific for application in stabilisation operations. Therefore, the "Strategy" pillar is developed. To integrate the fundamental Success Factors (see paragraph 7.2), ten fundamental guiding implementation principles are displayed at the top of the new policy framework presented in Appendix A. Their details are discussed in chapter 9. For each of the six phases, the ten fundamental guiding implementation principles are specified in the "Implementation Principles" pillar. To provide a clear structure, the "Phases" pillar introduces each Activity, Strategy, and Implementation Principle phase with a distinguishing question or comment. Next, the characteristics of each of the four pillars are elaborated in more detail.

Phases. For a structured implementation, the Phases pillar introduces each Activity, Strategy, and Implementation Principle phase with a distinguishing question or comment.

Activities. The six implementation phases of the Integrated Approach (IA) included in the Activities pillar, serves as the backbone of the new policy framework. Subdivided in the following phases, the IA activities which need to be executed are made specific for the application of water management in stabilisation operations:

1. Orientation.
2. Analysis & Assessment.
3. Integrated Action Possibilities.
4. Planning & Cooperation.
5. Implementation & Execution.
6. Evaluation.

The coherency and interrelation between the six implementation phases and three pillars is strong. As displayed in the figure 8.1, the new policy framework is divided into two parts. Phase 1 until 3 is distinguished by orientation, assessing, plan formulation and decision-making at the higher political and military levels. Mission planning, deployment, execution and evaluation characterises phases 4, 5 and 6.

Strategies. Specific and crucial supporting strategies corresponding with the activities formulated in the Activities pillar, are presented in the Strategies pillar. As a result the Integrated Approach is made specific for the application of water management in stabilisation operations. It starts with the strategic objectives of the Netherlands government in phase 1, followed by phase 2 which includes: gaining situational awareness and understanding, determining the conflict stage and possible resolution techniques, mapping of possible strategic scenarios within the DIME domain (Diplomatic, Information, Military, Economic) and by which water management peace mechanisms water security can be achieved. As a result scenarios are development how water management can serve as a development and peace instrument. In phase 3, the campaign plan goals and development themes are formulated including the "Water Management & Governance" development theme. Thereby, the application of water management is well included in the campaign plan. The new policy framework is designed to be applicable in every geographical environment. Therefore, each function water possesses in a society is represented by seven Water Management Development Themes which are connected through Water Governance. As a result all possible applicable water management activities to prevent water conflicts and create water security can be mapped in phase 4. In phase 5, the developed Water Management Portfolio assists in the execution of the short-, medium-, and long-term water management activities during the stabilisation operation. In Appendix D this portfolio is presented. Based on key performance indicators the Desired Endstate; a self-reliant region or country, is evaluated in phase 6. When needed or regarded appropriate, a follow-up plan can be formulated. Since the participating actors already reached the consensus on whether water is or can become an issue, the implementation of the new policy framework starts again at implementation phase 2. This loop is displayed in figure 8.1 and Appendix A.

Implementation Principles. This pillar provides the detailed description how each phase of the Activities and Strategies pillars should be executed. The implementation principles are based on the Success Factors and Stakeholder Involvement design criteria elaborated in chapter 7. Thereby, this pillar guides the user how the new policy framework should be implemented, including which actor types to involve and the appropriate level of interaction. Also, it describes the factors to mitigate, exploit and influence, the needed impact and assessment plan plus important water management design principles. Since multiple success factors are applicable for multiple phase, duplications can be recognised. In Appendix A, this pillar is presented in its totality. In order to increase the readability, only crucial implementation principles are included in the Activities pillar in the summarised version of the new policy framework presented in figure 8.1.

In the paragraphs 8.1 until 8.6, the details of its six implementation phases and each corresponding pillar will be explained in more detail. The new policy framework is based on the in Part II discussed strategies, tactics and design criteria. To increase the readability of this chapter, only new consulted sources will be referenced.

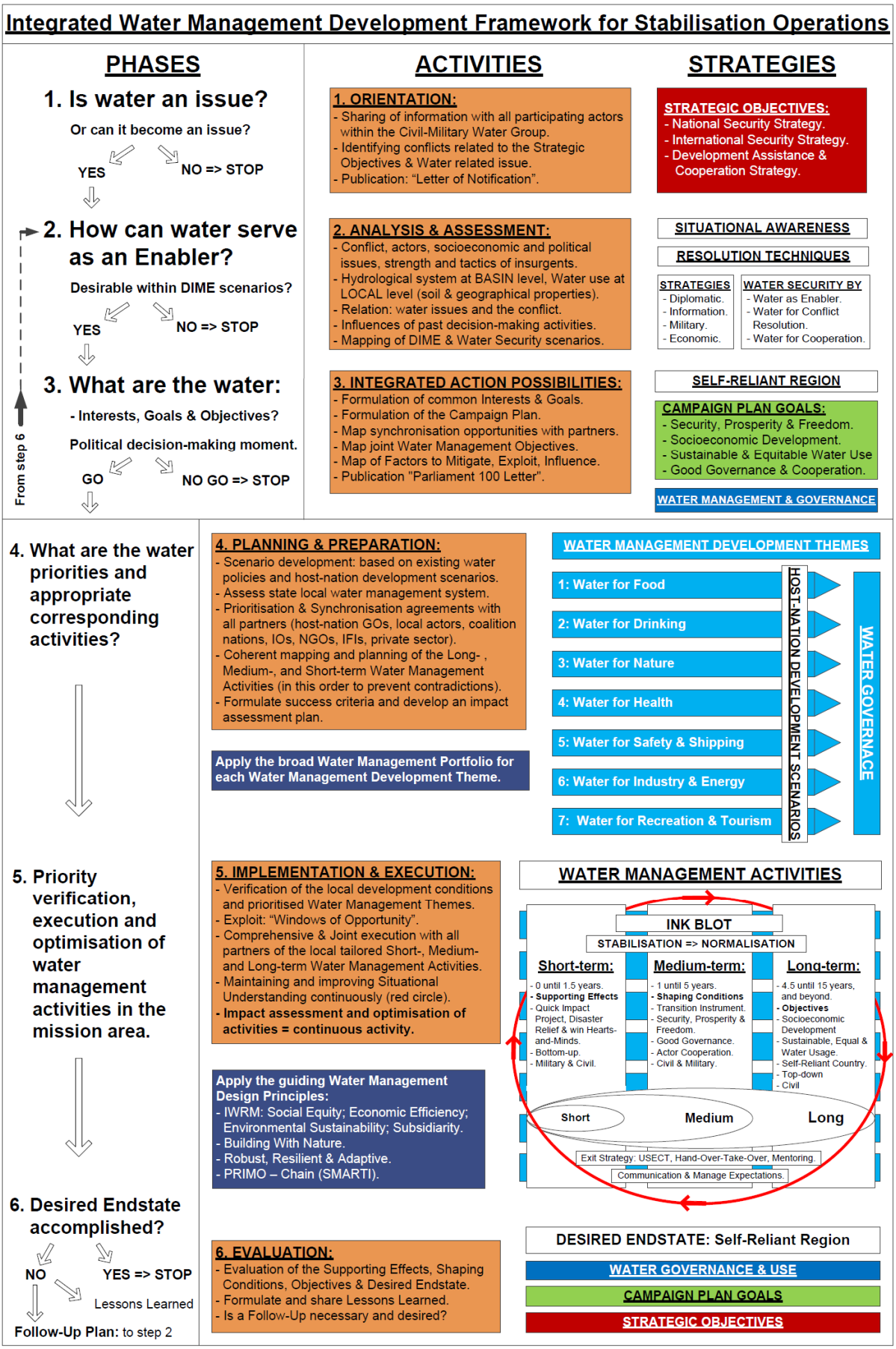

Figure 8.1: The Integrated Water Management Development Framework for Stabilisation Operations (summarised).

8.1 Phase 1: Orientation

Is water an issue? Or can it become an issue?

When this significant question is answered at the end of the Orientation phase by a **Yes**, the implementation of the framework enters Phase 2: Analysis & Assessment. If water is not an issue in the expected area of operations nor it can become an issue in the future, the application of the framework stops. Before Phase 2 starts, the "Letter of Notification" is published. By this letter, the Netherlands government informs the Dutch Parliament it has received a request for a military or a humanitarian involvement and is investigating how the Netherlands can make an appropriate contribution. Phase 1 is displayed in figure 8.2 and Appendix A.

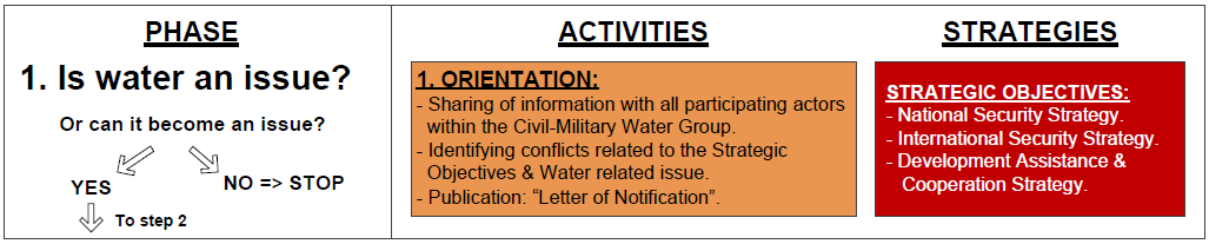

Figure 8.2: Phase 1 - Orientation (summarised).

The available resources and the political Strategic Objectives of the Netherlands are the main factors which determine a possible Dutch involvement. Therefore, the three Strategic Objectives related with a possible application of water management in the military and/or humanitarian involvement are presented in the Strategies pillar. In section 8.1.2, this relation and the details of the Strategic Objectives will be elaborated in more detail. First, the activities of the Orientation phase will be discussed in section 8.1.1. Finally, this paragraph is concluded in section 8.1.3 with the specific implementation principles for the Orientation phase. In this section, sub research question 2C is answered: Who is the most appropriate actor for leading in the implementation of the new policy framework?

8.1.1 Activities Orientation Phase

Early identification of instability or conflicts which are related to the political Strategic Objectives, is the main activity in the Orientation phase. In order to answer the question if water is a current existing issue or if it can become an issue in the future, a qualitative or quantitative water assessment of the expected mission area is made within the Civil-Military Water Group. In table 8.1, more details are provided.

Phase 1 - ORIENTATION: Water Issues & Strategic Objectives.
Input: Diplomatic office network, Intelligence services, Field observations.
Performed in: Prevention or Intervention stages (see figure 8.4 and table 8.3).
Activities & Outputs: - Sharing of information by means of regular early warning meeting with the Civil-Military Water Group. - Identifying conflicts related to the political Strategic Objectives. - Identifying conflicts related to water issues (scarcity, quality, flooding, governance system, upstream - downstream water access, usage, effects and actor interactions, etc.). - Publication: Letter of Notification (see chapter 3).
Involved actors: - Netherlands ministry Foreign Affairs (which include Foreign Trade & Development Assistance): Diplomatic office networks, Security, development and water specialist, the specific regional department. - Netherlands ministry of Defence: Intelligence branch / DOPS, Army Corps of Engineers including their intelligence branch, the Water management functional specialists from 1CMI-Co and those from the Political, Military, Economic, Social, Infrastructure and Information networks, Joint Defence Meteorological Institute. - NATO, UN, EU.

Table 8.1: Activities Orientation Phase.

8.1.2 Strategic Objectives

The Orientation phase is performed based on the Strategic Objectives. As displayed in the figures 8.1 and 8.2, the following three strategies reflect the national political interests and objective of the Netherlands government, including those of international organisations and coalitions such as the UN, NATO and the EU:

- **National Security Strategy** is focussed on maintaining and enhancing peace, stability, freedom, independence, equal treatment and prosperity within the Netherlands. Protection against any form of potential threat who jeopardise the disruption of society due to human acts or disasters is within the responsibility of the government. The National Security Strategy is characterised by: Territorial; Economic; Ecological; Physical: Social; and Political safety and stability (Ministerie van Veiligheid en Justitie, 2007).
- **International Security Strategy** is founded on the pillars of Security, Prosperity & Freedom with the focus on: more European responsibility; fragile states near the European borders; prevention; disarmament and arms control; the Integrated Approach and collaboration with the private sector. With regards to international security, the Netherlands government has the following three strategic interests (Ministerie van Buitenlandse Zaken, 2013):
    - Defense of its own territory and those of the NATO alliance.
    - A well functioning international law and order system.
    - Economic, trade, energy and resources security.
- **Development Assistance & Cooperation Strategy** is focussed on international solidarity, contributing to the UN Sustainable Development Goals and development aid with the focus on increasing the levels of independence of the partner countries. Therefore, the Netherlands government has the following vanguards (Ministerie van Buitenlandse Zaken, 2011):
    - Human Security by Safety and Law & Order.
    - Water & Sanitation Access.
    - Food Security.
    - Sexual and Reproductive Healthcare and Rights.

'A Safe World, is a Safe Holland' (Ministerie van Buitenlandse Zaken, 2013). Based on this quote from the previous Dutch minister of Foreign Affairs, Frans Timmermans, the coherence between the National- and International Security Strategies is clearly described. Thereby, prevention is the main strategy. Since development countries, fragile and failing states are a part of the problem, they are also a part of the solution. Therefore the Development Assistance & Cooperation Strategy is aimed to develop the socioeconomic sector of the failing state. Due to the unsafe environment, the military asset is an important instrument for the implementation of the National and International Security strategies including the Development Assistance & Cooperation strategy.

When water is or can become a security or development issue, application of the new policy framework contributes in establishing security, prosperity and freedom by making the region or country self-reliant. Consequently, application of the new policy framework contributes in achieving the Strategic Objectives of the Netherlands government. Thereby, water management is applied as a conflict prevention or strategic enabling peace mechanism through its following characteristics: Water as Enabler; Water for Conflict Resolution; and Water for Cooperation. In see section 8.2.4, this subject is further elaborated .

8.1.3 Implementation Principles Phase 1

Early identification of instability or conflicts is a continues process within the Orientation phase. Therefore, a qualitative evaluation of possible water conflicts or instability scenarios twice a year between the partners of the Civil-Military Water Groups is crucial. In this phase, the core of the Civil-Military Water Group consists of the security, development and water specialist of the Netherlands ministries of Defence and Foreign Affairs including the water management and non-water specialists from the Army Corps of Engineers and 1 Civil Military Interaction Command (1CMI-Co). When needed, specific NATO, UN and NGO experts can be consulted.

When reasonable developed, a host-nation governmental organisation with sufficient water management knowledge ideally implements the new policy framework. However, in stabilisation operations this will be unlikely. Therefore, it is recommended that the Netherlands ministry of Foreign Affairs leads the implementation in close cooperation with the ministry of Defence, because:

- Engagement with the host-nation should be established by means of the political channels. Foreign Affairs has these contacts due to their global embassy network.
- Foreign Affairs can better focus on the long-term socioeconomic development objectives compared to the ministry of Defence.
- Because Foreign Affairs maintains contact with the host-nation continuously, they are better able to guard the long-term needed continuity.

Depending on the area, its situation and the set vanguards, the actual planning and execution can be military, civilian or civil-military. Due to the high level complexity of the expected mission area and the multiple involved and affected actors, a joint orientation with the Civil-Military Water Group is essential. Furthermore, when water is or can become an issue, the political Strategic Objectives serves as input for phase 2; Analysis & Assessment. In paragraph 8.2, this phase will be explained in more detail.

8.2 Phase 2: Analysis & Assessment

How can water serve as an Enabler?

With answering this question the Analysis & Assessment phase will be concluded. Before, the following question needs to be answered by the Civil-Military Water Group:

Is water involvement desirable within the DIME scenarios?

When answered by a **Yes**, water involvement is regarded appropriate, wanted or necessary in making the expected mission area self-reliant. Consequently, the implementation will continue by means of Phase 3: Integrated Action Possibilities. When the enabling water security mechanisms: Water as Enabler, Water for Conflict Resolution and Water for Cooperation are not desirable or regarded unusable within the mapped DIME[20] scenarios and selected resolution techniques, the application of the new policy framework stops. As displayed in figure 8.3 and Appendix A, the mentioned strategies are used to perform the activities of Phase 2. In the sections 8.2.2 until 8.2.5 these strategies are explained. First, the activities of the Analysis & Assessment phase will be discussed in section 8.2.1. Finally, this paragraph is concluded in section 8.2.6 with the specific implementation principles for Phase 2.

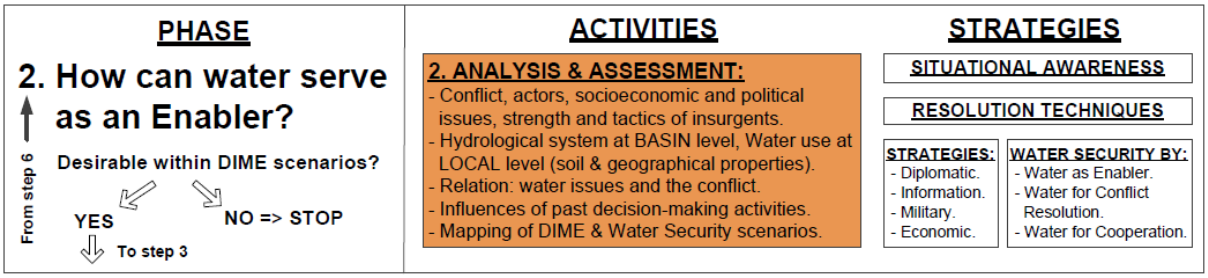

Figure 8.3: Phase 2 - Analysis & Assessment (summarised).

In Phase 6: Evaluation, the accomplishment of the Desired Endstate is evaluated. When a follow-up plan is regarded necessary and desired, the participating actors already reached the consensus on whether water is or can become an issue. Consequently, a new Orientation phase is unnecessary. Therefore the implementation of the new policy frameworks starts again at Phase 2. This loop is displayed in figure 8.1 and Appendix A.

[20] DIME: Diplomacy (Political), Information (Social), Military (Security), Economic (chapters 3 and 6 or Appendix G).

8.2.1 Activities Analysis & Assessment Phase

Gaining Situational Awareness & Understanding regarding the conflict causes, involved and effected actors, the hydrological system and local water usage are the first activities of Phase 2. Accordingly to the political Strategic Objectives, the water related issues and it relationship with the conflict will be investigated. This will result in a vision how water security can be created and maintained. Since a broad range of region specific information and expertise is required to perform the Analysis & Assessments phase, cooperation or coordination with all relevant actors is desired. In table 8.2, more details are provided.

Phase 2 - ANALYSIS & ASSESSMENT: Situational Awareness Analysis & DIME Strategies.
Input: Results Phase 1: Orientation. **Performed in:** Prevention or Intervention stages (see figure 8.4 and table 8.3). **Activities & Outputs:** Gaining Situational Awareness & Understanding of (baseline measurement): - Conflict: causes, stage and complexity in the expected area of operations. - Actors: which? including their motives, issues, interests, problems, concerns, power position, relationships and interrelations. - A multidisciplinary country-specific analysis regarding the social, economic and political environment and dissatisfactions including its key drivers for the war or armed insurgency. - Strength and tactics of the Opposing Military Force or Insurgent Groups. - Soil and geographical characteristics. - The hydrological system at basin level and water usage at the local level. - Water issues and their relationship with the conflict. - Political and non-military risks and consequences of possible actions. - Mapping of applicable strategic DIME scenarios (Diplomacy, Information, Military, Economic). - Options portfolio how water management can serve as a development and peace instrument including how water security can be created and maintained. **Involved actors (recommended):** - Netherlands ministry Foreign Affairs (which include Foreign Trade & Development Assistance): Diplomatic office networks, Security, development and water specialist, Specific regional department. - Netherlands ministry of Defence: Intelligence branch / DOPS, Army Corps of Engineers including their intelligence branch, Water management functional specialists from 1CMI-Co and those from the Political, Military, Economic, Social, Infrastructure and Information networks, Joint Defence Meteorological Institute. - Other Netherlands ministries like; Security & Justice, Infrastructure & Environment, Economic Affairs, General Affairs. - Coalition- and partners-nations. - International Organisations: NATO, UN, EU, World Banks and other IFIs. - Willing Dutch and international NGOs, knowledge institutes (water, development, socioeconomic, safety and host-nation experts) and private sector partners. - Local partners: host-nation government (ambassador), local GOs, NGOs, knowledge institutes, private sector partners and inhabitants. - Media and Journalists.

Table 8.2: Activities Analysis & Assessment Phase.

As discussed, a constant and good working relationship with the participating and not-participating actors throughout the entire implementation process is crucial. In section 8.2.6 the levels of interaction with the relevant actor types applicable for Phase 2 will be elaborated. First, in the sections 8.2.2, 8.2.3, 8.2.4 and 8.2.5 the following subjects from the Strategies pillar will be discussed: Situational Awareness Analysis & Understanding; Conflict Stage & Resolution Techniques; Water Security & Enabling Peace Mechanisms; and Strategic DIME Strategies.

8.2.2 Situational Awareness Analysis & Understanding

Getting and maintaining Situational Awareness followed by improving the Situational Understanding is a significant aspects within stabilisation operations. For the application of water management in a stabilisation operation, the following baseline assessments are crucial:

- Conflict: root-causes, symptoms, stage and complexity.
- Actors: which? including their motives, issues, interests, problems, concerns, power position, relationships and interdependencies.
- A multidisciplinary country-specific analysis regarding the social, economic and political environment and dissatisfactions including its drivers.
- Strength and tactics of the Opposing Military Force or Insurgent Groups.
- Soil and geographical characteristics.
- The hydrological system at basin level and water usage at the local level.
- Water issues and their relationship with the conflict.
- Political and non-military risks and consequences of a possible mission.
- Influences of past decision-making including their agreements and activities.

The situational awareness analysis and understanding assessments, are used to determine the conflict stage and possible effective resolution techniques. Based on this assessment, the strategic DIME scenarios are mapped. These scenarios are aimed to make the expected mission area self-reliant again. Thereby, the methods to create water security are included. Both serve as the main input for Phase 3: Integrated Action Possibilities. The essential information needed to perform the situational awareness analysis is gathered through multiple methods. In section 8.2.6, these methods are elaborated.

8.2.3 Conflict Stage & Resolution Techniques

In order to determine which strategic response is appropriate to apply, first the conflict stage need to be known. This follows from the performed Situational Awareness Analysis. When the conflict stage is defined, the applicable conflict resolution techniques can be selected. The different conflict stages within stabilisation operations are visualised in figure 8.4. Table 8.3 explains the relationships between the conflict stages, resolution technique and possible conflict resolution instruments.

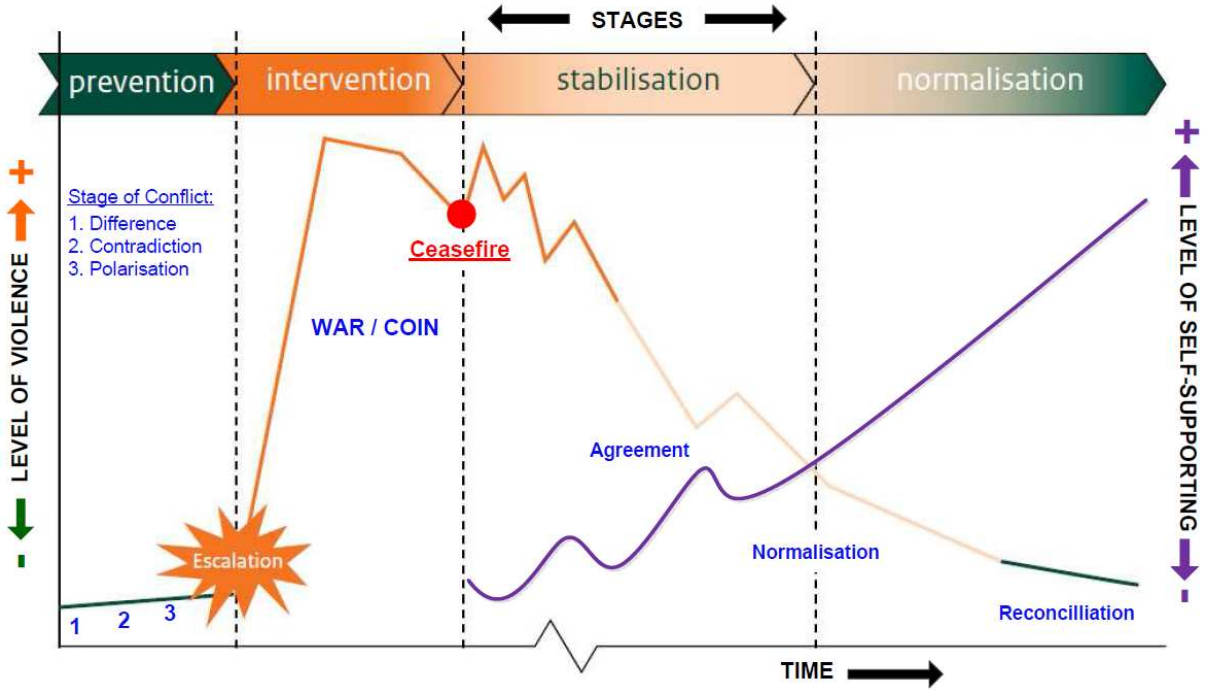

Figure 8.4: Conflict Stages compared with the areas level Self-Supporting (Based on: Ministry of Defence, 2013; Ramsbotham, et all, 2011; adapted and supplemented by the author).

Conflict Stages:	Conflict Resolution Techniques:	Conflict Resolution Instruments:
Difference	Cultural Peacebuilding (L-WMA)[21]	- Problem solving. - Support for indigenous dispute resolution. - Fact-finding missions. - Peace commissions. - Culture of toleration and respect.
Contradiction	Structural Peacebuilding (L & M - WMA)	- Develop assistance. - Civil society development. - Governance & Regulation. - Institutional capacity building. - Human right training.
Polarisation	Elite Peacemaking (M-WMA)[22]	- Mediation. - Negotiation. - Diplomacy. - Preventive peacekeeping.
Violence / Escalation	Peacekeeping (S-WMA)[23]	- Crisis management.
War[24] / COIN[25]	War Limitation	- Peace enforcement.
Ceasefire	Peacekeeping (S-WMA)	- Preventive peacekeeping. - Confidence building.
Agreement	Elite Peacemaking (M-WMA)	- Problem solving. - Power sharing. - Decentralisation of power.
Normalisation	Structural Peacebuilding (L & M - WMA)	- Collective cooperation. - Socioeconomic development.
Reconciliation	Cultural Peacebuilding (L-WMA)	- Problem solving. - Justice commissions. - Peace awareness creation and education. - Cultural issue exchange.

Table 8.3: Relationships between the Conflict Stages, Conflict Resolution Techniques and Conflict Resolution Instruments (Ministry of Defence, 2013; Ramsbotham, et all, 2011; SWP & ZIF, 2013; adapted and supplemented by the author).

As displayed in figure 8.4 and explained in table 8.3, short-, medium- and long-term water management activities can be applied as a preventive conflict resolution instrument before the escalation. However, the new policy framework is designed for implementation in the stabilisation and normalisation stages. Hereby, the water management activities can be applied as a de-escalating conflict resolution, development and peace instrument after the military intervention. In paragraph 8.5 this is explained in more detail. Within the stage of War or COIN, the contrary is applicable. Due to its strategic value and importance, water infrastructures are likely to be military targets or used as a weapon within the intervention stage.

Over time, the level of violence in- or decreases. The aim of the short-, medium- and long-term water management activities is to contribute to a decrease in the level of violence and an increase in the level of security and self-supporting. Because these factors change over time, similarly the kind of conflict resolution techniques will change. A constant Situational Awareness Analysis during the operations is thus essential. The selected conflict resolution technique serves as input for the formulation of possible strategic DIME scenarios and water security mechanisms. In the next section, these strategies will be discussed.

8.2.4 Water Security & Enabling Peace Mechanisms

Due to its vital functions at all societal levels, good water management is a crucial ingredient in every reconstruction step and sustainable socioeconomic development strategies in the aftermath of war. Consequently, achieving and maintaining water security is a must.

[21] L-WMA = Long-term orientated Water Management Activities (see paragraph 8.5).
[22] M-WMA = Medium-term orientated Water Management Activities (see paragraph 8.5).
[23] S-WMA = Short-term orientated Water Management Activities (see paragraph 8.5).
[24] War = Armed violent conflict between two or more states (Joint Chiefs of Staff, 2013).
[25] COIN = Counterinsurgency is an armed violent conflict within one state (Joint Chiefs of Staff, 2013).

Following from the case study: Water Management in Uruzgan (chapter 6), the following three water security and enabling peace mechanisms can be distinguished:

1. **Water as Enabler.** Ground warfare is characterised by capturing or defending land. Because water is a basic need, water has proven to be a discussable issue in every region within a (post-)conflict area, safe and un-safe. By starting the discussion over water issues, the situational understanding related to water and non-water issues is improved. As a result, water management reconstruction activities can be made debatable and executed in cooperation with the local population. Thereby, essential development activities are performed. More importantly, this enables the commander to increase its area of influence through initiating a dialogue about water with the local population in the areas that are not under his control. By executing reconstruction activities in the areas outside its ink blots of control, the stabilisation force can increase its area under influence and control, step by step.
2. **Water for Conflict Resolution.** By means of water diplomacy, water conflicts including its destabilising effects can be prevented. Also, other pressing water problems can be made discussible. To prevent water conflicts, water problems should never be shifted in space to neighbours downstream and in time to the future. Consequently, every actor needs to solve their own problems in their area of responsibility. By means of water allocation and prioritisation, water security can be achieved for the different functions and users. Appendix C provides an example how water can be prioritised based on the level of importance water possesses within the Netherlands society.
3. **Water for Cooperation.** By facilitating water meetings between the local water users, water issues and possible solution are made discussible. Thereby, the foundation is created for resilient, locally oriented and cooperative water governance systems.

For achieving and maintaining water security, these three water security and enabling peace mechanisms should formulated coherently with and in the strategic DIME scenarios. As a result, creating water security is included as an Campaign Plan Goal in the Campaign Plan.

8.2.5 Strategic DIME Strategies

The main objective within stabilisation operations is to eliminate the political, economical and social breeding ground of the armed insurgency movement. Usual multiple root-causes are underlying the escalation. Since the problems are not military, neither the lasting solutions for peace and stability are. In order to create a sustainable solution all the instruments within the DIME-domain need to be applied:

- **Diplomatic instrument** is used to establish and maintain relations and influence other actors. Diplomatic pressure, with or without the threat to use other means of power can be applied.
- **Information as an instrument:** states can also use information as an instrument to develop their own strategies or to influence public opinions and perceptions held by other actors. Furthermore, the information instrument can be applied to influence an opponent's information and target his information systems, while at the same time protecting the state's own information systems.
- **Military instrument:** can be used to "persuade" other actors to take a particular course of action or to refrain from one by the threat or use of credible force. Thereby the military instrument distinguishes itself significantly from the other instruments through the threat of or actually using its military capabilities. Since no crisis or conflict can be resolved by military means alone and because the military instrument is focussed on short-term interventions, the military instrument is particularly effective in combination with the other DIME instruments. This asks for a combined coherent approach in which the use of military force contributes in creating the required preconditions for the implementation of the diplomatic, economic and information instruments. Accordingly, the security issue needs to be considered in its entirety in which the military instrument provides support and creates the required preconditions for lasting solutions such as a safe environment.
- **Economic instrument:** provides a range of long-term orientated options to improve or disrupt a state's wellbeing, as well to support or combat other actor by means of economic development aid on the one hand and measures such as embargoes or boycotts on the other.

Due to the characteristics and functions of water, all the strategies within the DIME-domain can be applied to create water security, like:

- **Water Diplomacy:** establishing agreements over the use of shared waters between riparian states.
- **Water Information:** sharing information with regards to precipitation within a basin system which serves as input for inter-basin flood warning systems.
- **Water Warfare (Military):** contamination or destruction of freshwater supplies.
- **Water Economics:** transportation by shipping and agreements of water usage for industrial and energy purposes between up- and downstream countries.

Based on input from the strategic objectives, the situational awareness analysis, the conflict stage and the selected conflict resolution instruments, the strategic DIME scenarios are formulated. In combination with the water security mechanisms (see section 8.2.4), the strategic DIME scenarios serve as direct input for the formulation of the Campaign Plan Goals and the Campaign Plan Development Themes of Phase 3. The strategic DIME scenarios are also linked with the Planning & Preparation and Implementation & Execution phases. In the paragraph 8.3, 8.4 and 8.5 these phases will be discussed in more detail.

8.2.6 Implementation Principles Phase 2

In order to gain a full situational awareness regarding the water and non-water issues, a field research in the expected mission area is essential (Post, 2015). This intelligence operation is characterised as small and performed by specialised units within the intelligence branch like Army Commandos, Brigade Reconnaissance Squadrons or Marines Special Forces. For data gathering regarding the soil and geographical characteristics, the hydrological system, local water usage and its relation with the conflict, the Netherlands Army Corps of Engineers intelligence branch in combination with the water management functional specialists from 1CMI-Co can execute the needed field research (Cooten, 2015). Thereby, not only the conflict and safety situation is mapped, also water opportunities and its possible enabling peace mechanisms are identified. Before the fact-finding mission, initial hydrological and geographical scans can be made through remote sensing by the Defence Meteorological Institute and other partners.

Perhaps a field research is not even necessary. As discussed in paragraph 3.5, Integrated Approach Success Factors, early creation of Unity of Effort is crucial. Because a shared analysis creates a common problem understanding, cooperation or coordination with the host-nation authorities, coalition- and partner-nations, IOs, NGOs, IFIs, knowledge institutes and private sector enterprises should starts within Analysis & Assessment phase. Consequently, this can result in full participation in the succeeding phases since *'knowing each other, before meeting each other in the field' (Berg, 2014)* is an important principle for the joint performance of the Analysis & Assessment (Phase 2), Integrated Action Possibilities (Phase 3), Planning & Preparation (Phase 4), Implementation & Execution (Phase 5) and Evaluation (Phase 6) phases of the new policy framework. Thus, Phase 2 functions as the base for future participation through cooperation or coordination.

Based on the participation willingness of actors, the needed information can be gathered. The actors acting within the Civil-Military Water Group, thus differ per phase. By means of the following actor types, the in section 8.2.2 listed water and non-water related data can perhaps be gathered without the performance of a field research:

- **Netherlands ministry Foreign Affairs** (which includes Foreign Trade & Development Assistance): Diplomatic office networks, Security, development and water specialist, Specific regional department.
- **Netherlands ministry of Defence:** Intelligence branch, Army Corps of Engineers including their intelligence branch, 1CMI-Co functional specialists from the Political, Military, Economic, Social, Infrastructure and Information networks, the Defence Meteorological Institute.
- **Other Netherlands ministries** like; Security & Justice, Infrastructure & Environment, Economic Affairs and General Affairs.

- **Host-Nation.** Through the host-nation government represented by the ambassador situated in the Netherlands, information can be gathered. This has a top priority since not only information is gained, also a working relationship and local actor responsibility is established from the beginning which is essential throughout all succeeding phases.
- **Local, international or Dutch NGOs, host-nation, partner-nations, knowledge institutes and private sector enterprises.** Especially when these organisations are or have been active in the expected mission area, their expertise and knowledge regarding the local culture, causes of conflicts and the reasons why states are fragile can be essential for making the right Analysis & Assessment. This actor type also includes water, development, socioeconomic, safety and host-nation experts.
- **IOs like; NATO, EU, UN, the World Bank and other IFIs.** Due to their substantial size and level of importance on the international playing field, they probably are or have been active in the expected mission area. As a result, they possess crucial information regarding the water management system, water development issues and needs including an overviews of local actor relationships. If not, they have the internal or external capacities to gather the needed data.
- **Media and Journalists.** Like the IOs, NGOs, knowledge institutes and the private sector enterprises, it is very likely that media and journalist are or have been active in the expected mission area. Thereby, they can have interesting expertise and knowledge appropriate and applicable for the performance of the situational awareness analysis.

Through this collective and joint sharing of information, blind spots will be better identified. Consequently, more robust and tailored DIME scenarios which are applicable to the local situation can be developed. As a result, better common goals will be formulated in Phase 3. Ultimately, this will contribute in better agreements regarding the coordination of activities, labour and funding in the Phases 4 and 5.

In this phase, the Civil-Military Water Group consist of a wide range of actor types and specialties. More actors, also means more opinions and a higher level of complexity within the dialogue team. To prevent an overflow of non-essential information and to stay effective and efficient, it is strongly recommended to include only those actors who have valuable or new information. Since this is location and situation dependent, a more specific actor analysis before each mission need to be made.

8.3 Phase 3: Integrated Action Possibilities

When at the end in Phase 2 the question: Is water involvement desirable within the strategic DIME scenarios? is answered by **Yes**, the following question is having a central position throughout Phase 3:

What are the water interests, goals and objectives?

Guided by the common interests and goals of the participating actors, the formulation of the Campaign Plan Goals and Development Themes will be the end result of Phase 3. In addition, the joint water management objectives are mapped including the synchronisation opportunities based on the strengths, weaknesses and resources of the participating actors. Also, the factors to mitigate, exploit and influence are identified. Based on this package plan, the Parliament 100 Letter is published. By means of this letter the Netherlands government describes and informs the Dutch parliament it has taken the decision to participate in Operation X, at the request of Organisation Y, for the reasons A, B C and D, taking into account Risks I, II and III, with the deployment of the resources and partners Alpha, Bravo, Charlie according the Command Structure P (see paragraph 3.3). Thereby, the Parliament 100 Letter highlights the political decision-making moment if, and so, how the Netherlands will contribute in the deployment. Consequently, **the political decision-making moment with regard to active involvement within the stabilisation operations takes place at the end of Phase 3.** When the political decision results in a **GO**, the implementation of the new policy framework continues by means Phase 4: Planning & Preparation. In the situation of a **NO GO**, the application of the new policy framework stops because there is no political mandate.

As displayed in figure 8.5 and Appendix A, the campaign plan goals and development themes are formulated in Phase 3. To guarantee inclusion of the three enabling water peace mechanisms in all the activities of Phase 3, the "Water Management & Governance" development theme and related Campaign Plan Goals are prominently displayed in the Strategies pillar. In section 8.3.2 the campaign plan goals and themes will be explained in more detail. First, the activities of the Integrated Action Possibilities phase will be discussed in section 8.3.1. In section 8.3.3 the specific implementation principles for Phase 3 are discussed. Finally, this paragraph is concluded in section 8.3.4 with factors to mitigate, exploit and influence which are specifically formulated for the application of water management in stabilisation operations.

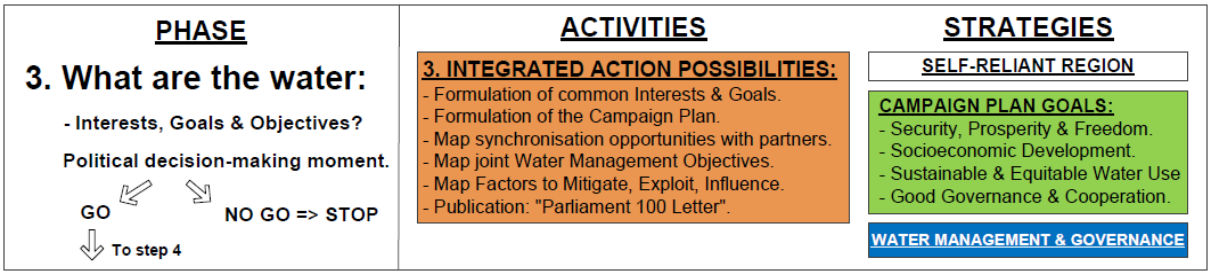

Figure 8.5: Phase 3 - Integrated Action Possibilities (summarised).

8.3.1 Integrated Action Possibilities

In cooperation with all participating governmental organisations and other partners, the question is answered what can be done to promote the recovery of security, prosperity and freedom in the expected fragile, falling or (post-)conflict mission area. Based on the mapped DIME scenarios and the three enabling water peace mechanism principles, the Campaign Plan Goals and Campaign Plan Development Themes are formulated in Phase 3. These are based on the common interests and goals of the participating actors. Also, the joint water management objectives are mapped, connections for synchronisation between the participating actors strengths, weaknesses and resources are formulated and the factors to mitigate, exploit and influence are identified. Based on this package plan, the Parliament 100 letter is formulated and published. An overview of all activities which are performed in coordination with all relevant and in cooperation with all participating actors within the Civil-Military Water Group are displayed in table 8.4.

Phase 3 - INTEGRATED ACTION POSSIBILITIES: Water Governance & Use Campaign Plan Theme.
Input: Results Phase 2 - Analysis & Assessments. **Execution:** Prevention or Intervention stages (see figure 8.4 and table 8.3). **Activities & Outputs:** - Formulation of common Interests. - Formulation of common Goals. - Formulation of Campaign Plan Goals and Campaign Plan Development Themes including the "Water Management & Governance" development theme. - Map synchronisation opportunities between the actors strengths, weaknesses, resources, current and planned projects including water development aid and cooperation programs. - Map joint Water Management Objectives. - Map Factors to Mitigate, Exploit, Influence. - Publication: Parliament 100 Letter (see chapter 3). **Involved actors (recommended):** - Same as in Phase 2 (see table 8.2).

Table 8.4: Activities Integrated Action Possibilities Phase.

8.3.2 Campaign Plan Goals & Themes

The precondition and system boundaries of the Campaign Plan Goals are determined by the political strategic objectives of the host-nation, supporting nations and involved international organisations. In stabilisation operations the Campaign Plan Goals are formulated with the purpose to accomplish the Desired Endstate: a self-reliant region. Regarding the new policy framework, appropriate Campaign Plan Goals are:

- Security, Prosperity & Freedom.
- Socioeconomic Development.
- Sustainable, Equitable & Reasonable Water Utilisation.
- Good Governance.
- Actor Cooperation.

Based on the joint formulated Campaign Plan Goals, appropriate and applicable Campaign Plan Development Themes are formulated by the participating actors of the Civil-Military Water Group. Thereby, the Campaign Plan Development Themes serve as the tailored guide for the practical implementation of the Campaign Plan Goals. Additionally, each development theme is translated into specific, practical and implementable short-term quick impact projects, medium-term activities and long-term objectives. Figure 8.6 provides an example of suitable Campaign Plan Development Themes regarding stabilisation operations.

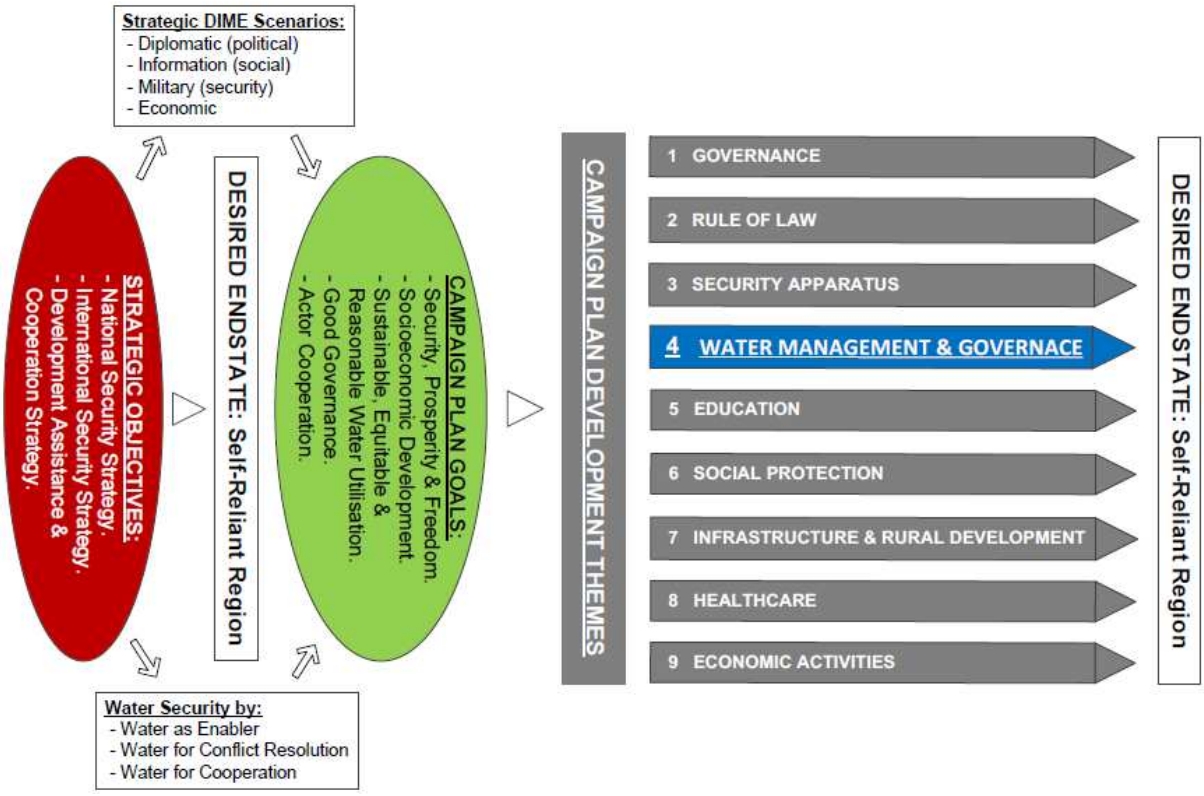

Figure 8.6: Example of suitable Campaign Plan Development Themes regarding stabilisation operations.

As recommended in the case study: Water Management in Uruzgan (see chapter 6), water management should be prominent visible in the campaign plan through its own development theme. Especially, when one or multiple of the three water security and enabling peace mechanism characteristics are applicable within the stabilisation operation. Thereby, water management will not be "lost" as an important development theme during the mission. Moreover, the short-, medium and long-term activities, plans and project can be planned coherently and synchronised within the Civil-Military Water Group.

Consequently, complementary resources, actors strengths, expertise and capacities will be used in an optimum way, resulting in efficient and effective stabilisation operations. Above all, the execution of incoherent and conflicting short-term quick impact projects will be prevented.

For successful application of water management within the stabilisation operation an own Campaign Plan Development Theme is a must. Through development theme 4: "Water Management & Governance" (displayed dark blue in the figures 8.1 and 8.5), water management is included in the set of suitable Campaign Plan Development Themes. Based on the multiple functions water possesses in each society, this development theme is general applicable in every geographical environment through its eight subdivided elements. In paragraph 8.4, the eight Water Management Development Themes will be discussed and explained. Each of the nine presented Campaign Plan Development Themes will influence or will be influenced by another development theme. The interrelations between and with the "Water Governance & Use" development theme are explained by means of a relationship diagram presented in figure 8.7.

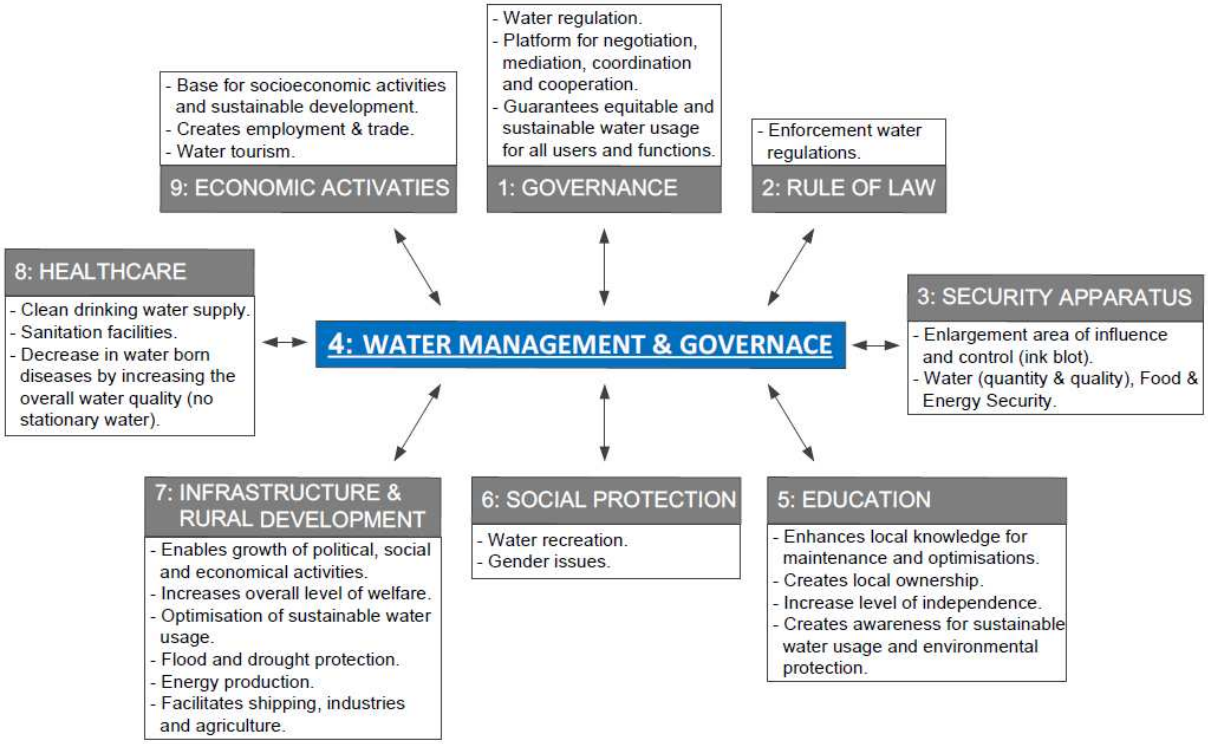

Figure 8.7: Relationships: Water Management & Governance and other suitable Campaign Plan Development Theme.

8.3.3 Implementation Principles Phase 3

'Nothing should be planned or performed in isolation. To ensure continuity and coherence it is key to synchronise the activities and agree upon the Hand-Over-Take-Over state before starting the implementation of the short-term activities' (Cooten, 2015).

Within the Integrated Approach phases 1 until 3 and before the publication of the Parliament 100 Letter, national and international partners are consulted. This is an important process because the why's, how's, whom's and what's of the mission are also explained in the Parliament 100 Letter. Early involvement and consultation of possible partner-nations, the host-nation governmental authorities, international organisations, humanitarian and development organisation, (local) knowledge institutes, (local) private enterprises and non-governmental actors is thus not a barrier. This is even an essential requirement in order to gain support for the mission in the public and political arenas. Based on agreements of confidentiality also essential knowledge can be shared, resulting in synchronisation of possible activities and better mission options before the actual deployment.

The position and support of the host-nation is very important. The ambassador of the host-nation and / or other relevant host-nation experts are ideally involved from phase 2 until 6. This will stimulate local ownership, the main exit strategy, from the early beginning. Furthermore, the common goals and implementation plan also become their idea, making the execution and the handover-takeover more smoothly.

In Phase 3, first the common interests of all relevant actors are mapped. When specific actor interests differ to much compared to the Strategic Objectives of the Netherlands government, coordination will be the best and only workable option since the goals and means will be to different to foster cooperation. As a result at least duplication of activities and spill-over effects can be prevented. Actors with the same interests, will formulate common goals. Through the formulation of common goals, the foundation for a trustful working relationships is created. When the common goals are formulated and agreed upon by the actors, each actor and its organisation will decide, if it will, or will not, cooperate through participation within the Civil-Military Water Group.

When decided upon to participate, the common goals are the foundation for the formulation of the Campaign Plans Goals and Campaign Plan Development Themes. These are comprehensive and jointly formulated goals by those actors who share the same commitment to participate in implementation and execution of the short-, medium- and long-term Water Management Activities. In order to be successful, organisational parochialism need to be avoided and sustainable cooperation between the defence, diplomacy, development and water actors established. A collaborative mindset plus clear demarcated conditions and positions each participating actors fulfils, are important implementation principles.

Connecting the short-term quick impact projects with the long-term sustainable development objectives, will be essential for successfully achieving the Campaign Plan Goals. In this manner the new policy framework serves as the transition management instrument. Since the short-, medium- and long-term activities need to be connected, the new policy framework also stimulates cooperation between the participating actors through investigating synchronisation opportunities regarding:

- Current and planned projects like; (inter)national basin programs including national and local water project of the host-nation GOs, coalition nations, IFIs, NGOs and private sector enterprises.
- Water Development Aid & Cooperation programs and policies of the Netherlands, EU and UN.

In Phase 3, Unity of Effort among the participating actors is created through the formulation of the Campaign Plan Goals and Development Themes. Through investigating the above mentioned synchronisation opportunities, also the limitations of one actor and compensating strengths of another participating actor are identified. Through this collective and joint sharing of information, blind spots will be better identified. Consequently, this results in a complete set of identified factors to mitigate, exploit and influence (see section 8.3.4). Also, the water management objectives will be mapped complementarity. Consequently, the activities will result in a complete and comprehensive Parliament 100 Letter.

Thus in Phase 3 the preconditions are created for coherent, robust and tailored Water Management Activities. Also knowledge is gained which actor is better equipped and suited to do which activity at what moment in time. Thereby, contradictions and conflicts between activities are prevented. Also, the coordination of activities including labour and funding can be better executed in Phase 5. The final result will be a highly efficient stabilisation operation with: fewer organisational shortfalls; less personnel; maximum utilisation of the available resources; less financial assets; minimum duplications; faster help and fewer casualties.

8.3.4 Factors to Mitigate, Exploit & Influence

The negative factors caused by the disablers should be mitigated. Single or multiple strategies within the DIME domain can be applied to mitigate the native effects. The following disabling **Factors to Mitigate** are identified:

- **Climate Change & Natural Disasters.** Although these effects cannot be eliminated they can be mitigated through robust, flexible and risk reducing structures, management plans and governance policies. In section 8.5.4, appropriate mitigating Water Management Design Principle are elaborated.
- **Unsustainable water use.** Unsustainable water usage can result in water quantity (scarcity or flooding events) and water quality issues between up- and downstream users. When these acute problems or social and economical dissatisfactions are not resolved equitable and sustainable, the needs and demands issues regarding the available freshwater supply can result in (armed) skirmishes and escalate into violent conflicts. By means of negotiation and mediation, multi-stakeholder problem awareness, cooperation, regulation, education and good governance the chance of escalation can significantly be reduced. Furthermore, the Reduce-Reuse-Recycle and Retain-Store-Discharge principles can significantly reduce unsustainable water usage. In section 8.5.4, these design principles are explained in more detail.
- **Pollution (local).** Pollution from domestic, agricultural and industrial activities in rural and urban areas including salinization will decrease the amount of available freshwater. Furthermore, efficient and effective land usage will be negatively influenced. Thereby pollution contributes to the potential root-cause of conflict: water scarcity. By the Reduce-Reuse-Recycle principle, pollution can significantly be reduced and prevented (see section 8.5.4 for more details). Also, by awareness creation, cooperation, regulation, education, good governance and law enforcement pollution can be prevented.
- **Opposing Military Force(OMF) activities.** Besides the OMF also insurgent groups, warlords and armed criminal organisations will have a direct destabilising effect in the mission area. Thereby, these actors can (partially) eliminate the achieved security environment including the interrelated development and governance activities. By means of peacemaking, peacekeeping and peace enforcement operations these disablers are mitigated on the short-term. Post-conflict peace-building, sustainable socioeconomic development, good governance and regulation including the execution of the rule of law are crucial needs for lasting long-term solutions.
- **Local Conflicts.** Like the OMF activities, local skirmishes and violent conflicts have a direct destabilising effect on the local security environment. Consequently, these activities disrupt the achieved development, governance and cooperation activities. Regarding the mitigation measures for local conflicts, the same approach is applicable as described for mitigating the OMF activities.

The positive factors caused by the enablers should be exploited to enhance the progress of the Water Management Activities. The following enabling **Factors to Exploit** are identified:

- **Local Knowledge.** Apply the knowledge of the local inhabitants, host-nation GOs, local NGOs, knowledge institutes and of private sector enterprises. By means of incorporating the local effected and influenced actors within the Planning & Preparation and Implementation & Execution phases, the development and governance activities can be performed in a faster way, with a higher rate of efficiency and a better chance for success. Consequently, the needed local ownership is created through capacity building. By the Factor to Influence: Local Ownership, this is further elaborated.
- **Projects and plans of the local inhabitants, host-nation GOs, NGOs and (inter)national Basin Programs.** Complementarity between the participating actors of the Civil-Military Water Group is a crucial success factor. To be effective, the existing and planned water management related short-, medium- and long-term activities of the local, regional, national and international civilian and military partners need to synchronised and prioritised before they are planned and prepared in Phase 4. Thereby, complementary resources, actors strengths, expertise and capacities will be used in an optimum way. As a result, more can be accomplished faster and with less resources.

- **Water Development & Aid Programs from the UN, EU, the government of the Netherlands including coalition- and partner-nations.** The UN, EU and the Netherlands including coalition- and partner-nations have long-term orientated water management and sanitation development and assistance programs. In order to strengthen the medium- and long-term Water Management Activities, it is recommended to discover the synchronisation points between these programs. By exchanging ideas how to merge these resources, mismanaging of international aid funds are prevented. In addition, interference can be reduced and overall performance enhanced. Because their policies and actions have significant effects on conflict or crisis situations, these actors ideally cooperate by partnerships to operate successfully in structural conflict prevention.

Those factors which can have a negative influence should be influenced to such an extent that they have a positive influence on the progress of the Water Management Activities. Therefore, the following **Factors to Influence** are identified:

- **Actor Cooperation.** Since the problems are locally, lasting solution only can be created by the local population and the host-nation governmental organisations themselves. Therefore lasting cooperation mechanism among the local actors need to be facilitated by the stabilisation force. A common interest is the starting point for cooperation. The second is trust. Achieving mutual trust is a prerequisite for effective cooperation. Trust demand transparency and open communication. Water is live, since it is a basic human and ecological need. Thereby water is always a discussible issues for every actor, making it a mean to create trust and cooperation. Sharing of hydrological data can be a first step in building trust. When trust is established, cooperation can be enhances through joint designing and planning with regards to the utilisation of the common resources pool. In this process, sharing of the cost and benefits has proven to be a sustainable cooperation mechanism.
- **Regulation & Governance.** *'Without water there is no live and without live there is no governance'* (Post, 2015). Governance and regulation are thus essential needs for equitable, sustainable and efficient water management. As explained in table 8.8, regulation and governance functions as the transition management instrument to transform the short-term orientated quick impact projects toward the long-term sustainable development activities. This also includes scale enlargement of the technical projects and management activities. Furthermore, regulation and governance should be focussed to ensure a constant cooperative working relationship between the involved actors in order to guarantee periodic maintenance and a constant optimisation of the technical system and management practices. By application of a SMARTI PRIMO-chain, sustainable water management is established. In section 8.5.4 these design principles are further elaborated.
- **The Media (local, host-nation, supporting nations, international partners).** *'The media is key in how the mission is framed, explained and thus supported'* (Lucius, 2015). In order to increase the awareness regarding local water issues, their possible solution and to win the "hearts-and-minds" of the local population, the media in all its forms can be applied (radio, newspapers, television, internet, etc.). By means of the media the purpose and objectives of the stabilisation operation can be explained to the inhabitants of the host-nation. Also, an independent media operated by the local population and/or host-nation GO will increase the level of free speech, personal independence and trust in the host-nation governmental organisations. Furthermore, the importance and aim of the mission needs to be explained at the supporting nations and between the international partners who contribute to the stabilisation operation. By explaining the importance of the mission in the media, politicians create and maintain a mandate among there population and within their parliament for the execution and continuation of the mission.

- **Hearts-and-Minds.** Through winning the hearts-and-minds, the stabilisation force attempts to obtain the needed acceptance and support for the mission among the local population, local officials, tribal leaders, informal rulers, power brokers and other interested actors within the host-nation. In order create a stable and peaceful living environment where socioeconomic development will increase the living standards, the local population needs to trust the post-conflict host-nation government. By decreasing the level of dissatisfactions among the local population, the breeding ground of the armed insurgency movement is decreased. Simultaneously, the power position of, and trust in, the host-nation is increased due to the security, prosperity and socioeconomic development improvements. Thereby, the needs for an opposing military force or armed insurgent groups are made obsolete and the level of independence of the local population is increased. Since water is a basic need and an essential resource for socioeconomic development, the Water Management Activities fulfil an crucial role within the process of winning the hearts-and-minds among the majority of the local population.
- **Education & Awareness.** Awareness through education with regards to water usage is crucial to decrease the demand for water and prevent pollution. By means of this proactive measure, the change of a water conflict will be reduced because water scarcity is minimised.
- **Local Ownership.** Local capacity building and the creation of local ownership through entrepreneurship from the very beginning of the mission are prerequisite for creating a self-reliant nation. These are also the main ingredients regarding the exit strategies, because only the local population and governmental organisations can ensure the needed transition process from stabilisation towards normalisation which includes the responsibility of creating sustainable security and socioeconomic development. Hence, from the beginning, one of the initial objectives need to be the creation of local ownership and the transfer of responsibilities towards the local population and host-nation governmental organisations. This demands an early involvement of local actors. Without it, no project or activity will result in a sustainable end result. Therefore it is recommended to perform the projects and activities always in cooperation with the local population and host-nation authorities. Ideally, investments, labour, equipment, materials, and time are shared. By applying this working method, it is confirmed that the project has value for the local population. Thereby, successful usage and maintenance over the long-term is guaranteed.
- **Key Leadership (Formal & Informal).** Formal and informal local and regional actors who obtain a substantial power position and share the same attitude regarding the desired end-state, can boost the process and increase the efficiency of the reconstruction acts and development activities. Therefore, a working relationship should be created and maintained with these actors from the start of the mission. In addition, it is crucial to stay aligned with these stakeholders. Since success is a mutual interest, it is important to involve the local population in the development process. Furthermore, for a good handover-takeover, expertise and knowledge needs to be shared. By consulting these actors and including their ideas, it also becomes their solution. By this approach support among the local population for the implementation is created and local problem ownership enhanced. Since local habits, methods and knowledge is included and information regarding the local projects are shared constantly, the preconditions for a good handover-takeover are created. Moreover, key leaders obtain crucial knowledge regarding the local issues and possible solutions. Sharing these at an early stage will enhance the quality and efficiency of the stabilisation operation.

8.4 Phase 4: Planning & Preparation

Phase 3, Integrated Action Possibilities, is concluded by the publication of the Parliament 100 letter. Thereby, the Parliament 100 Letter highlights the decision-making moment of the Netherlands government if, and so, how the Netherlands will contribute in the deployment. When the political decision results in a **GO**, the implementation of the new policy framework continues by means Phase 4: Planning and Preparation. During the performance of Phase 4, the following question is having a central position:

What are the water priorities and appropriate corresponding activities?

As displayed in figure 8.8 and Appendix A, the deployment is planned and prepared in Phase 4. In the Strategies pillar, each function water possesses in a society is represented by seven Water Management Development Themes which are connected through Water Governance. For each theme, a broad Water Management Portfolio is developed. Through representing all water functions including the broad portfolio of possible technical water projects and water governance activities, the new policy framework is applicable in every geographical environment. Furthermore, the Strategies pillar is a crucial and guiding tool to perform the activities of Phase 4. As discussed in the Activities pillar of Phase 4, the participating actors of the Civil-Military Working Group agree on the synchronised water management objectives. Also, the current state of development or underdevelopment regarding the local water management systems are mapped and prioritised per Water Management Development Theme. By applying the Water Management Portfolio, a set of appropriate Water Management Activities can be mapped and planned in a coherent manner accordingly to the host-nation development scenarios with the aim to prevent water conflicts and create water security.

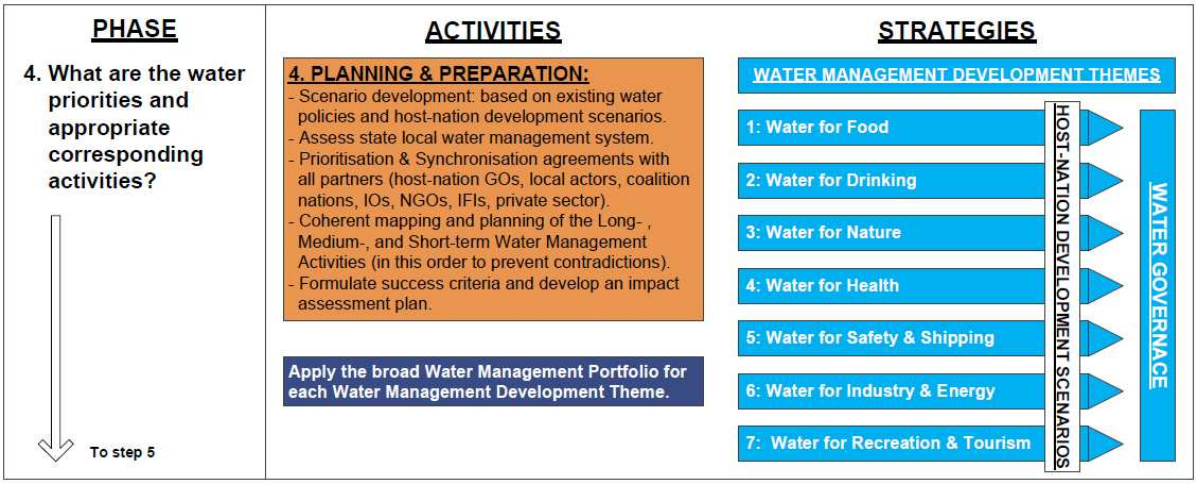

Figure 8.8: Phase 4 - Planning & Preparation (summarised).

In section 8.4.2 the Water Management Development Themes and the developed Water Management Portfolio are elaborated in more detail. First, the activities of the Planning & Preparation phase will be discussed in section 8.4.1. Finally, this paragraph is concluded in section 8.4.3 with discussing the specific implementation principles of Phase 4.

8.4.1 Planning & Preparation

Setting the baseline, preparing for the operation, alignment of the implementation planning and selection of the execution options characterises the Planning & Preparation phase. In table 8.5 an overview is provided describing all the activities which are jointly executed by the Civil-Military Water Group within Phase 4. Based on the Campaign Plan Goals, Campaign Plan Development Themes and the development scenarios of the host-nation, a set of appropriate Water Management Activities are mapped in a coherent manner. Subdivided based on all the functions water possesses within each society, the Water Management Portfolio provides the Civil-Military Water Group with a broad portfolio of possible technical projects, management activities and policies. In section 8.4.2, the portfolio and the Water Management Development Themes will be discussed.

Phase 4 - PLANNING & PREPARATIONS: Water Management Development Themes.
Input: Results Phase 3 - Integrated Action Possibilities.
Performed in: Prevention or Intervention stages (see figure8.4 and table 8.3).
Activities & Outputs: - Setting baseline and preparing for the operation. - Scenario development. These are based on existing policies or development scenarios of the host-nation. - Making synchronisation agreements with all participating actors within the Civil-Military Water Group. - Assess current state of development or underdevelopment regarding the local water management systems per Water Management Development Theme. - Prioritisation of the Water Management Development Themes. These are based on the current development state and future needs of the region located within the mission area. - Coherent mapping and planning of the Water Management Activities.
Involved actors (recommended): - Same as in Phase 2 (see table 8.2).

Table 8.5: Activities Planning & Preparation Phase.

8.4.2 Water Management Development Themes

For successful implementation of water management in stabilisation operations, an own development theme within the campaign plan is a must. Through the Campaign Plan Development Theme: "Water Management & Governance", the creation of water security through water management is included (displayed dark blue in the figures 8.1 and 8.5). Furthermore, achieving the campaign plan goal: "Sustainable, Equitable & Reasonable Water Utilisation" is put into practice. Based on the multiple functions water possesses within each society, the Water Management & Governance development theme is structured and made specific through the following seven subdivided Water Management Development Themes:

1. Water for Food.
2. Water for Drinking.
3. Water for Nature.
4. Water for Healthcare.
5. Water for Safety & Shipping.
6. Water for Industry & Energy.
7. Water for Recreation & Tourism.

To increase the overall benefits of the seven Water Management Development Themes, they are connected by the Water Governance development theme. Both are displayed blue in the figures 8.1 and 8.8. To ensure the applicability of the new policy framework in every geographical environment, these themes are broad formulated. Because water usage and problems including the hydrological and geographical condition differ per location, each water management problem-solving instrument needs to be tailored to the local situation.

The displayed order does not indicate the level of importance. Based on the Situational Understanding Assessment within the mission area, the Water Management Development Themes are ordered and prioritised based on their actual needs. While one theme will be underdeveloped and thus need start with a short-term activities, another theme is more developed meaning that it can start with a medium-term activity or long-term objective. In Appendix D the broad, detailed and flexible Water Management Portfolio is presented which lists and describes all possible Water Management Activities for each Water Management Development Theme. As a result, sub research question 2D is answered: What short-, medium- and long-term water management activities regarding technical projects, management approaches and governance policies can be applied?

As the stabilisation operations prevails over time, the water needs and its relation with the short-, medium- and long-term activities need to be assessed and updated. Therefore a continues Situational Understanding Analysis is a must. In paragraph 8.5, the implementation and execution of the water management activities will be discussed. First, how the activities of Phase 4 should be performed will be elaborated in section 8.4.3.

8.4.3 Implementation Principles Phase 4

A flexible plan which integrates the short-term activities and long-term stability and socioeconomic development objectives coherently is crucial. Also, early involvement of the host-nation is an important precondition. In order to prevent conflicts and contradiction between the short-, medium- and long-term water management activities, first the hydrological system at basin level and water usage and demands on the local level need to be well understood. This analysis results in the baseline. After, the Water Management Development Themes are ordered and prioritised by the Civil-Military Water Group based on the actual local needs and accordingly to the host-nation development scenarios. Based on this outcome, first the long-term water management objectives are formulated as a desired situation followed by the medium-term shaping conditions. Finally, the short-term supporting effects and quick impact projects can be formulated as specific projects including their activities and desired end-states. Because first the long-term development objectives are determined, the medium- and short-term reconstruction acts and development activities can be planned and synchronised accordingly. Consequently, the interrelations between the activities is strengthened, coherency created, duplications prevented and contradictions plus conflicts are minimised. Thereby, water management positively contributes in making the region self-reliant again.

To prevent conflict between up- and downstream users in the short-, medium- and long-term time horizons, all water extractions including possible relocation and the related infrastructural projects need to be assessed. When these projects cause a substantial risk, mitigation measures and policy instruments need to be developed for the prioritisation of water usage to guarantee water security. In section 8.2.4 the method how water security can be achieved is elaborated in more detail. Robust, resilient and sustainable designs will significantly contribute in achieving water security. Therefore, application of the in section 8.5.4 formulated Water Management Design Principles is strongly advised. In addition, the in section 8.3.4 elaborated Factors to Mitigate, Exploit and Influence need to be integrated as well.

When the generic planning and locally tailored approach regarding the execution of the Water Management Activities are prioritised and formulated, the participating actors of the Civil-Military Water Group will make demarcated synchronisation agreements regarding specific actor responsibilities, labour, funding and other limited resources to create the needed complementarity, since:

- Early synergy will result in effective and efficient engagements because tasks and activities can be allocated optimal accordingly to the specific organisational strengths and engagement horizons.
- Ensures the long-term needed continuity and active engagement, since actor specific exit-strategies including the handover-takeover moment can be agreed upon, planned and focussed on.

Both will significantly increase the chance of accomplishing the long-term development objectives, Campaign Plan Goals and ultimately the Desired Endstate.

Within the current Dutch political climate, a large scale military deployment will be short- (1 year or shorter) or medium-term (1 until 5 years). Long-term missions (5 until 15 years and beyond) including the full package of civilian and military resources, are rare exceptions. In addition, the engagement horizons differs between the involved organisations: ministry of Defence and Foreign Affairs, NGOs, IOs, IFIs, the host-nation governmental organisations and private enterprises. Therefore participation with those organisations who have a long-term engagement and relationship with the Desired Endstate, is crucial for successfully achieving Sustainable, Equitable & Reasonable Water Utilisation. To guarantee that the short-term and medium-term projects performed by the military and civilian actors jointly contribute in achieving the long-term objectives, synchronisation agreements before the start of the mission are crucial. Within these agreements it should be specified what each participating actor will do, to what degree and in what sequence. Consequently, the activities, their objectives, the distribution of tasks, resources, responsibilities, accountability and the joint ownership over the long-term related goals, should be clearly demarcated. Table 8.6 presents a implementation canvas which can serves as guiding framework in making specific and demarcating synchronisation agreements.

IMPLEMENTATION CANVAS	
1. Problem	1A: What is my problem?
2. Solution	2A: How is the proposed measure contributing to solving my problem? 2B: Which (side-) effects (+/-) does the solution have?
3. Opportunities	3A: How can it contribute to the organisational mission? 3B: How can you improve the multifunctionality? 3C: Is it possible to link up with planned investments in the region?
4. Threats	4A: What are the most important threats?
5. Proposition to improve measures	
6. Benefits	6A: What are the revenues? 6B: Which societal benefits are generated?
7. Cost	7A: What are the costs of the investments? 7B: What are the maintenance costs?
8. Stakeholders	8A: Which stakeholders benefit? 8B: Which stakeholders are possibly against?
9. Partners	9A: Which persons do you need within your own organisation for implementations (name + dept.)? 9B: Which persons do you need outside your organisation for implementations (name + dept.)?
10. Relationships	10A: Are there any sensitive issues between stakeholders that compromises implementation?
11. Activities	11A: What should your organisation do to implement the measure? 11B: What should other organisations do?
12. Instruments	12A: What kind of (policy-) instruments could you apply? 12B: How do they contribute to the implementations of the measure?
13. Agenda	13A: What are for you important preconditions for implementations? 13B: Which agreements do you want to make with whom? 13C: What are critical decision moments?
14. Monitoring	14A: What do you want to monitor? 14B: What will happen with the measurements?

Table 8.6: Implementation canvas for the formulation of synchronisation agreements (Ven, 2011).

The performance of each activity need to be reviewed regularly, evaluated and adapted when necessary during Phase 5. To measure the effects of specific water management activities including their contributions to the Campaign Plan Goals, specific impact assessment indicators and success criteria should be formulated prior to a mission. For each Water Management Development Theme, specific indicators are presented in Appendix D.

8.5 Phase 5: Implementation & Execution

In Phase 4, the water priorities are mapped into a generic, cohered and tailored plan. Also, synchronisation agreements with all participating Civil-Military Working Groups partners are made. Consequently, Phase 5 is characterised by:

> **Priority verification, execution and optimisation of the water management activities in the mission area.**

Phase 5 is performed in the mission area itself. All the previous phases, are not. The fact-finding mission, part of situational awareness assessment analysis performed in Phase 2, is an exception (see sections 8.2.2 and 8.2.6).Throughout Phase 5, the emphasis is on transforming the conflict by the combined execution of the nine Campaign Plan Themes including the "Water Governance & Use" theme (see section 8.3.2). These themes are designed and executed in order to make the region or country self-reliant again. Phase 5 starts at the end of the intervention stage and at the beginning of the stabilisation stage (see section 8.2.3). In the cause of war this moment is marked by a ceasefire. Due to the characteristics of a counterinsurgency operation this transition moment is not marked, stays vague and will be accompanied with violent outbursts, as displayed in figure 8.4.

Water management is by definition long-term orientated accompanied with short-, and medium-term activities. Consequently, it is an ideal mechanism to transform the conflict from the early beginning of the stabilisation to the end of the normalisation stage. Therefore, the short-, medium- and long-term orientated Water Management Activities are presented as the main strategy of the Strategies pillar of Phase 5. Phase 5, Implementation & Execution, is presented in figure 8.9 and Appendix A. Based on the identified appropriate Water Management Activities mapped in Phase 4, the actual field implementation in the mission area is performed in Phase 5. Its details are described in the Activities pillar.

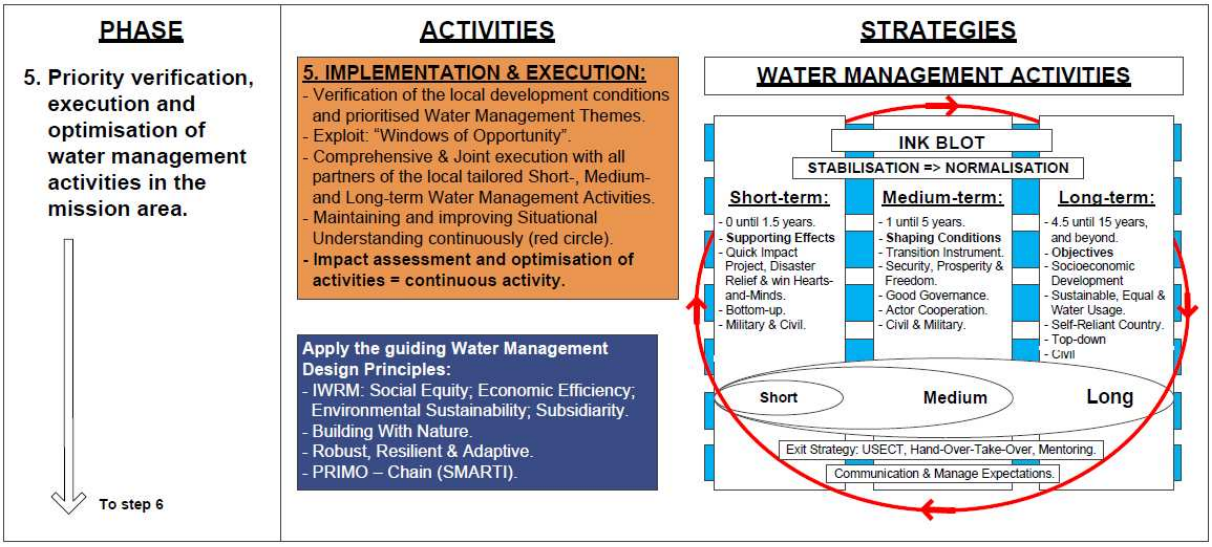

Figure 8.9: Phase 5 - Implementation & Execution (summarised).

During the transition process multiple different actors play a vital role. Due to the decreasing level of violence over time, the type of actors will change as well. What and how the Water Management Activities are performed plus the involved actor types, will be elaborated in the sections 8.5.1 and 8.5.2. The guiding implementation principles will be discussed in section 8.5.3. Finally, in section 8.5.4, the guiding Water Management Design Principles are presented.

8.5.1 Implementation & Execution of the Water Management Activities

Achieving the Campaign Plan Goals by joint execution of the development themes in cooperation or coordination with the local, national and international civilian and military partners, characterises Phase 5. Within this phase, constant performance monitoring of the implemented Water Management Activities is crucial. Therefore, maintaining and improving the Situational Understanding during the deployment is a must. This process is displayed with a red circle in the figures 8.1 and 8.9. In section 8.5.2, the execution of the short-, medium- and long-term orientated Water Management Activates will be discussed in more detail. First, an overview of all the activities performed in Phase 5 in cooperation with the participants of the Civil-Military Water Group or in coordination with other relevant actors are displayed In table 8.7.

Phase 5 - IMPLEMENTATION & EXECUTION: Water Management Activities.
Input: Results Phase 4 - Planning & Preparation and first results from the Situational Understanding Assessments reports performed in the mission area.
Performed in: Stabilisation and Normalisation stages (see figure 8.4 and table 8.3).
Activities & Outputs: - Verify baseline analysis. - Maintaining and improving Situational Understanding in the mission area is a continues process. - Verification of the prioritised Water Management Development Themes and the local development or underdevelopment condition regarding the identified and mapped Water Management Activities.

- Execution of the Short-, Medium-, and Long-term Water Management Activities based on the 'Ink Blot' strategy and tailored with regards to the local prioritised needs accordingly with the host-nation development scenarios. - **Impact assessment and optimisation of activities = constant process.** Based on the formulated success criteria and the developed impact and assessment plan, the effectiveness and performance of the Water Management Activities will be evaluated. If they do not perform according to the host-nation development scenarios and to the achievement of the Campaign Plan Goals including the Desired Endstate, they need to be optimised. **Involved actors (recommended):** - Same as in Phase 2 (see table 9.2).

Table 8.7: Activities Implementation & Execution Phase.

8.5.2 Water Management Activities

The actual implementation and execution of the Water Management Activities within the area of operations is performed throughout Phase 5. These technical projects and management policies are divided into short,- medium- and long-term orientated activities. Their characteristics are discussed in table 8.8. As explained in the previous paragraphs of this chapter, these activities are analysed, mapped, prioritised, synchronised and planned within the Phases 2, 3 and 4 of the new policy framework. In coherence and based on the development scenarios of the host-nation, the factors to mitigate, exploit and influence (see section 8.3.4) and the Water Management Design Principles (see section 8.5.4), the Water Management Activities are planned, selected, designed, implemented and optimised in Phase 5. Thereby, the local cultural aspects and political economy are leading. Therefore, expectations management and good communication with the local population, host-nation governmental authorities and other relevant local actors is essential. The activities execution is aimed at creating Sustainable, Equitable & Reasonable Water Utilisation. Thereby, the Water Management Activities should contribute in achieving the Desired Endstate, a self-reliant region or country.

To prevent contradictions and strengthening the sum of the results, the Water Management Activities are planned based on the host-nation development scenarios and the prioritised local needs in Phase 4. First the long-term objectives, second the medium-term shaping conditions and activities and finally the short-term quick impact projects are planned. After, synchronisation agreements between the participating actors are made in order to create the needed coherency. Regarding the implementation of the planned Water Management Activities in Phase 5, first the short-term activities are executed, followed by the medium- and long-term activities according to the *New IWRM Implementation Cycle* (see paragraph 4.5). Thereby, the medium-term shaping conditions serve as the transition management instrument which is characterised as:

- **Short-Term, supporting effects:** military and civil-military quick impact projects (QIP's) provide the direct basic water needs of the local population after the initial military strike, entry or intervention.
- **Medium-Term shaping conditions:** the QIP's are connected and transformed towards Water Development, Aid & Cooperation projects and policies to achieve actor cooperation, good governance and security, prosperity and freedom.
- **Long-Term objectives:** self-reliant region by means of long-term orientated socioeconomic development including sustainable and equal water usage through scale enlargement of technical projects, management policies and water laws.

When certain Water Management Development Themes in the area of operations are more developed, the corresponding Water Management Activity can start at the medium-term shaping activities and perhaps even the long-term orientated water management objectives.

Liberating an area without the follow-up of establishing and maintaining a permanent presence only results in delivering short-term results. Based on the "ink blot" strategy elaborated in chapter 6, kinetic offensive or defensive operations are directly followed by reconstruction activities. Through applying Water as Enabler, Water for Conflict Resolution and Water for Cooperation, the ink blot strategy is strengthened.

Thereby, the short quick impact projects set the baseline for further development. After, the medium- and long-term activities will contribute to enlargement of the ink blot, because these activities are orientated on actor cooperation, good governance including water management policies and scale enlargement of the technical projects.

Local water usage, issues and problems including the hydrological and geographical condition differ per location and situation. Consequently, each water management problem-solving instruments need to be tailored to the local situation. To be effective and efficient from the start, a broad and flexible Water Management Portfolio is created. In Appendix D this portfolio is presented. By means of figure 9.10 the Water Management Portfolio is summarised. Also, achieving water security is crucial. How to achieve water security is discussed in section 8.2.4 and Appendix C.

CHARACTERISTICS WATER MANAGEMENT ACTIVATIES			
	Short-Term:	**Medium-Term:**	**Long-Term:**
Aim:	Supporting Effects: - Disaster relief.	Shaping Conditions: - Security, Prosperity & Freedom. - Good Governance - Actor Cooperation.	Objectives: - Socioeconomic development. - Sustainable & Equal Water Usage. - Self-reliant region or country.
Duration:	0 until 1.5 year.	1 until 5 years.	4.5 until 15 years, and beyond.
Approach:	Bottom-up.	Bottom-up / Top-down.	Top-down.
Characteristics & Activities:	Quick Impact Projects: - Win Hearts and Minds by providing basic needs. - Start with small technical orientated reconstruction and development projects. - Include local ownership. - Establish contact and a trustworthy working relationships with locals. - Maintain and increase Situational Understanding. - Increase awareness of issues and problems between the actors. For more methods, see Appendix M.	Transition management instrument: - Restoration of destroyed water management infrastructures and governance systems. - Start of large technical development projects. - Create local ownership through entrepreneurship and the Negotiated Approach (see Appendix K). - Create cooperation mechanisms within the local society by means of the Constructive Conflict Approach[26]. - Start (re)establishing water management policies and a governance systems.	Sustainable Development: - Enlargement of the physical dimensions and impact of the technical projects. - Guarantee continuation of cooperation on local, national and internationals level through water management governance policies. - Implement and enforce laws. - Investments of private enterprises are needed to increasing the host-nations capability in a sustainable peace and economy development.
Actors involved:	Military: - Army Battlegroups. - Army Engineers. - 1CMI-Co or CIMIC. Civil: - Water, diplomacy and development specialist. - Host-nation government and local governmental organisations. - Local population. - NGOs, IOs, IFIs and Knowledge Institutes.	Military: - 1CMO-Co or CIMIC. - Army Engineers. Civil: - Water, diplomacy, development and governance specialist. - Host-nation government and local governmental organisations. - Local population. - NGOs, IOs, IFIs, and Knowledge Institutes (local and international). - Private sector enterprises (local).	Military: - 1CMO-Co or CIMIC. Civil: - Water, diplomacy, development & governance specialist. - Host-nation government and local governmental organisations. - Local population. - NGOs, IOs, IFIs and Knowledge Institutes (local and international). - Private sector enterprises (local and international).

Table 8.8: Characteristics of the Short-, Medium- and Long-term Water Management Activities.

[26] Constructive Conflict Approach: for more information, consult Cuppen (2012).

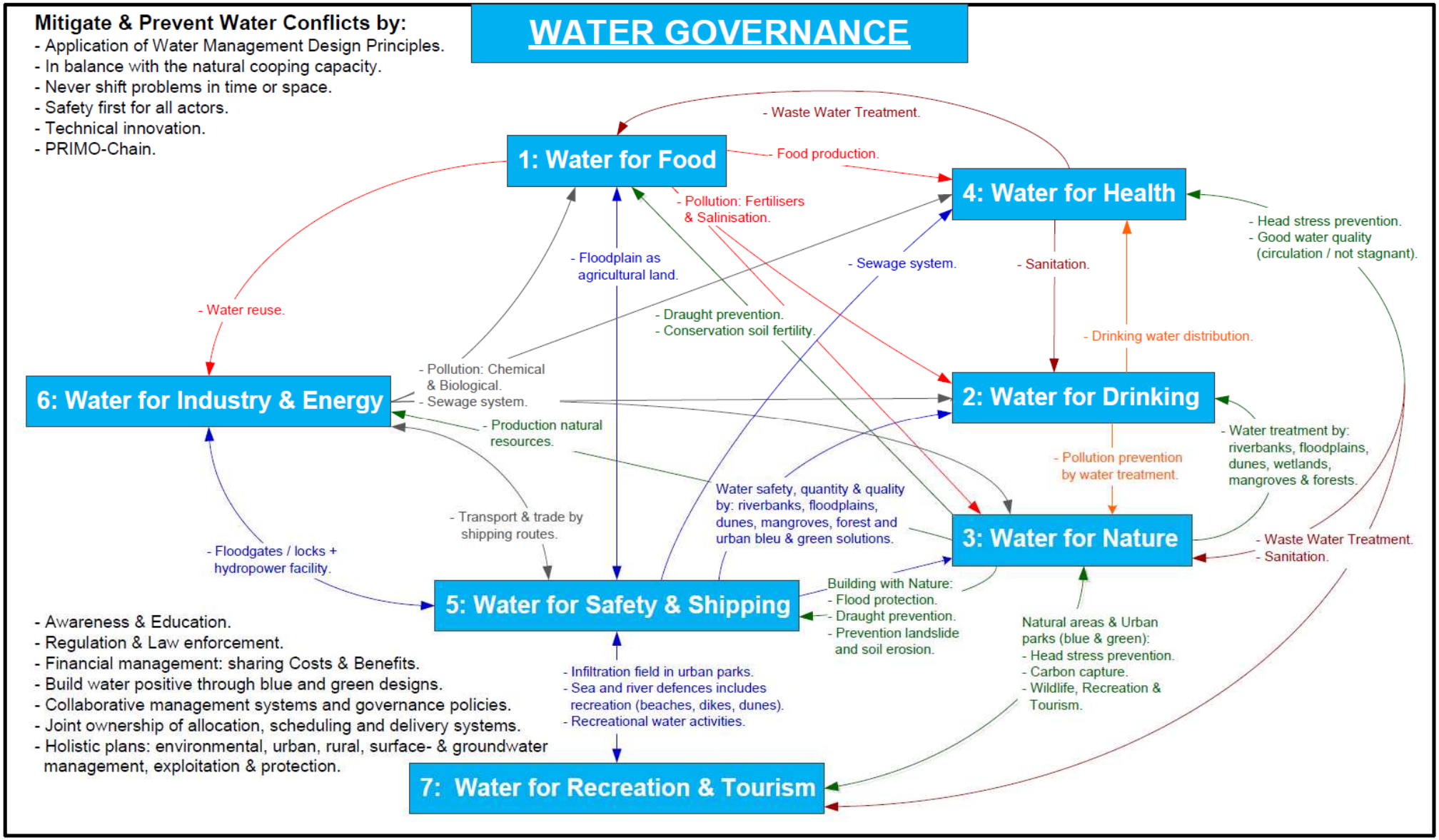

Figure 8.10: Interrelationships Water Management Development Themes, including significant Water Management Activities and Water Governance principles.

Creating local ownership and local entrepreneurship (see section 8.3.4) including the application of the USECT framework (Understand, Shape, Engage, Consolidate, Transfer: see Appendix G) are the fundaments of the exit strategy. Therefore, it is included as a fundamental implementation principle in paragraph 9.10. During the implementation and execution of the Water Management Activities, the local population and host-nation governmental organisations are actively involved in the planning, design and implementation of each activity. Thereby, local problem-solving ownership and education are creates and enhanced. This is essential, because only the local population can create a self-reliant region. Therefore, every activity should have an exit strategy and handover-takeover definition before its implementation. This should be clearly formulated together with the local population and the host-nation government. Also, the expectations regarding budget, time and responsibilities of the stabilisation force need to be clearly communicated with the local actors. Ideally the transition of responsibilities between the actors should be a gradual and step by step handover-takeover process. To assist the local population or other actors after the handover-takeover moment, a mentoring overlap of six months between the short-, medium- and long-term orientated activities is included in the new policy framework (see table 8.8). Thereby continuation of sustainable development is guaranteed.

Based on the designed impact assessment plan in Phase 4, the performance of the activities are reviewed and evaluated on a regular bases during the Implementation & Execution phase. If they don't contribute to the Desired Endstate and Campaign Plan Goals, the activities need to be adapted or optimised. For each activity corresponding with the Water Management Development Themes, specific indicators to measure its effectiveness and performance are presented in Appendix D. Consequently, maintaining and improving situational understanding is a must. To stimulate trust building and cooperation with and between the local institutions, the information is ideally gathered by the local knowledge institutes. In the figures 8.1 and 8.9 the Situational Understating analysis process is displayed as a red circle. This analysis includes the following subjects:

- Hydrological System & Water Usage.
- Results and effects of the executed Water Management Activities.
- Local Cultural & Political Aspects.
- Socioeconomic & Security Systems.
- Conflict: causes, symptoms, stage, complexity.
- Relation: water issues and the conflict.
- Actors: which? motives, issues, powers and relations.
- Strength and tactics of insurgents and OMF (Opposing Military Forces).

8.5.3 Implementation Principles Phase 5

In the mission area, first the prioritised Water Management Development Themes and identified Water Management Activities are verified based on input from the host-nation governmental organisations and the local population. If needed, these are corrected and adapted based on their inputs. In addition, when specific "windows of opportunities" occur, they should be exploited.

To strengthen the sum of the results by coherency and to prevent contradictions and duplication, the execution of the short-, medium- and long- term water Management activities need to be based on a comprehensive, joint and synchronised implementation with all participating partners of the Civil-Military Water Group. Since the mission area is insecure and unstable, the short-term quick impact projects will be performed by military units, like the Army Corps of Engineers or 1CMI-Co. Assisting in reconstruction activities or protecting water resources to prevent further escalation over them, are just two examples. Thereby, the preconditions for the handover-takeover by Water Assistance, Aid and Development policies of the Dutch government, EU, UN and specific NGOs and IOs on the medium- and long-term is established.

Developing the capacity of the local and national government to deliver basic services is crucial for the government's outreach to its population. Also, a self-reliant region and long-term sustainable development can only be achieved when the activities create the desired added value for the local population. Therefore, ideally the host-nation is the problem owner. As a result, all the water management activities need to be based on the host-nation development scenarios. Regarding the execution of the water management activities, the detailed plans, the selection of alternatives, designing, construction and operations should be performed in cooperation with the local population and host-nation governmental organisations. These activities, their objectives including the distribution of tasks, resources, responsibilities, accountability and the joint ownership over the long-term related goals, should be clearly demarcated. Furthermore, these activities are ideally be labour intensive, executed by the local population and be based on their cultural principles, methods and knowledge. Only by these principles a self-reliant water management systems can be created, because:

- By making the local population the problem owners, sustainable local ownership and problem-solving are created including the capability for wise budget allocation.
- Entrepreneurship is created.
- Local capacity is build by education and sharing of knowledge. Consequently, the needed capacity among the local population to maintain and optimise the systems by themselves without support is created.
- Due to this working method the local users are also trained in the operation, management and maintenance of the new system, which are vital elements of the PRIMO-chain.
- A real tailored approach regarding the local geographical, safety, social, economical and political circumstances is created.
- Support for the stabilisation operation is enhanced including a good working relationship.

Since a long-term engagement is crucial, mentoring of local actors by civilian experts based on a long-term partnership, coaching or supporting strategy after the handover-takeover moment is advised. During the implementation and execution of the Water Management Activities, the disablers need to be mitigated, the enablers exploited and the important factors influenced (see section 8.3.4). Furthermore, during and between every activity the local cultural aspects and political economy should be leading in the planning, designing and execution processes. Taking into account the long-term development, local and international private enterprises can boost the host-nations capability for sustainable peace and economic development by means of private investments. Moreover, good communication regarding expectations and the exit strategy with the local population, governmental organisations, coalition- and partner-nations, NGOs, IOs and IFIs is crucial. Finally, the Water Management Design Principles presented in section 8.5.4 should be applied.

8.5.4 Water Management Design Principles

For the technical designs and planning of the management policies, basic design principles are formulated. Because the conditions during the mission will be dynamic and chaotic, the following principles serve as a guideline.

IWRM principles. The Integrated Water Resources Management (IWRM) framework stimulates sustainable and desirable socioeconomic development in combination with water management. In order to guarantee the public interests and to obtain, maintain and improve water security, the following four IWRM policy principles are applicable:

- **Equity.** Water is a basic need for the survival of society and should be used in name of public interest. This justifies the policy principle for universal recognition that all humans have a basic right for access to water which is of adequate quantity and quality for the sustenance of human wellbeing.
- **Environmental Sustainability.** The current utilisation of the water resource should be managed in a way that it sustains the vital life-support systems, thereby not harming or compromising the use by future generations. Only a natural regenerating freshwater environment is capable to supply a sufficient quality and quantity.

- **Economic Efficiency.** Due to the increasing scarcity of water and financial resources, the finite and vulnerable nature of water as a resource and the increasing demands upon it, water must be used with the maximum possible economic efficiency, to ensure social welfare and contribute to the elimination of poverty.
- **Subsidiarity.** Water systems need to be managed at the lowest appropriate level.

In practice IWRM thus deals with finding sustainable compromises with regards to the social, economic and environmental goals. In order to establish sustainable security, prosperity and freedom including socioeconomic development, achieving and maintaining water security is a must. To prevent conflicts, water problems should never be shifted in space to neighbours downstream and in time to the future. Consequently, every actor needs to solve their own problems in their area of responsibility. By means of water allocation and prioritisation, water security can be achieved for the different functions and users. Appendix C provides an example how water can be prioritised based on the level of importance water possesses within the Netherlands society. This includes: meeting basic needs; sharing water resources; managing water risks; valuing water; and protecting the ecosystem. By sustainable water allocation based on the prioritised needs and demands of its multiple users, a sustainable living environment can be created in the mission area.

SMARTI. In order to create effective and efficient designs and operational water management plans, they need to be designed: Specific, Measurable, Acceptable, Realistic, Time-bounded and Inspiriting / Innovative.

PRIMO – chain. In order to guarantee a well functioning water management system, Policy, Regulation (plus legislation), Implementation, Management (plus operational control, maintenance and optimisation) and Organisation (plus governance) related issues need to be formulated and actively applied within the water governance systems and design process. Consequently, the planning and design phases will be intensive, but guarantees a smooth maintenance and operational management because there requirements are include in the designs (Ven, 2011).The PRIMO-chain is as strong as the weakest link. In order to optimise the chain, it is advised to execute a periodic SWOT-analysis (Strengths, Weakness, Opportunity & Threats).

Robust, Resilient & Adaptive. Adaptable, flexible and sustainable water designs and management policies are needed for risk mitigating purposes. Thereby, the water management system is prepared for future changes and challenges, like mitigating the effects of climate change (Ven, 2011). Building With Nature, Retain-Store-Discharge and Reduce-Reuse-Recycle are practical principles to design Robust, Resilient & Adaptive water systems.

Building With Nature. Natural systems like wetlands and dune systems can be applied for water treatment and are hydrological buffers. Moreover, mangrove forest serve as natural flood protection systems and the breading chambers of tropical ecosystems. By applying the natural system in a smart way, they serve multiple functions and users through one design. Also, infrastructural investments can be kept low, while improving environmental sustainability including its economic functions like agriculture and fishery (Ven, 2011). In Appendix D designs and policies are presented which are based in the building with nature principle.

Retain-Store-Discharge. This practical design philosophy is applied to contain water at its location of precipitation as long as possible. In its application, a small water cycle should be created (Ven, 2011). This will increase effective and efficient use on a local level. Thereby, this design principle contributes in decreasing local water scarcity and preventing possible conflicts over the available freshwater resource. Furthermore, it decreases the amount of investments for water allocation structures, management operations and policies. Moreover, high salinity grounds can be reduced by this approach by local water infiltration and retention. In Appendix D a broad range of designs who apply this design principle are presented.

Reduce-Reuse-Recycle. By means of this approach, pollution is prevented and the available freshwater resource can be used optimum. Consequently water scarcity will be prevented since the water quality is preserved and enhanced. Also, the available freshwater supply is utilised efficient and effective. Since the same water resource is used multiple times, water infrastructure will be utilised less resulting in a smaller needed design capacity. Thereby the amount of investments for water purification and allocation is minimised. Pollution prevention should be the first priority. In its application, apply the smallest possible cycle (Ven, 2011). In Appendix D a broad range of designs who apply this design principle are presented.

8.6 Phase 6: Evaluation

In Phase 6, the implementation of the new policy framework is evaluated based on the following questions:

Is the Desired Endstate, a self-reliant region or country, accomplished?

What Supporting Effects, Shaping Conditions & Objectives are accomplished?

What are the Lessons Learned?

Is a Follow-Up Plan necessary and desired?

Thereby, Phase 6 is the final phase of the implementation loop. In figure 8.11 the Evaluation phase is presented. As described in the Activities pillar, the implementation process is evaluated. Also, the lessons learned for optimising the process and the activities are documented and shared. More importantly, the accomplishment of the Desired Endstate, the Campaign Plan Goals, the Water Governance & Use development theme and the Strategic Objectives are evaluated based on the Situational Understanding reports produced within Phase 5.

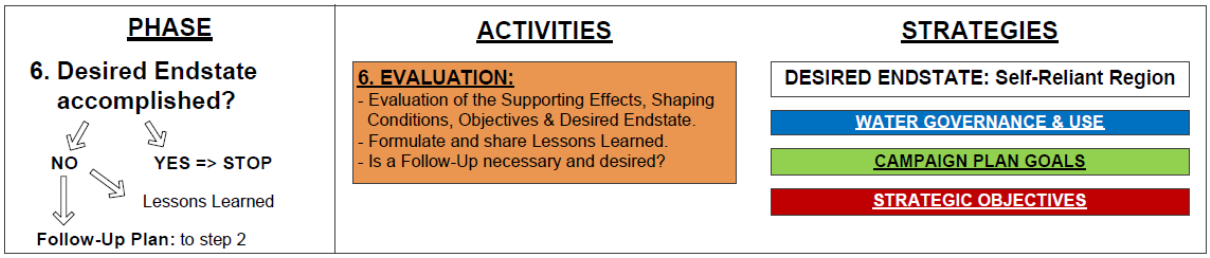

Figure 8.11: Phase 6 - Evaluation (summarised).

When the region or country is regarded as self-supporting on all the Campaign Plan Goals, additional assistance is regarded unnecessary. When the host-nation needs or desires assistance in one or multiple aspects, it is advised to develop a Follow-Up Plan. In such a situation the implementation of the new policy framework starts again at Phase 2: Analysis & Assessment, since the participating actors already reached the consensus on whether water is or can become an issue in the mission area. This loop is displayed in figure 8.1 and in Appendix A. The activities of the Evaluation phase and how they should be implemented are elaborated in the sections 8.6.1 and 8.6.2.

8.6.1 Evaluation

Based on the performed effects measurements, the performance of the Water Management Activities are evaluated continuously in Phase 5. If they do not perform accordingly, they will be optimised in order to contribute to the accomplishment of the Desired Endstate. The Campaign Plan Themes are designed and executed in order to make the region self-reliant, independent and self-supporting again. By means of the Campaign Plan Goals, the Desired Endstate is made specific and measurable.

In the political decision-making process at the end of Phase 3, also the timeframe commitment of each participating actor is set. Due to the dynamic political climate of the participating and helping nations, a mission can also stop earlier. When the mission is ended, the accomplishment of the Campaign Plan Goals are evaluated. In addition, what supporting effects, shaping conditions and objectives are accomplished are evaluated as well. Thereby, continuation of the created developments by another actor like; the local population, host-nation GOs, NGOs and IOs should be included. Especially when the mandate of the military deployment is short-term, these effects are important to communicate with the participating and other relevant actors for achievement of the long-term effects.

Within the Civil-Military Water Group, every activity has an exit strategy (handover-takeover by another actors) before its implementation. This should be clearly communicated with all participating actors, the local population and the host-nation governmental authorities. The right time to handover the responsibilities toward another actor, needs to be evaluated per specific activity. Especially with regards who you will involve in which stage of the process. This need to be an actor which has enough resources to enable future successes and shares the same Campaign Plan Goals. Moreover, in order to increase the effectiveness and efficiency of current and future stabilisation operations, the identified lessons learned with regards to the joint responsibility and actual implementation of the new policy framework should be publishing and informed among all the relevant and participating actors. By means of table 8.9, all the activities within Phase 6 are summarised.

Phase 6 - EVELUATION: Desired Endstate (Self-Reliant Region or Country).
Input: Results Phase 5 - Implementation & Execution and Situational Understanding Assessment reports. **Performed in:** Normalisation stage (see figure 8.4 and table 8.3). **Activities & Outputs:** - Evaluation of the achieved Supporting Effects, Shaping Conditions, Objectives and Desired Endstate based on the set Campaign Plan Goals and the "Water Governance & Use" development theme. - If needed or desirable, formulation of a Follow-Up Plan. - Formulation, publishing and education of the Lessons Learned among all relevant and participating actors. **Involved actors:** - All other actors who have participated based on cooperation and were involved through coordination in one or multiple implementation phases.

Table 8.9: Activities Evaluation Phase.

8.6.2 Implementation Principles Phase 6

The evaluation of the desired end-state, supporting effects, shaping conditions and objectives, should be performed with all actor who have been involved. All actors who participated in the Civil-Military Water Group are the core members of the evaluation team. Regarding the formulation of the Follow-Up Plan, also the new participating, relevant and effected actors should ideally be included in the new Civil-Military Water Group.

9

Fundamental Implementation Principles

In Appendix A the new *Integrated Water Management Development Framework for Stabilisation Operations* is presented. In chapter 8, the details of new policy framework are thoroughly explained. The ten Fundamental Implementation Principles displayed at the top of the new policy framework will be elaborated in the following paragraphs of this chapter. As a result, sub research question 2A is answered: What are the fundamental guiding principles for applicable implementation of the new policy framework in stabilisation operations?

The presented Fundamental Implementation Principles are developed and formulated based on the discussed success criteria and summarised design criteria of the Integrated Approach, the Integrated Water Resources Management framework, water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices and the case study: Water Management in Uruzgan. In order to increase the readability of this chapter, the amount of references are kept at a minimum level by referring to the corresponding chapters of Part II in most circumstances.

9.1 DO NO HARM

Always prevent a tragedy of the commons effect by applying the "Do No Harm" principle (SWP & ZIF, 2013; Post, 2015). Military operations are accompanied with negative side effects. Therefore, stabilisation operations should be shaped sensitive to the conflict by minimising the negative effects at all times (section 3.5.2). In day to day practice destroying or damaging social, cultural (church, mosque, etc.) and economic (agriculture, industries, etc.) live supplies the local population depends on, should be prevented at all times. If damage is caused, first apologize to its owner and users followed by compensation payment or reconstruction activities (section 3.7.2).

The creation of a conflict root-cause should be prevented at all times. Regarding water management issues, water security should be created. Through application of the four Integrated Water Resources Management (IWRM) policy principles water security is created: Equity; Environmental Sustainability; Economic Efficiency; and Subsidiarity. To prevent conflicts, water problems should never be shifted in space to their neighbours downstream and in time to the future. Consequently, each actor needs to solve their water problems in its own area of responsibility. By means of water allocation and prioritisation agreements, water security can be achieved for the different functions and users (paragraphs 4.4, 5.3 and 5.4).

9.2 A Long-Term Engagement is Key

'The low absorption capacity and an underdeveloped administrative system make sustainable development a long-term process' (Gabriëlse, 2007). Developing the capacity of the local and national government to deliver basic services is crucial for the government's outreach to its population (Gabriëlse, 2007). This basic governance transformation may take 20-40 years (IDPS, 2011). *'To reconstruct a country toward stability, the Dutch NGO Cordaid maintains the principle that the stabilisation and normalisation period is the same as the total conflict duration. Therefore, Cordaid formulates its development policies and activities over a time horizon of 20 years'* (Berg, 2014). Achieving visible and measurable positive effects will thus take a while (Tak, 2015).

These statements underline the need for a long-term engagement and commitment by the donor-nations and the international community. Supporting the host-nation authorities to strengthen their capacities for a self-reliant region regarding security, socioeconomic development and addressing the conflict root-cause requires time and perseverance. Therefore, the commitment should not be formulated with an end-date but as an end-state with intermediate objectives. In addition, the engagement should always be measured against realistic long-term objectives combined with short-term actions. Furthermore, the resources utilised should be appropriate to the prioritised and pursued objectives (sections 3.5.2 and 6.7.2).

In order to establish the long-term needed engagement, the Integrated Approach activities can be adopted within the multi-year strategic plans of the United Nations Development Programme or the Netherlands Development Assistance & Cooperation Strategy policy (sections 3.5.2). Furthermore, attracting citizens, NGOs and the private sector for cooperation based on public–private partnerships results in a broader support, thereby ensuring long-term cooperation between the multiple water users. For development, you always need funds and donors. Hence, it is advised to include IFIs like the World Bank, the EU Investment Bank and individual nations at an early stage within the process (sections 3.5.1).

9.3 Common Interest as the Starting Point for Cooperation

'Common (local) interests are the starting point for cooperation' (Post, 2015). Therefore, the local water managers in the mission area should be identified before the start of Phase 5 (Implementation & Execution). Second, a good working relationship should be established to create trust and enable cooperation. Since success is a mutual interest*,* don't impose solutions. Therefore, the local actors should be involved in the entire process. Furthermore, share expertise and successes to enhance trust in the local authorities and the stabilisation force (sections 3.5.1 and 3.5.2).

9.4 Treat Each Actor Equally & Respectfully

Since exclusion, favouring, belittle or marginalisation of actors is a root-cause of conflict, equal and respectful actor treatment is essential. Above all, never exclude actors from any kind of essential resources for human survival, like water (Kleijn, 2014; Berg, 2014).

Because shared waters can play a strategic role, these disputes need to be resolved early in the post-conflict setting (Weinthal et al., 2011). In order to ensure credibility of the water diplomacy efforts, all actors; low or highly interested and those with a low or high producing or blocking power, need to be identified and adequately represented in the problem-solving process. This includes individuals and groups who are, or are expected to be affected by the new or changing water governance and policy decisions. At least the interested actors that play a role in the decision-making process and implementation should be represented. By including all relevant actors, the full range of perspectives and all available local expertise obtained by the inhabitants and knowledge institutes can be used. This will result in better accepted solutions. Thereby, crowding-out of stakeholders should be avoided at all times. In order to reduce the complexity, grouping the stakeholders based on their values and interests when ten or more actors are participating is advised (chapter 5).

9.5 Trust is the Precondition for Cooperation

Achieving mutual trust is the prerequisite for effective cooperation and decision-making. Trust demands transparency and open communication. Therefore, it is advised to interact equivalent, act transparent, stay neutral, have a collaborative mindset, and make difficult plus delicate subjects discussible. By applying these mediation principles, a conflict can be resolved peacefully (sections 3.5.1, 6.7.1 and 6.7.2). An effective strategy to reach agreements in decision-making processes, is based on creating and maintaining a trustful working relationship with and between the involved actors. Consequently, involving the environmental, public and private water stakeholders who will be effected through clear and open communication, is crucial. While each actor will behave strategically, an actor should not affect the core values of another actor (paragraph 5.3).

Joint data collection, information exchange and sharing of hydrological data between nations, communities and regions helps in creating dialogue, trust and innovations. This brings the effected stakeholders from the entire region together to coordinate their actions. This supports again a broader regional network of conflict de-escalation and promotes agreements (paragraphs 5.3 and 5.4). By means of the receptivity[27] philosophy, cooperation can be strengthened during the design and implementation of water policies (Ven, 2011).

In order to increase the effectiveness of cooperation, it is advised to communicate the common goals, interests and joint objectives among the affected actors (paragraphs 5.3 and 5.4). After, prioritisation and synchronised planning and execution of the activities can flourish when trust is established (Sections 3.5.1 and 6.7.2).

When actors interests are interrelated with each other, cooperation can be enhanced. By means of the PRIMO-chain, the level of actor independency can be increased (paragraphs 5.3).

To win the trust of their civilian partners, to create sustainable cooperation and to maintain a trustful relationship, military actors need to be transparent. Due to security reasons, transparency is not always possible. If transparency is not possible the reason should be explained (section 3.5.1).

9.6 Manage Expectations & Invest in Value Creation

Expectation management through explaining: where you come from; what your objectives are; what you can and cannot achieve; which expectations your organisation has and the relationship with those of the host-nation GOs and local population are crucial in gaining trust of your own staff, the local population and the host-nation governmental organisations (sections 6.7.2, 3.5.1 and 3.5.2).

'What has no monetary value, has no value' (Post, 2015). Consequently, it is advised to invest only in those activities which have real value for the local population and the host-nation governmental authorities. Therefore, it is recommended to perform the projects always in cooperation with the local population and the host-nation authorities. Ideally, investments and resources are shared, like: labour; equipment and materials (Post, 2015). By applying this working method, you have the conformation that the project has value for the local population. Moreover, it includes user education which result in well functioning systems which can be operated, managed and maintained by the local population. Furthermore, the solutions will be in harmony with the changes the local culture can absorb. Thereby, sustainable local ownership is created, which is the base for successful use and maintenance over the long-term (Ven, 2014; Berg, 2014; Lucius, 2015; Post, 2015).

9.7 All Actors Gains & Keep it with Water

In order to prevent conflict over water, fair, efficient and wise agreements for all stakeholders are needed. A non-zero-sum approach in which mutual gains are created is regarded as the best approach, because: this results in agreements who are viewed as fair by those affected; efficient by those who have to pay for them; and wise by those with the expertise to judge them. In practice, all actors should benefit or obtain the status-qua from the comprehensive and cooperation focussed approach. Especially when specific actor costs regarding water quality and water safety are shared between up- and downstream actors, water management as a cooperation mechanism and governance system has proven to be very effective. (paragraph 5.3).

Keep it with water! In order prevent decision-making deadlocks, a multi-issue games instead of one-issue games is recommended in the multi-actor decision-making literature. In the complex and dynamic environment of stabilisation operations where multiple armed and conflicting actors act according to their own interests, multi-issue games are not the right approach (paragraph 5.4).

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[27] Developing Receptivity (Jeffrey et al, 2004):

1. **Awareness creation** of problems, opportunities and of better solutions.
2. **Associate** potential benefits with needs and capabilities of stakeholders.
3. **Acquire** capacity to exploit new knowledge, technique, method, etc.
4. **Apply** the new knowledge, techniques, creative design methods, creating stimuli to act, etc.

Especially in beginning, the water issues and their possible solutions should not be made into a multi-issue games connected with social, cultural and political sensitive issues. However, making acceptable and workable compromises and trade-offs is common practice in every multi-actor decision-making process (paragraph 5.4).

9.8 "As civilian as possible and as military as necessary"

Work *'as civilian as possible and as military as necessary'* (Gabriëlse, 2007). Since the problems are not of military nature, neither are the long-term solutions. For facilitating reconstruction works, military units will fulfil functions to which they are less suited than civilian organisations. Although civilian actors are better equipped for these tasks, the conditions are often such that only military actors can do the job, because: the civilian actors are not yet available; the area is considered unsafe and hostile; or logistics prevent civilian actions. During the military deployment their main objective is to shape the necessary conditions, like a relative safe working environment and freedom of movement for performing governance and development related activities executed preferably by NGOs and IOs. When the level of violence reduces, IOs and NGOs in cooperation with the host-nation government and its population can gradually take over, since they are better equipped in performing medium-, and long-term reconstruction and development activities. In general, civilian actors should execute civilian activities as much as possible and military units only when there is no civilian alternative (sections 3.5.1 and 3.5.2).

Harmful practices by the coalition forces and inflicting casualties among the local population and their belongings - also referred to as Collateral Damage - need to be avoided. Strong kinetic military actions should only be executed when needed. Therefore, communication and agreement on the use of force - also known as the Rules of Engagement - before any kind of deployment is crucial. The application of military power to gain control over an area with the aim to defeat the opposing forces or to enforce peace, requires force proportional to the demands of the particular situation. Hence, minimise the use of force. But be aware, (military) safety and security priorities have a higher priority and will come first (section 3.5.2).

9.9 Apply the "Adaptive Solution Path" Approach

Crisis management instruments and crisis response measures pursue short-term objectives while development instruments are long-term oriented. Merging the short-term goals and deployment of military actors with the medium- to long-term objectives of most civilian humanitarian and development organisations is regarded as difficult. However, merging these goals is very significant and a critically needed activity in order to create coherency. To respond appropriately to the evolving actor interests and positions, the broad range of possible futures and the constant changing dynamics of the operational environment, demands a flexible approach.

As schematically explained in figure 9.1, the "Adaptive Solution Path" approach is regarded appropriate to deal with these uncertainties. By means of this approach a coherent, synchronised, demarcated, tailored, integrated, top down, bottom-up, continues, flexible and broad Campaign Plan can be created. Consequently, contradiction and duplications are prevented and the sum of the activities is strengthened. Additionally, “Unity of Effort” is created through early civil-military actor involvement. To achieve the long-term acceptable situation, boundary conditions set the precondition to plan the short-, medium- and long-term orientated activities. The timelines of the involved actors including their objectives and related activities will differ. Also, it is often not possible to define a specific and definite future. To avoid negative fallouts and create an agreed understanding of what and how the various goals are ideally achieved, a consistent and coherent planning based on actor cooperation or coordination is crucial. The needed flexibility and continuity are guaranteed, by formulating what the desired objective are instead of how they need to be achieved. Consequently, the responsible actor has the crucial freedom to determine how the goal can be achieved the best during the implementation (paragraph 3.4). Although, *'sometimes you cannot prevent and is it even essential to do quick impact projects, without a proper assessment. Hereby the projects are based on common sense and expert experience, because doing nothing is not an option especially in crisis situations'* (Lucius, 2015).

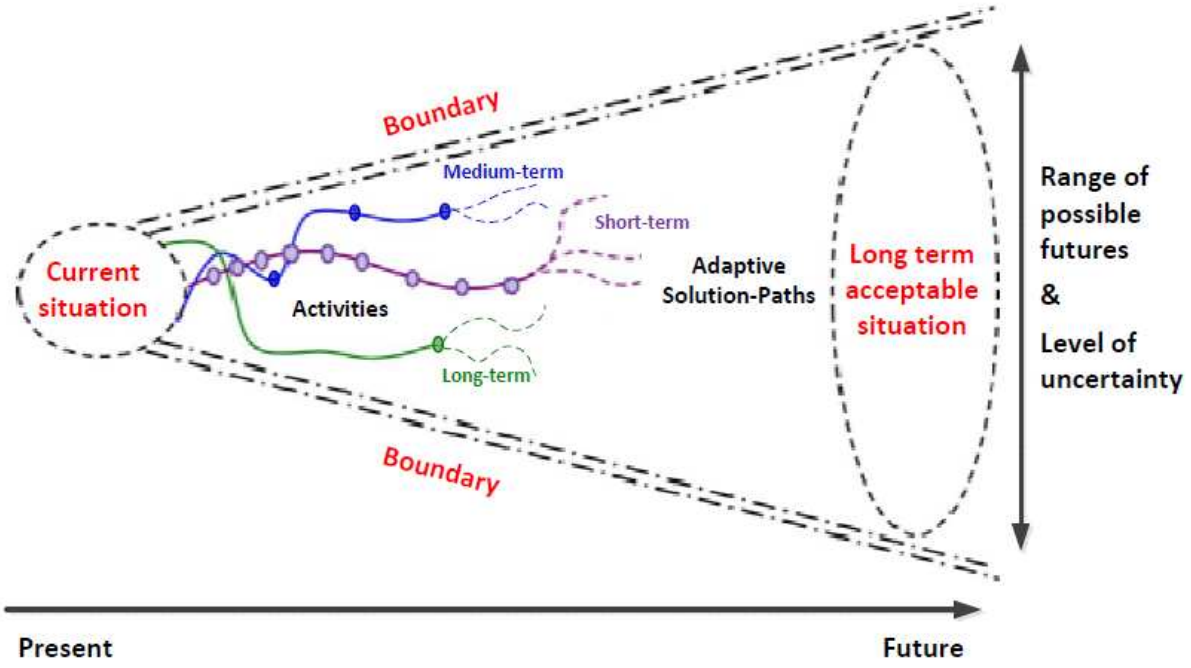

Figure 9.1: The Adaptive Solution Path approach (Based on: Bemmel et al., 2014; Enserink et al., 2010; optimised by the author).

9.10 Exit Strategy by Local Ownership

Only the local population and the host-nation governmental authorities can ensure the needed transition process from stabilisation towards normalisation. Since the local population and the host-nation government are the ultimate problem-solving actors; local problem ownership, local problem-solving responsibilities, local entrepreneurship and good governance are the pillars of the exit strategy (sections 3.5.2 and 6.7.2). *'This approach will be more costly and time consuming compared to the execution by a Western organisation, but are crucial and essential to invest in for the creation of a self-reliant community and country'* (Matthijssen, 2015). Hence, from the beginning local ownership need to be created and responsibilities transferred to the local population and host-national governmental organisations. Without it, no water management project or activity will result in a sustainable end result, a self-reliant region. Consequently, every activity should have an exit strategy (handover-takeover by another actors) before its implementation. This should be clearly communicated with the local population and the host-nation government. The right time to handover the responsibilities toward another actor, needs to be evaluated per specific activity. Especially with regards to who will be involved in which stage of the process. This need to be an actor which has enough resources to enable future successes and shares the same Campaign Plan Goals. (sections 3.5.2 and 6.7.2).

From the start all activities need to be planned, designed and performed together with the local population and be based on their knowledge, cultural principles and methods. This also includes allocation of funds by the host-nation itself. Since it is their country, the activities should not be dictated. If these are dictated, local ownership and restoring trust in the local governmental authorities will be weakened. Also, it is advised to use the existing formulated and approved local, national and international strategic water plans. Especially fundamental changes need to be implemented gradually and appropriately in respect to the local values, interests, social and political structures. Above all, the activities should not be based solely on western minded solutions (section 3.5.2). To stimulate socioeconomic development and entrepreneurship, the activities are preferably labour intensive since; '*stagnation or a decrease of the local economy in the area of operations is a significant threat for stability' (Koolhof, 2014).* By contracting the local companies, the local economy is stimulate. Furthermore, this approach will educate the local population in maintaining and optimising the development works. Also, it will enhance cultural understanding, stimulates trust and a good working relationship between the local, national and international actors (section 3.5.2).

10

Civilian-Military Interaction

The new developed policy framework is thorough elaborated in chapter 8. The interactions between the civilian and military actors within the Civil-Military Water Group will be explained in this chapter. As a result, sub research question 2B is answered: Which military and civilian actors should be involved in each of the specific implementation steps and what should be their level of interaction? In paragraph 10.1, the civilian-military interaction playing field in relation with the Integrated Approach will be discussed. The Implementation Principles of each phase presented in chapter 8, discusses the desired level of actor interaction for each implementation phase. Moreover, the actor types which are recommended to coordinate or cooperate with are described explicit in these sections. Per corresponding actor type, the specific actors which are appropriate to interact with based on cooperation or coordination are discussed in paragraph 10.2.

This chapter is developed by the author and based on the formulated Integrated Approach Success Factors (see paragraph 3.5). In order to increase the readability of this chapter, only new consulted sources will be referenced.

10.1 Civilian-Military Interaction Playing Field

In the best interests of the host-nation and its local population, national and international military and civilian organisation all make their contributions. Each actor will have a different mindsets, another working methodology and a different planning horizon regarding their time commitment; short-, medium- and/or long-term. Consequently, continuity and coherency is threatened since the objectives, supporting effects, decisive conditions and desired end-states will differ per actor. Therefore, the Integrated Approach is developed with the purpose to fulfil the political strategic objectives of the Netherlands government coherently with the interests of the host-nation and the other involved civilian and military actors. As visualised in figure 10.1, the national political and military strategic levels of the Netherlands (blue and green) are influenced by the international political strategies of the UN, EU and NATO (purple in figure 10.1). Vice versa, the Netherlands political strategic level will influence the international playing field. International political strategies are although not one to one translated into national political strategies. For example: the Dutch Military strategies are influenced by international political strategies of the NATO and specific Dutch national strategies. The capacity of the Netherlands Armed Forces at their turn influences the strategies of the Netherlands government and those of NATO, the UN and the EU. This interrelationship is also applicable for IOs, other nations, knowledge institutes, host-nation GOs, the local population, NGOs, IFIs and private sector enterprises. In figure10.1, these actors are displayed gray.

Transforming a post-conflict environment to a self-reliant region can only be achieved through long-term socioeconomic development, good governance and application of the rule of law. Within this process, the short-term reconstruction and quick impact projects need to be coherent and contributing to the long-term security and development objectives. Due to their knowledge, expertise, medium- and long-term planning and engagement horizons, the local, host-nation and international GOs, NGOs and knowledge institutes including the private sector enterprises can make significant contributions within stabilisation operations. To be effective and efficient, organisational parochialism should be avoided and actor synergy created by means of a joint mission preparation (see paragraph 3.5, Integrated Approach Success Factors).

Therefore, the new policy framework is designed to stimulates cooperation between the Netherlands ministries of Defence and Foreign Affairs, the host-nation GOs, partner and coalition countries, IOs, NGOs, knowledge institutes and private sector enterprises. Through early interaction, common goals, charring of information and resources and a joint planning, the early needed "Unity of Effort" between all participating actors is established resulting in:

- Prevention of conflicts and contradictions since all short-, medium- and long-term defence, diplomacy and development activities can be synchronised and planned coherently accordingly with the development scenarios of the host-nation.
- Identification of blind spots, since the limitations of one actor are compensated by the strengths of another actor. This will results in more resilient plans and activities.
- The long-term needed continuity and active engagement, since actor specific exit-strategies including the handover-takeover moment to another actor can be agreed, planned and focussed on.
- Important defence, development and diplomacy activities will constantly be in the awareness scope.
- Early synergy will result in effective and efficient engagements because tasks, activities actor responsibilities, labour, funding and other limited resources can be allocated and demarcated optimum accordingly with the specific organisational strengths.

Figure 10.1: Civilian-Military Interaction Playing Field (Based on: Koninklijke Landmacht, 2014b; Cremers, 2014; Lucius, 2015; optimised by the author).

In the new policy framework, the Integrated Approach including its success factors (see chapter 3) is applied as the guiding framework for the civilian-military cooperation or coordination. However, the management of civilian and military organisations differ. Civilian organisation are managed as a network, while military organisations are managed through a ranked order. Interdepartmental cooperation on all levels between the Netherlands ministries of Defence, Foreign Affairs, other ministries, IOs, partner nations, IFIs and the host-nation is a standard procedure within the Integrated Approach. As displayed in figure 10.1, cooperation between the participating civilian actors will occur with all military levels during the six implementation phases of the new policy framework (light green, gray, light blue in figure 10.1). To create the needed "Unity of Effort" among all involved actors including the host-nation, the collaborative engagement demands:

- A cooperation based mindset.
- A broad and tailored approach.
- Common interests and goals.
- Specified actor responsibilities allocation (agreements what to do, to what degree and in what sequence including who is best suited and equipped to deal with which challenge at what moment in time).

Ideally the situational awareness and understanding analysis including the mission planning, preparation, execution, monitoring and evaluation are executed jointly with all participating actors of the Civil-Military Water Group. Crucial for cooperation is the "willingness" factor of actors. When certain actors do not want to participate based on cooperation within the new policy framework, it is advised to interact based on coordination. By informing each other on the planned activities at least duplication and spill-over effects are minimised while operating autonomous. In addition, coordination can create or maintain a good working relationship. Consequently, the attitude can change towards a pro-participation willingness. These not-participating or "non-willing" actors are grouped and displayed in gray on the right and left outsides of figure 10.1. In the mission area, coordination between the not-participating actors only occurs on the military tactical and technical levels.

10.2 Appropriate actors for Cooperation or Coordination

For effective and efficient stabilisation operations early coordination between all relevant parties and cooperation between all participating actors is a must (paragraph 3.5). In the new policy framework this early needed civilian-military interaction is established through the Civil-Military Water Group. These interactions are crucial because linking the right actors with the right activities is essential to prevent conflicts, contradictions and duplications. Moreover, cooperation is essential to synchronise the short-, and medium-term activities accordingly with the long-term sustainable development objectives of the host-nation. By means of the Implementation Principles pillar, the desired levels of interaction within the new policy framework is explained per phase in chapter 8. Also, the type of actors recommended to coordinate or cooperate with are mentioned. Per actor type, specific actors appropriate for active interaction are listed in Appendix B.

Regarding the implementation of the new policy framework, the Netherlands ministries of Defence and Foreign Affairs should always be involved. Furthermore, host-nation support and integration in the entire process is crucial. Thereby the precondition for a self-reliant region are set; local ownership by local problem responsibility. In addition, involvement of the IFIs, the Netherlands Water Partnership and Dutch Risk Reduction Team including their broad network and expertise is essential.

Per implementation phase, the Civil-Military Water Group consist of a wide range of actor types and specialties. More actors, mean more opinions and a higher level of complexity. To prevent an overflow of non-essential information and to stay effective and efficient, it is strongly recommended to include only those actors who have valuable or new knowledge and expertise. For a real-time implementation the selection of maximum 15 appropriate partners with substantial experience will be crucial. Since this is location and situation dependent, a more specific actor analysis before each engagement need to be made per mission.

PART IV

Conclusions & Reflection

'I believe the root-cause of future conflicts and the key mechanism to solve them, namely water the most important and basic resource, is captured by your thesis research. In addition, the awareness created by your research will help us to conduct better stabilisation operations because now we have insight in what handles and levers we can use concerning water as an enabler.'

G. van Cooten, 2015

'When water is a cause of conflict, related with the state fragility or other problems in the mission area, this framework can contribute in solving the problem.'

C.J. Matthijssen, 2015

'Since your framework is based in the Integrated Approach, the potential of applying your framework within the Netherlands ministry of Foreign Affairs is large'.

G.J. Lucius, 2015

'The framework links peace-building with water management'.

A. Onencan, 2015

'I have experienced that water is a root-cause for conflict. When reframed, water acts as a conflict resolution mechanism and enabling opportunity for peace, stability and development. Consequently, this framework is crucial for civil-military stabilisation operations'.

P. van den Berg, 2014

'Water is not a weapon, it's a common interest and thus the key factor in solving conflicts. Your framework clearly describes how you can do this in a coherent and appropriate way'.

H. Post, 2015

11

Conclusions

In this final Part IV, the Conclusions & Reflection regarding the new developed *Integrated Water Management Development Framework for Stabilisation Operations* are presented. In chapter 12 the research objective and process are evaluated, the scientific and social relevance reflected and the framework constraints discussed. Subsequently, in chapter 13 recommendation regarding the next steps implementation opportunities and additional research suggestions are elaborated. By answering the in chapter 2 presented main- and sub research questions, first the conclusions are presented in chapter 11.

The new developed policy framework presented in Part III is ready for implementation. By answering the research questions, the most significant conclusions are presented in this chapter. The main research question is answered in paragraph 11.2. Before, the sub research questions answers are presented in paragraph 11.1.

11.1 Sub Research Questions

To ensure that the research stayed focussed, sub research questions were formulated. The new policy framework provides the answers to these sub research questions. Throughout the research report, its details are elaborated. In the next sections each sub research question is answered briefly.

11.1.1 [1] What are the fundamental design criteria for the comprehensive, coherent, strategic and integrated new policy framework?

In chapter 7 the design criteria for the new policy framework are presented. The design criteria are divided in general and specific criteria. In general, a policy framework should be holistic, flexible, well structured, clear and robust. Also, stakeholder involvement during the design process is important. The specific design criteria are formulated based upon the studied Integrated Approach, the Integrated Water Resources Management framework, water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices and the case study: Water Management in Uruzgan. Resulting, the following specific design criteria are the most significant ones:

- Apply the water management peace mechanism characteristics: Water as Enabler; Water for Conflict Resolution; and Water for Cooperation.
- Include scenarios development how water management can serve as a peace mechanism.
- Use the Integrated Approach as the fundamental pillar.
- Make the Integrated Approach water specific.
- Integrate the identified success factors.
- Prevent water conflicts and create water security by integrating the Adaptive Solution Path approach in the new policy framework.

1A: What are the characteristics of Stabilisation Operations?

The root cause of every conflict lies in political-, social-, and economic inequalities due to the uneven distribution of resources between groups of actors or the exclusion of one group from resources by another. This also includes the humiliation and marginalisation of (groups of) people. Since the origin of most conflicts is not military, neither are the permanent solutions to it.

Stabilisation operations must therefore always serve the political aim to stop violent conflicts. Consequently, the aim of every stabilisation operation is to decrease the level and number of violent conflicts and shape the conditions for a self-reliant society. Here, the main strategy is to undermine the opponent's violet aspirations by creating a secure environment in which socioeconomic activities can be developed. Within this development zone, trust-building, consensus-building, and reconstruction works can be executed, creating long-term focussed stability and sustainable development. To create the conditions for a safe environment and to gain trust from the local population and authorities, the physical and mental component of the opponent forces need to be tackled on the short run by means of offensive- and subsequently defensive military operations. Long-term stability can only be established by a functional and effective governance system as well as socioeconomic growth. Thus at the same time, development and diplomacy activities should be performed within these "ink blots". The simultaneous execution of Defence, Development & Diplomacy activities is called the 3D Approach.

In chapter 6 and Appendix G the aim of stabilisation operations, its characteristics and strategies methodologies are discussed in more detail.

1B: What are the characteristics of the Integrated Approach?

The Integrated Approach is an operational manual and modular framework for decision-making, planning and execution of civil-military operations in fragile states and conflict zones. Furthermore, the Integrated Approach aims to create coherence between the activities through coordination or collaboration between the involved civilian and military crisis management actors and organisations. By means of cooperation based on a common desired end-state, duplications of scarce resources and efforts are minimised or avoided, mutual information sharing is ensured, synergies identified and friction reduced. In order to reach sustainable conflict transformation towards security, prosperity and freedom, the Integrated Approach has the following six implementation phases:

1. Orientation
2. Analysis & Assessment
3. Integrated Action Possibilities
4. Planning & Preparation
5. Execution
6. Evaluation

More details regarding the activities of each Integrated Approach implementation phase and its complexity of application within stabilisation operations including crucial success factors are elaborated in chapter 3.

1C: What are the characteristics of the Integrated Water Resources Management framework?

The Integrated Water Resources Management (IWRM) framework stimulates sustainable and desirable socioeconomic development by means of water management activities, while protecting the public interests. In practice IWRM deals with finding sustainable compromises with regards to the social, economic and environmental goals. To guarantee water security by IWRM, the following four fundamental policy principles are applicable: Equity, Environmental Sustainability, Economic Efficiency and Subsidiarity.

By its own Campaign Plan Development Theme: "*Water Management & Governance",* water management is embedded in a stabilisation operation. Based on the functions water possesses within a society, the water management activities are subdivided through the following Water Management Development Themes:

- Water for Food.
- Water for Drinking.
- Water for Nature.
- Water for Healthcare.
- Water for Safety & Shipping.
- Water for Industry & Energy.
- Water for Recreation & Tourism.

In order to increase the overall benefits of the seven Water Management Development Themes, they are connected though water governance. Within the new policy framework, water security can be achieved through the implementation of the needed and desired water management projects and policies. All need to be tailored with the purpose to make the region self-reliant again. To be effective and efficient from the start, a broad and flexible portfolio of possible effective water management activities is developed. In Appendix D, the developed Water Management Portfolio is presented. As a result, the developed Water Management Portfolio ensures the applicability of the new policy framework in every geographical environment. Regarding the planning, preparation, implementation and execution of the water management activities, application of the new developed *New IWRM Implementation Cycle* is advised (see paragraph 4.5).

1D: Which water diplomacy, water resolution and de-escalating water cooperation mechanisms and best practices can be applied in stabilisation operations?

In the chapter 5 an extensive and detailed overview is provided. Based on their level of importance, the most significant ones are presented below:

1. Equal actor treatment is essential because exclusion, favouring, humiliation or marginalisation of (groups of) people is a root-cause of conflict. Consequently, never exclude actors from water usage.
2. Water issues and their possible solutions should not be made into a multi-issue game connected with political and social sensitive issues. Keep it with water!
3. The local political, economical and social structures are leading.
4. When water is viewed as a fixed pie, water allocation always results in conflicts. Therefore, all actors and stakeholders should benefit or at least obtain the status quo from the comprehensive and cooperation focussed approach. A non-zero-sum approach in which mutual gains are created is regarded as the best approach, because the resulting agreements are viewed as fair by those affected, efficient by those who have to pay for them, and wise by those with the expertise to judge them.
5. Long-term goal-oriented actions and projects are difficult to sell. Since political unwillingness to cooperate is the main blocking power for cooperation mechanisms, short-term wins for selling the project are essentials to included for realising the long-term development objectives and effects.
6. International freshwater management is effective when up- and downstream nations and governments across international, national and sub-national levels situated within the same basin are involved in the problem-solving process. Also NGOs, the private sector and individual water users should be involved in the process and be interlinked regarding the needed governance, infrastructural investments and operations management.
7. For development, you always need banks. Therefore, early donor and fund coordination with the International Financial Institutions like the World Bank, the EU Investment Bank and individual nations is crucial.
8. A professional and neutral facilitator is better able to navigate the pushes and pulls of a complex multiparty negotiation. Involving a neutral facilitator early in the process will help building consensus in a constructive and timely manner.
9. Joint data collection and information exchange between nations, communities and regions is a proven first step in creating dialogue, trust and innovations.
10. Cooperation is maintained because stakeholders' interests are interrelated with each other. By means of the PRIMO-chain (Policy, Regulation, Implementation, Management & Organisation), actor independency can be increased resulting in a constant process of consciously optimising the system.
11. The cost-sharing principle has proven to be an effective tool to resolve pollution and environmental related conflicts. Also benefit-sharing projects like hydropower and flood protection have resulted in an increase in cooperation among other water and non-water related issues.

1E: What are the main recommendations for application of water management in a stabilisation operation based on the Uruzgan experiences?

In paragraph 6.8, the recommended design criteria regarding the applications of water management in future stabilisation operations following from the case study: Water Management in Uruzgan are presented. The significant ones are summarised below:

- Apply the following three enabling peace mechanisms and conflict prevention characteristics of water: Water as Enabler; Water for Conflict Resolution; and Water for Cooperation.
- Water Management should be prominently visible in the campaign plan by having its own "Water Management Reconstruction & Development Theme".
- Include scenario development how water management can serve as a peace mechanism.
- To prevent conflicts and create water security, the short-term activities need to be planned accordingly and coherently with the long-term development objectives.
- Hydrological- and water usage data are needed from the start.
- Include an Impact & Assessment Plan.
- To gain and increase trust of the local population and decrease the support for the insurgency, the Do No Harm principles should have a prominent position.
- A long-term engagement accompanied with a step by step exist strategy of responsibility to the host-nation is crucial. Thereby, local problem ownership is regarded as the fundamental exit strategy.
- Since long-term goal-oriented activities are difficult to sell in the political arena, long-term objectives should be connect with the short-term projects in close cooperation with the host-nation by applying the Adaptive Solution Path approach.
- To be effective and efficient from the start, a broad and flexible portfolio which describes possible effective water management activities is needed.
- To create better results, a tailored approach and early synergy between all involved stakeholders through joint analysis, goals setting, strategy development, decision-making, planning, execution and monitoring is advised. Thereby, its limitations need to be clearly communicated. Furthermore the campaign plan need to be clearly demarcated regarding actor responsibilities and should include prioritisation and synchronisation of activities between the involved actors
- Include the DIME (Diplomacy, Information, Military, Economic) and Ink Blot strategies.

11.1.2 [2] How can the Integrated Approach be extended to a comprehensive, coherent and integrated policy framework for the application of water management and water diplomacy as a peace mechanism in stabilisation operations.

To create the recommended holistic, robust and water specific new policy framework with a clear structure, the six implementation phases of Integrated Approach serve as the fundamental backbone of the new policy framework. The six implementation phases of the Integrated Approach are included through the Activities pillar. As a result, all phases regarding the orientation, analysis, decision-making, planning, implementation and evaluation of water management in the mission area are included in one overall policy framework. In addition, the phases of the Activities pillar are made specific for the application of water management in stabilisation operations. More specific and crucial supporting strategies corresponding with the activities formulated in the Activities pillar, are presented in the Strategies pillar. Its implementation is guided by ten fundamental implementation principles. These principles are displayed at the top of the new policy framework, which is presented in Appendix A. For each of the six phases, the ten fundamental implementation principles are specified in the Implementation Principles pillar. To provide a clear structure, the Phases pillar introduces each phase of the Activities and Strategies pillar with a distinguishing question or comment. As a result, the coherency and interrelation between the six implementation phases and four pillars is strong. In chapter 8, the new policy framework is elaborated and presented in great detail.

2A: What are the fundamental guiding principles for applicable implementation of the new policy framework in stabilisation operations?

The ten fundamental guiding peace mechanism implementation principles are thoroughly elaborated in Chapter 9. Based on their level of importance, they are summarised below:

1. DO NO HARM! (Do not create a root-cause of conflict and use a minimum level of force).
2. A long-term engagement is key!
3. Common (local) interest is the starting point for cooperation.
4. Treat each actor equally and with respect. Do not exclude actors from any kind of resources, like water. Favouring or marginalisation is a root-cause of conflict.
5. Trust is the precondition for cooperation: interact equivalent, act transparent, stay neutral, have a collaborative mind-set, make difficult and delicate subjects discussable.
6. Manage expectations and only invest in activities which have real value for the local population.
7. Apply a non-zero-sum multiple actor gain approach. Do not start a multi-issue game related with social, cultural and political sensitive issues. Keep it with water!
8. Work "as civilian as possible and as military as necessary". Minimise the use of force. But be aware, safety and security priorities have a higher priority.
9. Apply the "Adaptive Solution Path" approach: Coherent and synchronised planning of the short- and medium-term activities according to the long-term objectives which are tailored based on the host-nation development scenarios. To create the desired unity of effort and complementarity, early actor involvement, common goals, sustainable cooperation and relevant coordination between all appropriate civilian and military actors is crucial.
10. Exit Strategy = local problem ownership, local problem-solving responsibilities, local entrepreneurship and governance capacity. Consequently, from the start all activities need to be planned, designed and performed together with the local population and be based on their knowledge, cultural principles and methods. To stimulate socioeconomic development these are ideally labour intensive.

2B: Which military and civilian actors should be involved in each of the specific implementation steps and what should be their level of interaction?

The level of interaction is determined by the willingness of each specific actor. The Netherlands ministries of Defence and Foreign Affairs are participating based on the level of cooperation in each of the six implementation phases. Complementarity with and between the crucial international organisations like the UN, the EU, NATO and the funds from the World Bank or another IFI is essential. Because their policies and actions can have significant effects on conflict or crisis situations, these actors ideally cooperate through participation within the Civil-Military Water Group. Furthermore, participation of the Netherlands Water Partnership (NWP) including its broad network and expertise is essential. Moreover, host-nation support and interaction is crucial because local bottom-up problem ownership, local problem-solving responsibilities, local governance capacity and local entrepreneurship is the exit strategy. Consequently, the planning, selection of alternatives, design, construction and implementation of all Water Management Activities should be performed in cooperation with the local population and the local, regional and national host-nation governmental organisations.

Comprehensive and jointly based on cooperation, is the level of interaction between the participating actors within the Civil Military Water Group. With those non-participating actors, coordination is the desired level of interaction. Thereby at least duplications of activities are prevented and a well working-relationship is maintained. More details are elaborated in the chapters 8 and 10.

2C: Who is the most appropriate actor for leading the implementation of the new policy framework?

This depends on the level of stability, development and quality of host-nation governmental organisations including its local and national reliability and accountability. When reasonable developed, a host-nation governmental organisation with sufficient water management knowledge ideally implements the new policy framework. However, in stabilisation operations this will be unlikely.

Since the problems are not military, neither the long-term solutions are. Because water usage and water allocation are political sensitive, the nations who are going to assist with the implementation should obtain a neutral position. Due to the long-term needed commitment and engagement, preferably one or a combination of international civilian conflict-resolution and development organisations like the UN or EU should be in the lead. They can redirect the water part to the government of the Netherlands. In this situation, the Netherlands ministry of Foreign Affairs should lead the implementation in close cooperation with the ministry of Defence, because:

- Engagement with the host-nation should be established by means of the political channels. Foreign Affairs has these contacts due to their global embassy network.
- Foreign Affairs can better focus on the long-term socioeconomic development objectives compared to the ministry of Defence.
- Because the ministry of Foreign Affairs maintains contact with the host-nation continuously, they are better able to guard the long-term needed continuity and engagement.

All kind of actors, public and private, can initiate the new policy framework without any restrictions. Within NATO-SHAPE, the CMI branch or CIMIC (J9) can initiate the new policy framework. Ownership of the new policy framework should be a combination between the Netherlands Ministries of Defence and Foreign Affairs. From the side of the ministry of Defence, the new policy framework ideally has a fixed position within the planning procedure of Defence Operations (DOPS). Also the commanders of 1 Civil Military Interaction Command (1CMI-Co) and the Army Corps of Engineers have a crucial role in the initiation and ownership. Because the Stabilisation and Humanitarian Aid Department is focussed on long-term, stabilisation, normalisation and development, this is the most likely counterpart at the ministry of Foreign Affairs. For the water domain, they can be assisted by the Climate Energy, Environment and Water Department.

The actual implementation and execution will be done by the Civil-Military Water Group situated within the Task Force. In this mission focussed organisation the military and civilian actors participating within the Civil-Military Water Group should be represented by a civilian process manager. This process manager advises and assists the responsible host-nation governmental organisation or other local actors regarding the implementation of the new policy framework. Ideally this is a development specialist from the ministry of Foreign Affairs or an 1CMI-Co functional specialist from the ministry of Defence. This should be a pro-active person who easily makes connections on his own with all relevant counterparts or experts within the public and private domains. Also, this expert should have a long-term orientated mandate and the ability to focus on all the planned or executed development programs. Furthermore, this person should have the right understanding in the technical, political, development and management domains because he or she needs to guide the Civil-Military Water Group. This mission team includes a wide range of specific military units and civilian experts, such as: host-nation and local water and development experts, the Army Corps of Engineers, 1CMI-co and their water experts, the Netherlands ministry of Foreign Affairs including its political, security, development and water specialists, NATO, the World Bank or other IFIs, coalition and partner nations plus the willing NGOs, knowledge institutes and private enterprises. However, the involvement of too many actors will make the implementation of the framework complex. For a real-time implementation the selection of maximum 15 appropriate partners with substantial experience will be crucial. Since this is location and situation dependent, a more specific actor analysis before each engagement need to be made per mission. Furthermore, another option is to outsource the field implementation and execution responsibility to a knowledge institute or NGO.

2D: What short-, medium- and long-term water management activities regarding technical projects, management approaches and governance policies can be applied?

The specific application is determined by the geographical conditions, the desired needs of the local water users and the host-nation development scenarios. To assist the Civil-Military Water Group including the local population and host-nation governmental organisations in making the generic and detailed plans, selecting alternatives, making the designs, execute the activities and implement operational, maintenance and optimisation processes within the Planning & Preparation and Implementation & Execution phases, a broad Water Management Portfolio is developed. To be effective and efficient from the start, the portfolio describes a wide range of possible applicable technical projects, management approaches and governance policies for each Water Management Development Theme. As a result, the developed Water Management Portfolio ensures the applicability of the new policy framework in every geographical environment. For more details, consult chapters 8 and Appendix D.

11.1.3 [3] What are the strengths, weaknesses, opportunities and threats of the new policy framework?

By consulting 12 experts in the domains of defence, development, diplomacy and water management, the new policy framework is validated. In addition, its completeness, effectiveness, usability, constrains and relevance is checked Furthermore, the framework is optimised based on the tips and recommendation from the consulted experts.

In paragraph 2.4 a detailed overview is provided regarding the consulted experts and their profession. In Appendix N the validation process and interview reports are presented. In this section the validation results are summarised and presented through a SWOT-analysis. As a result, sub research question 3 is answered.

Strengths. The new policy framework provides the professional answer how water can be applied as a peace mechanism in stabilisation- or crisis management operations. As a result, a guiding method how water conflicts can be resolved is provided. Through one visual schematic illustration, the entire new policy framework is professional formulated, easy to understand, complete, well arranged, systematic and clarifying for those persons who have experience in one or several of the defence, development, diplomacy and water management domains.

All societal water functions are represented by means of the Water Management Development Themes. Through the broad portfolio describing all possible short-, medium- and long-term Water Management Activities, fast wins can be made during the initial planning stages and in the actual deployment. Because water related problems and possible solutions are being detected in an early stage, future harm resulting in conflicts can be prevented. As a result, the new policy framework provides the desired structure and cohesion how water management can be applied by piece builders: from the top decision-making level until the execution of water management projects and governance in the mission area.

The new policy framework is well connected with the Integrated Approach. Also, the right connection between the activities and actors are made. As a result, the new policy framework will function as a cooperation "bridge" between the Ministries of Defence and Foreign Affairs, the host-nation population and governmental organisations, NGOs, IOs, knowledge institutes and private enterprises. Because the long-term water management development activities and short-term quick impact projects are connected and synchronised with all participating actors accordingly to the host-nation development scenarios, the new policy framework shapes the conditions to establish long-term continuity and coherency. Also, local ownership as the exit strategy is well included. Consequently, actor responsibility is stimulated from the start.

Weaknesses. The new policy framework is a simplification of reality. An actual implementation will not be simple, since everyday reality is too complex to be described by one framework.

Experts need around 10 minutes to understand the new policy framework. However, for a person who is not acquainted with the matter, the first impression of new policy framework is regarded as complex.

The framework is focussed only on water, while the application of water management in stabilisation operations needs to be seen in relation with all the other Campaign Plan Development Themes.

Opportunities. The new policy framework is ready for implementation. Consequently, the new policy framework provides the Netherlands government with a tool to fulfil an important role in enhancing future NATO, UN and EU stabilisation- and crisis management operations. Furthermore, since the framework covers the entire spectrum from the top decision-making level to the practices of water management in the field, the new policy framework will be very useful as an underlying and in-depth specific document how to apply and implement the Integrated Approach with regards to water related issues. In order to exploit these opportunities awareness creation, implementation in existing policies and doctrines, inclusion in education programs, verification and optimisation in civilian-military exercises or the real-time implementation in missions are recommended next step implementation opportunities. In chapter 13, these recommendations are elaborated in more detail.

Threats. No support of the top decision-making level, a weak stabilisation force, a short-term focussed (international) political commitment and the limited power position of the Netherlands are the main implementation threats. Since the national considerations will always prevail, the national preconditions ultimately determine the scope of the mission also in international coalitions.

Until today, the "DO NO HARM" implementation principles is not firmly set in the military mindset. In combination with the cognitive dissonance of military personal, another significant threat is present. Thereby, military personal don't want or can understand the opportunities shaped by the peace mechanism characteristics water management possesses. Instead, they stay military focussed including the mindset that conflict only can be resolved by offensive and defensive kinetic actions.

For successful implementation, a long-term engagement and commitment of military and civilian actors is crucial. Based on the current political climate, this will be difficult to accomplish. Furthermore, the small staff capacity of water management experts in the Netherlands Armed Forces and an implementation based on a western viewpoint are important threats. Furthermore, due to the scale of water management, it is sensitive to be "undermined" by strategies of the opponents.

11.2 Main Research Question

In chapter 8 the new policy framework is presented. As a result, the main research question is answered:

> **In what manner is water management applicable as a peace mechanism in the complex and dynamic environment of stabilisation operations?**

A joint execution of defence, development and diplomacy activities are required to transform the (post-) conflict area toward a self-reliant region. To prevent conflicts and create coherence, the short-term peace-building efforts need to be interlinked accordingly with the long-term development objective. Therefore, the "Adaptive Solution Path" approach and Integrated Approach are integrated in the new policy framework (chapter 3). To strengthening the sum of the results, the Water Management Activities are planned based on the host-nation development scenarios, existing water policies and the prioritised local needs. In practice, first the long-term objectives, second the medium-term shaping conditions and finally the short-term quick impact projects are planned. Because the time horizon between the different involved actors differ, agreements are essential. Consequently, clear demarcated synchronisation agreements are made between the participating partners within the Civil-Military Water Group regarding the appropriate Water Management Activities and their objectives including the distribution of tasks, resources, responsibilities, accountability, the exit-strategy and the joint ownership of the long-term goals. Consequently, a stabilisation operation can be conducted faster, more effective and more efficient because not only is a plan created for the military deployment, but also for the follow-up period when the military component is pulled-out.

By this integrated strategy contradictions are prevented, coherency between the activities created and continuity guaranteed. To be effective and efficient from the start, a broad and flexible portfolio of possible effective water management activities is developed. In Appendix D, the developed Water Management Portfolio is presented. As a result, the developed Water Management Portfolio ensures the applicability of the new policy framework in every geographical environment. Regarding the implementation and execution of the water management activities, first the short-term activities are executed, followed by the medium- and long-term activities accordingly to the Fundamental Implementation Principles (chapter 9) and the *New IWRM Implementation Cycle* (chapter 4).

Water management is by definition long-term orientated accompanied with short-, and medium-term activities. Consequently, it is an ideal mechanism to transform the conflict from the early beginning of the stabilisation to the end of the normalisation stage, by means of:

- **Short-Term, supporting effects:** military and civil-military quick impact projects (QIP's) provide the basic water needs of the local population after the initial military strike, entry or intervention.
- **Medium-Term shaping conditions:** the QIP's are connected and transformed towards Water Development & Cooperation policies to achieve sustainable cooperation and water security.
- **Long-Term objectives:** self-reliant region by means of long-term orientated socioeconomic development, good governance including sustainable and equal water usage through scale enlargement of technical projects, management policies and water laws.

As a result, a long-term engagement accompanied with a step by step exist strategy of responsibility to the host-nation is included. Thereby, local problem ownership is used as the fundamental exit strategy. Due to its vital functions throughout each society, good water management is crucial in every reconstruction step. Hereby, water management serve as a de-escalating conflict resolution instrument after the military intervention with the aim to contribute to a decrease in the level of violence and an increase in the level of security. In every region where water is an issue, water management can be applied as a strategic enabler or peace mechanism, through: Water as Enabler; Water for Conflict Resolution; Water for Cooperation. In the next sections, the three defined water management peace mechanisms are elaborated in more detail.

11.2.1 Water as Enabler (short-term supporting effects)

Ground warfare is characterised by capturing or defending land. In both circumstance, commanders use the landscape in their advantage. Because water is a basic need, water has proven to be a discussable issue in every region within a (post-)conflict area, safe and un-safe. By starting the discussion over water issues, the situational understanding related to water and non-water issues is improved. As a result, water management reconstruction activities can be made debatable and executed in cooperation with the local population. Thereby, essential development activities are performed. As a result, water management contributes to security, prosperity and freedom since the breeding grounds of the armed insurgency; political, social and economical dissatisfactions are decreased. More importantly, this enables the commander to increase its area of influence through initiating a dialogue about water with the local population in the areas that are not under his control. By executing reconstruction activities in the areas outside its ink blots of control, the stabilisation force can increase its area under influence and control, step by step.

When a relative safe area is created and maintained through security forces, a sufficient amount of freshwater can be provided. This is essential to ensure food and energy security including the support of basic livelihoods and economic activities in urban and rural areas. Also, large-scale water infrastructures are essential to enable and support economic development. Through the execution of water management reconstruction acts, water managements contributes to security, prosperity and freedom since the breeding grounds of the armed insurgency; political, social and economical dissatisfactions are decreased.

11.2.2 Water for Conflict Resolution (medium-term shaping conditions)

By means of water diplomacy, water conflicts including its destabilising effects can be prevented. Good water management and governance is a common interest of most actors. Consequently, most freshwater utilisation disputes are resolved through negotiations. Organising and facilitating water meetings between the local water users, have proven to be successful in de-escalating water conflicts, stimulating mutual actor problem understanding and discussing possible solutions. Furthermore, one of the most significant root-causes of conflict; water scarcity and other pressing water problems, can be made discussible.

By connecting the short-term reconstruction project with the Water Development & Cooperation policies, the medium-term shaping conditions transform the process into sustainable cooperation and water security agreements. Thereby, the stabilisation operation represents a window of opportunity to rebuild or improve resilient, adaptive and cooperative water governance institutions that are capable of coping with future uncertainties and impacts.

To prevent conflicts between up- and downstream users, water problems should never be shifted in space to downstream neighbours and in time to the future. Consequently, every actor needs to solve their own problems in their area of responsibility. By means of water allocation and prioritisation, water security can be achieved for the different functions and users. Appendix C provides an example how water can be prioritised based on the level of importance water possesses within the Netherlands society. When water extractions including the possible relocation and the related infrastructural projects are causing a substantial risk, mitigation measures and policy instruments need to be developed for the prioritisation of water use to guarantee water security (section 8.2.4).

Robust, resilient and sustainable designs will significantly contribute in achieving water security. Therefore, application of the formulated Water Management Design Principles (section 8.4.4) is strongly recommended.

11.2.3 Water for Cooperation (long-term objectives)

When actors are dependent or interrelated by cooperation mechanisms, violent conflicts are unlikely to occur. Especially when the water resource is shared sustainable, equitable and reasonable between up- and downstream users including its cost and benefits. As a result, violent conflict over water availability and quality will be reduced and opportunities for long-term sustainable livelihoods created. Therefore, properly tailored water diplomacy functions as the base for creating common goals regarding the local water issues. By facilitating water meetings between the local water users, water issues and possible solutions are made discussible. From this trust, consensus cooperation and reconstruction works can flourish which are crucial in creating long-term focussed stability, peace and socioeconomic development. Consequently, peace-building is strengthened since confidence is built and cohesion between communities created. Furthermore, the foundation is created for resilient, locally oriented and cooperative water governance systems. Thereby, future and pressing water problems, can be resolved peacefully.

Good water management and governance is a common interest in every society. Consequently, most freshwater utilisation disputes are resolved through negotiations resulting in water cooperation and working agreements even while hostilities rage over other issues. Thereby, the stabilisation operation represents a window of opportunity to rebuild or improve resilient, adaptive and cooperative water governance institutions that are capable of coping with future uncertainties and impacts like climate change. Since the short-term quick impact projects and long-term water management development objectives are interlinked and coherently planned accordingly with the host-nation development scenarios, the new policy framework links peace-building with cooperative water management.

12

Evaluation, Discussion & Reflection

In this chapter the research objective is evaluated in paragraph 12.1, followed by the scientific and social relevance which is elaborated in paragraph 12.2. In paragraph 12.3 the constraints of the framework are discussed. This chapter is conclude by a reflecting on the research process in paragraph 12.4.

12.1 Evaluation - Research Objective

A policy framework, which applies water management as a peace mechanism in stabilisation operations, based on a coherent and interrelated strategy did not yet exist before the publication of this research report. In order to close this gap, the following research objective was formulated:

> **Providing the Netherlands Armed Forces and its partners with a comprehensive policy framework which integrates water management and water diplomacy as a peace mechanism for application in stabilisation operations.**

For successful application within stabilisation operations the short-term quick impact reconstruction projects and long-term water management development objectives need to be interlinked within one coherent strategy. Also, the discovered water management peace mechanism principles need to have a prominent position within the new policy framework. Furthermore, the new policy framework is designed to:

- Prevent contradictions and create coherence between the short-, medium- and long-term water management activities.
- Be generically applicable in politically unstable, fragile or falling states including their safe and non-un-safe regions.
- Be applicable in every geographical environment.
- Stimulate actor cooperation through bottom-up and top-down philosophies.
- Be executed by the Royal Netherlands Armed Forces and its partners.

As elaborated in chapter 2 the new policy framework is designed through literature reviews, conducting field researches and by consulting experts. Moreover, the application of water management by the Netherlands Armed Forces in the NATO-ISAF Uruzgan stabilisation operation is examining through a case study. By interviewing 12 experts within the domains of defence, development, diplomacy and water management domains the new policy framework is validated and optimised. In Appendix N the validation interviews are presented. Based on the feedback of the consulted experts, the research objective is evaluated in this paragraph. In section 12.1.1 the usability of the new policy framework is evaluated, followed by the evaluation of its added value for Netherlands Armed Forces and its partners in section 12.1.2.

12.1.1 Usability

Exclusion of groups of people from water usage in combination with water scarcity is predicted to be a root-cause for (violent) conflicts. Due to its vital functions at all societal levels, good water management is a crucial ingredient in every reconstruction step and sustainable socioeconomic development strategies in the aftermath of war and armed conflicts. Moreover, when water is a cause of conflict related with the state fragility or other problems in the mission area, the new policy framework can contribute in solving the problems.

Water is not a weapon, it's a common interest and thus a fundamental factor in solving conflicts. Based on this fact and expert opinions, the new policy framework provides the needed handles and levers to use water as an enabling peace mechanism. Thereby, the new policy framework provides coherency and strategies to the subject of water in stabilisation operations, secures and describes the required knowledge and makes priority setting with regards to the water management development themes possible. Furthermore, the new policy framework transforms the focus on the problematic conflict itself, toward solutions and cooperation through water management. Consequently, it links peace-building with water management which is regarded as an essential need by the consulted experts. Especially when all relevant actors are provided with a sustainable, equitable and reasonable water utilisation, the new policy framework acts conflict preventive.

The aim of every stabilisation operation is to decrease the level and number of violent conflicts in order to shape the conditions for a self-reliant society. Here, the main strategy is to undermine the opponent's hostile aspirations by creating a secure environment in which socioeconomic activities can be developed and by rebuilding the host-nation governmental authorities. In this process, the application of the ten Fundamental Implementation principles is crucial in any conflict situation. Thereby, the new policy framework takes the focus away from the problematic conflict itself by focussing on cooperation by means of water management. Consequently, it links peace-building with water management which is regarded as an essential need by the consulted experts. Especially when all actors are provided in a sustainable, equitable and reasonable water utilisation, the new policy framework acts conflict preventive according to the consulted experts.

The new policy framework is based on the Integrated Approach and multiple other significant fundamental policies, strategies and lessons learned of the security, development, crisis management and water management domains. Consequently, the new policy framework is regarded by the consulted experts as directly applicable in stabilisation operations. Thereby it serves as a guiding tool for the top political and military decision-makers. Furthermore, it is evaluated as a clear, coherent, well structured line to follow and checklist for military and development personnel who will execute and optimise the water management activities throughout the stabilisation and normalisation stages. As a result, water issues can be addressed in an comprehensive, integrated, coherent and structured way in every geographical environment from the beginning of a stabilisation operation. Since the short-term projects, medium-term transition and long-term sustainable development activities are planned and executed coherently and accordingly with the host-nation development scenarios, conflicting and contradicting (well-intentioned) actions will be decreased. Furthermore, duplications and a focus primarily on the quick impact projects will be prevented.

The new policy framework provides room to discuss the different objectives and stimulates synchronisation of activities. As a result, the new policy framework will help the Netherlands Armed Forces including its military and non-military partners to conduct better stabilisation operations. Since the Netherlands Armed Forces has identified water as a potential root-cause of future conflicts, the commander of the Netherlands Army Corps of Engineers considers the new policy framework as an essential tool for future operations (Cooten, 2015).

12.1.2 Added Value

By reflecting on the lessons learned from the case study: Water Management in Uruzgan (NATO-ISAF mission) presented in chapter 6, the added value of the new policy framework is evaluated. The following added values for Netherlands Armed Forces and its partners are concluded based in the conducted validation interviews.

Crisis Management Instrument. When water is or can become a security or development issue, application of the new policy framework can contribute to establishing security, prosperity and freedom by making the region or country self-reliant. Due to its vital functions at all societal levels, good water management is a crucial and cost effective ingredient in every reconstruction step and sustainable socioeconomic development strategy in the aftermath of war. Because both preventive and de-escalation measures are included, the new policy framework, it is not only applicable in stabilisation operation. Regarding the spectrum of crisis management operations, the new policy framework is applicable in the prevention, stabilisation and normalisation stages (see figure 8.4). Also, the new policy framework can be applied as a hybrid warfare counter strategy.

Contributes in achieving the Strategic Objectives of the Netherlands. Application of the new policy framework contributes in achieving the following national and international strategic objectives and vanguards of the Netherlands government:

- Defense of national territory and interests including those of the NATO alliance.
- Economic, trade, energy and resources security.
- International water and food security including healthcare rights.

Unique International Capability. The new policy framework provides the professional answers how water conflicts can be resolved and prevented. As a result, the Netherlands Armed Forces and its partners are prepared when they will be confronted with water conflict issues in future stabilisation operations. In combination with the capabilities of 1CMI-Co and the Army Corps of Engineers, the Netherlands possesses a unique capability within the NATO alliance. Consequently, the Netherlands can play an important role in enhancing conflict prevention activities, development, humanitarian and disaster relief missions, stabilisation- and crisis management operations of NATO, the UN and EU.

Contributes in mitigating the Global Risks Landscape 2015. In the Global Risks Landscape 2015 displayed in figure 1.1, a water crisis is identified as the second largest global risk. In the Middle East and North Africa, the water crisis risk holds the number one position (see figure 1.3). Therefore, water security and scarcity will have a significant influence on social, economic and political (in)stability. Due to the interconnections displayed in figure 1.2, the occurrence of the water crisis risk consequently triggers other risks like; a food crisis, large-scale involuntary migration or a state collapse. Hence, for sustainable risk mitigation creating proactive risk-source control solutions based on prevention will be the most effective method. As a result, the new policy framework can significantly contribute in mitigating the water crisis risks and its interrelated second order risk events of Global Risks Landscape 2015. Consequently, violent conflict over water availability and quality will be reduced and opportunities for long-term sustainable livelihoods created. In practical terms, through application of the new policy framework an ink blot of security, stability, development and prosperity can be created and gradually expanded at the unstable and conflicting southern borders of Europe, like in Mali and Syria.

Contributes in achieving the UN Sustainable Development Goals. Resolving water issues in stabilisation operations directly contributes in achieving goal 6 of the United Nations Sustainable Development Goals: *'Ensure availability and sustainable management of water and sanitation for all'*. This water goal also aims at: halving the discharge of untreated waste water; significantly increasing efficient water usage; and significantly reducing water stress (UNSD, 2015). Also, nine of the seventeen goals are closely related to and effected by the water cycle. Consequently, the following goals cannot be achieved without good water management.

- Goal 2: End hunger, achieve food security, improved nutrition and promote sustainable agriculture.
- Goal 3: Ensure healthy lives and promote well-being for all at all ages.
- Goal 7: Ensure access to affordable, reliable, sustainable and modern energy for all.
- Goal 8: Promote inclusive and sustainable economic growth, employment and decent work for all.
- Goal 9: Build resilient infrastructure, promote sustainable industrialisation and foster innovation.
- Goal 11: Make cities inclusive, safe, climate resilient and sustainable.
- Goal 13: Take urgent action to combat climate change and its impacts.
- Goal 14: Conserve and sustainably use the oceans, seas and marine resources.
- Goal 15: Sustainably manage forests, combat desertification and halt biodiversity loss.

The UN Sustainable Development Goals are defined to end poverty and to better meet human needs, while protecting the environment, ensuring peace and realising human rights. Thereby, it combats poverty, hunger, disease, child mortality, environmental degradation and gender discrimination. Since these issues are significantly influenced by good water management, the implementation of the new policy framework in poor, fragile, failing and conflicting regions significantly contributes in achieving the United Nations Sustainable Development Goals. Consequently, violent conflict over water availability and quality will be reduced and opportunities for long-term sustainable livelihoods created.

New methodology for Campaign Plans. The structure and way of thinking developed within the new policy framework can also be applied for the development of other Campaign Plan Development Themes, like; Governance, Rule of Law, Security Apparatus, Education, Social Protection, Infrastructure & Rural Development, Healthcare and Economic Activities.

A comprehensive Integrated Approach. The new policy framework contributes to a sustainable cooperation environment between the Netherlands ministries of Defence and Foreign Affairs, collation- and partner national, NGOs, IOs, IFIs, host-nation GOs, local residents and actors, knowledge institutes and private sector enterprises. Because early stakeholder interaction and involvement is included, cooperation and coordination is stimulated by the new policy framework from the beginning of the mission. Since non-governmental actors have a prominent position in the new policy framework, it is the first in its kind describing a real, total and comprehensive Integrated Approach. Especially when the Top Sector Water, the Netherlands Water Partnership and Water Development programs are included and synchronised. This comprehensive Integrated Approach is an important vanguard of the Netherlands government.

Effective and efficient integration of water management in Crisis Management operation. Due to the new policy framework, water management will not be lost as an important development theme. Water related issues and conflicts can be addressed in an integrated, coherent and structured way in every geographical environment from the very beginning of a stabilisation- or crisis management operation. In addition, the new policy framework is regarded as the line to follow or a checklist regarding the planning, preparation, execution and optimisation of stabilisation- and crisis management operations. Consequently, a crisis management operation can be conducted faster, effective and more efficient. Especially, because not only a plan for the military deployment is created but also for the follow-up when the military component is pulled-out. Thereby fewer organisational shortfalls, less personnel, maximum utilisation of the available resources, less financial assets, minimum of duplications, faster help and fewer casualties are expected.

The new policy framework stimulates early identification of water related problems and possible solutions. Consequently, early synergy can be created. Thereby, the broad and flexible Water Management Portfolio describing all possible water management activities provided within this research report, provides structure and guidance for every possible mission area. As a result, applicability of the new policy framework in every geographical environment is ensured. Subsequently, early cooperation and synchronisation agreements between the participating actors can be made regarding; what to do, to what degree and in what sequence including who is best suited and equipped to deal with which challenge at what moment in time. As a result, a greater impact and better results can be achieved due to a clear prioritisation of activities and a clear distribution of labour and other resources.

Since the short-term projects, medium-term transition and long-term sustainable development activities are planned and executed coherently and accordingly with the host-nation development scenarios, conflicting and contradicting (well-intentioned) actions will be prevented. Furthermore, duplications and a focus primarily on the short term quick impact projects for winning the hearts-and-minds of the local population is prevented.

12.2 Scientific & Social Relevance

The purpose of scientific research is characterised by analysis, explanation and improvement of reality (Keuchler et al., 2007). Furthermore scientific research is characterised by social relevance and scientific robustness (Hevner et al., 2004). This master thesis research possesses all of the above-mentioned characteristic. In this paragraph its scientific and social relevance will elaborated per subject.

Development of a new approach. A new approach is developed which coherently integrates and structures water management activities and water diplomacy best practices for application as a peace mechanism within stabilisation operations. Since the new policy framework did not yet exist and is directly linked with human wellbeing, creating and maintaining long-term orientated stability and socioeconomic development the scientific and social relevance of this research is justified.

In addition, the new policy framework will increase the effectiveness and efficiency of future stabilisation- and crisis management operations because the defence, diplomacy, development and water management domains are structured, connected and integrated coherently into one approach. Thereby, a fundamental mechanisms how to solve one of the significant predicted root-cause of future conflicts is captured by this research. Moreover, the new policy framework contributes to a sustainable cooperation environment between the Netherlands ministries of Defence and Foreign Affairs, collation and partner national, NGOs, IOs, IFIs, the host-nation GOs, the local residents and actors, knowledge institutes and private enterprises. Thereby it is the first framework thoroughly describing a real comprehensive Integrated Approach. Furthermore, the scientific foundation to create an additional approach to solve other (root-)causes of conflict is developed by means of the new policy framework.

Realism of reality and optimisations. Multiple proven methodologies and methods ranging from scientific knowledge and expertise, existing policy and theoretical frameworks including experiences, lessons learned and best practices from real-time applications are applied. Consequently, the new developed *Integrated Water Management Development Framework for Stabilisation Operations* is designed based on the principles of quality and rigor. Since the new policy framework is validated based on expert reviews, its scientific and social quality, robustness and added value are guaranteed and strengthened. Additionally, implicit knowledge is made explicit and multiple theories are optimised by the author. The additional scientific and social contributions and new optimisation which are performed by the author and presented in this report are explained below:

- The case study: Water Management in Uruzgan (NATO-ISAF mission) presented in chapter 6, studies and evaluates how water management was applied in a recent stabilisation operation including its interrelated security contributions. Since this subject was not yet researched before, a significant new empirical scientific contribution is made. This case study resulted in lessons learned and recommendations which are integrated in the new policy framework. Furthermore, the enabling peace mechanism characteristics water management possesses were identified by the case study.
- A broad range of Integrated Approach Success Factors is elaborated in chapter 3. This knowledge was dispersed over multiple publications and present in the minds of multiple experts. One overall document summing and explaining these success factors was not present. Since these success factors are combined and presented, an additional and relevant scientific contribution is made.
- By the international water management community, the Integrated Water Resources Management (IWRM) framework is regarded as the management approach to avoid a water crisis and to create long-term water security for societies and the environment. However, during the research multiple IWRM constrains and optimisations emerged (see Appendix J). Therefore, the author created the new developed *New IWRM Implementation Cycle* by combining the IWRM phases (1. Process Goal Definition, 2. Commitment Building, 3. Gap Analysis, 4. Negotiated Process & Strategy Formulation, 5. Action Plan Definition, 6. Action Plan Implementation) with the three Negotiated Approach bocks (A. Knowledge Development & Analysis, B. Community Empowerment, C. Creating the Environment for Negotiations & Plan Actions). Furthermore, inspired by the Integrated Approach the Monitoring & Evaluation phase was added by the author. The new developed *New IWRM Implementation Cycle* is presented in chapter 4 and Appendix L.
- In chapter 5 and Appendix M water diplomacy is discussed in a nutshell. Moreover, its six crucial implementation principles are elaborated. This knowledge was dispersed over multiple publications. One overall document summing-up and clearly explaining how to perform water diplomacy was not present.
- A broad range of de-escalating water cooperation mechanisms and water diplomacy and resolution best practices are presented and elaborated in chapter 5. This knowledge was dispersed over multiple publications and present in the minds of multiple experts. One overall document summing and explaining these best practices was not present.

- The knowledge gained within the Analysis part, resulted in the formulation of the ten Fundamental Implementation Principles (see chapter 9). This knowledge was dispersed over multiple publications and present in the minds of multiple experts. Since the ten Fundamental Implementation Principles are combined and presented, an additional and relevant scientific and social contribution is made.

12.3 Discussion - Framework Constraints

In order to achieve the research objective, scientific knowledge and expertise from the defence, development, diplomacy and water management domains needed to be integrated in one policy framework. Furthermore, the new policy framework is developed to be applicable for the Netherlands Armed Forces and its partners, namely: the Netherlands ministry of Foreign Affairs, NGOs, knowledge institutes, private sector enterprises, coalition- and partner nations, the host-nation and international organisation, like; NATO, the UN, EU, the World Bank and other international financial institutes.

The new policy framework includes all phases and levels of decision-making including the planning and application of water management in the mission area of operations. Consequently, the framework needs to be understandable for experts and non-experts. Due to the wide target audience, diverging levels of expertise and acquaintance plus the complexity of the application of water management in stabilisation operations at multiple organisational levels, the first impression regarding the new policy framework can be overwhelming. Optimisations have been made to decrease the amount of information within the new policy framework. The usability of the reduced frameworks was validated by consulting experts. The reduction resulted only in more questions by the consulted experts and non-experts. Due to the loss of essential implementation principles, approaches and strategies, deleting items within the final version would have resulted in deterioration of the frameworks usability. As discussed in the SWOT-analysis (see section 11.1.11), the new policy framework is regarded as easy to understand, complete, well arranged, systematic and clarifying for those persons who have experience in one or several of the defence, development, diplomacy and water management domains. For non-experts this is although not the case. To make the new policy framework understandable for those non-experts, all implementation principles, approaches and strategies are elaborated and explained in great detail in this research report. Additionally, to guarantee successful implementation of the new policy framework, education and training in its application will be essential especially for non-experts.

In addition, the new policy framework has the following constrains:

- The new policy framework is a simplification of reality. An actual implementation will not be simple. Thereby, the new policy framework provides the needed guidance and enhance coherency.
- Due to the scale of water management, it is sensitive to be "undermined" by strategies of the opponents.
- It is based on a Western view of thinking and a Dutch knowledge base.
- Support of the top (political) decision-making levels is needed at an early stage.
- For maintaining the required security level and to increasing the level of trust with the local population, a stabilisation force need to be present which acts appropriately against the armed insurgents. Since it will be a long-term process, a long-term focussed (international) political commitment is needed.
- Participating actors also become responsible and accountable. This can be a barrier for involvement.
- The framework can be applied as a political strategy to increase its leverage through development projects.
- The solutions need to be in harmony with the changes the local culture can absorb. Especially fundamental changes need to be implemented gradually and appropriately in respect to the local values, interests, social and political structures. This need to be in the mindset of the field workers and decision-makers.
- The development of the new policy framework is not entirely created comprehensively with all possible involved actors.

- Due to the military working methods, an implementation as described will be likely. Because the working methods of the Netherlands ministry of Foreign Affairs, NGOs, IOs and private sector enterprises is different, also the implementation of the new policy framework by them probably will be. It is likely that they will use only certain parts of the new policy framework.
- The involvement of too many actors will make the implementation of the new policy framework complex. For a real-time implementation selecting the right partners with substantial experience will be crucial and challenging.
- Only implementing the new policy framework does not guarantee success. Its success depends on a lot of other factors and issues which are difficult to control.
- Military, safety or security priorities will probably come first.
- A short-term orientated host-nation government and/or local population, will result in failure.
- The implementation phases and fields are schematised as a linear process and standalone activities. Due to the constant changing dynamics of the activities within the human an physical arena's, the implementation of the phases and activities are not a linear process. When needed, they can be performed less strict.
- The numbering of the Water Management Development Themes does not indicate the level of priority. The level of importance depends on the local needs and the developed scenarios of the host-nation.
- Duration of the short-, medium- and long-term activities is mission dependent. The time horizons are an indication based on the experiences of the consulted experts.

12.4 Reflection - Research Process

During my MSc graduation project, I had multiple valuable learning experience. Also, I am very satisfied with the end result. In this paragraph I will reflect on the research process, explain the personal challenges I faced and elaborate on interesting personal observations regarding the topic.

New Research Field. With a lot of pleasure I worked on creating and developing the new policy framework. First of all, I believe that with water we can change the world. Furthermore, due to the subject I integrated two provisional passions into one research topic, namely: the water management sector and the domain of international military and development operations. Third, the dynamic and inspiring working environments of the Netherlands Military Engineering Centre of Expertise and NATO's political and military headquarters I had to privilege to be stationed, plus the multiple army exercises and field trips to the Netherlands ministry of Foreign Affairs, Dutch NGOs and knowledge institutes were especially motivating. Finally, pioneering and exploring a new subject without organisational restrictions nobody has explored before, gave me a strong motivational drive, feeling of responsibility and great satisfaction. Especially, because the research findings and developed end result are highly appreciated by the Army Corps of Engineers.

Challenge: Integrating a Practical Design Question in a Scientific MSc Thesis. The development of the new practical orientated policy framework within a MSc thesis, was complex since the defence, development, diplomacy, water management and academic science domains needed to be integrated into one research report. Furthermore, to guarantee the inclusion of water management as an important development theme in the campaign plan of a stabilisation operation, a holistic policy framework which integrates orientation, assessment, political decision-making, planning, execution and evaluation needed to be developed. However, the integration of the multiple civilian and military organisational levels including their different mindsets and activities into one, clear and coherent policy framework was and is complex. The formulation of general and specific design criteria presented in chapter 7, was essential to manage these challenges.

The scientific character was another challenge. First, I developed the new policy framework with a focus on application by the Netherlands Armed Forces and its partners.

After the design process, I focussed on the scientific charter. For a MSc thesis report, which need to be scientifically adequate, I should have started the development process with a more scientific focus. As a consequence and caused by the broad research scope, I struggled to find the right story line to describe and justify the research project. Due to this struggle and shifting writing focus, the writing process took longer than anticipated. As a result, the total project duration increased with a few months. For managing these challenges, I am very grateful of the assistance and tips my graduation committee provided.

Experience: NATO Placement and Participation in Civilian-Military Exercises. By participation in several civilian and military exercises plus workshops and through the 3 months placement at the NATO headquarters in Brussels, I have gained a substantial amount of new knowledge and amassing personal and professional experiences. Furthermore, I have created awareness how water management can play a significant role in stabilisation operation within the NATO alliance, the Netherlands Armed Forces and the Netherlands ministry of Foreign Affairs. During these activities I experienced the complexity and challenges of including new, well argued idea's and proven methods in the current mindset of stabilisation operations in large organisations.

Within the NATO alliance, the general mindset sketched by the new policy framework was regarded as an added value by the decision-makers and experts regarding the military and civilian personnel of the Netherlands, Germany, the United Kingdom, Denmark and Canada. Especially by those who have experienced the effects water management can have in stabilisation- and crisis management operations. However, I experienced that the eastern European countries of the NATO alliance are more focussed on kinetic military actions. Based on Hosftede's (2010) cultural dimensions, this can be explained by the higher level of masculinity these countries are characterised with. Also, I believe that the traditional approach of warfare taught at their military institutes and the current instability at NATO's eastern borders significantly contributes.

At the planning and decision-making levels of the Netherlands Armed Forces and the ministry of Foreign Affairs, the right implementation mindset is present. Based on the attended civilian-military exercise, I experienced that the needed implementation mindset is unfortunately limited present at the field workers level within the Netherlands Armed Forces. Application of the new policy framework methodology in future exercises and education programs can change the current traditional, short-term, and domain specific focussed mindsets.

Reflection: Research Process. During the Research Set-Up and Analysis phases, I explored a substantial amount of literature and consulted multiple experts. This was essential because there is no single book, report or paper which deals with the research subject in its totality. For not losing the research context and content, I developed summarising mind-maps. This approach was very effective in selecting the relevant literature during the design and writing processes.

The iterative design process significantly contributed to the highly regarded usability and added value of the new developed policy framework (see paragraph 12.1). By checking the robustness and relevance through the validation interviews, the recommended tips were included before the next expert was consulted. This resulted in a continuous optimisation process in which the new optimisations were checked by another expert. This continuous optimisation process was however very labour intensive. Reflecting now at the end of the research, I believe that this continuous optimisation process is very effective in creating a new policy framework.

The creation of a new expert network was time consuming. By visiting seminars and symposia before and during the research, I developed a small expert network by myself. Due to the assistance and sharing of the broad organisational networks of Cap. (Ing.) Pieter van Ingen (daily supervisor at the Military Engineering Centre of Expertise) and Dr. Susanne Michaelis (daily supervisor at NATO) during the research, my expert network increased rapidly. Therefore, I am very grateful for their assistance.

Finally, I want to conclude with the fact that this research was performed without any organisational restriction of the Netherlands Military Engineering Centre of Expertise or NATO. As a result, the new policy framework is developed without making organisational focussed compromises.

13

Recommendations

In this final chapter the recommendation are elaborated. First, the next step implementation opportunities are presented in paragraph 13.1. The additional research recommendations are elaborated in paragraph 13.2.

13.1 Next Steps Implementation Opportunities

The next steps implementation opportunities are presented per subject in this paragraph.

Awareness Creation. In order to increase the chance of application within civil-military exercises, a real-time stabilisation- or crisis management operation or implementation as a preventive conflict methodology, awareness need to be created. Therefore it is recommended to publish a paper version of the research report in the Military Spectator, the "Genist" and other relevant journals within the defence, diplomacy, development and water management domains. Furthermore, it is highly recommended to present the research results at the Army Corps of Engineers, 1 Civil Military Interaction Command (1CMI-Co), NATO-SHAPE, the Netherlands ministry of Foreign Affairs, the Netherlands Water Partnership, the Dutch Risk Reduction Team and at the World Water Weak. Thereby, it should be presented as a non-military model.

Education. For successful implementation of the new developed *Integrated Water Management Development Framework for Stabilisation Operations,* education will be essential especially for non-experts. Therefore, it is advised to integrate the new policy framework within the education programs of CCOE[28], the HDV of the NLDA[29], 150 Water Construction Unit (105Gncie wb) and the Water Drilling Detachment of the 101 Battalion Netherlands Army Corps of Engineers, 1CMI-Co and "Klasje Clingendael" of the Netherlands ministry of Foreign Affairs. Also, its recommended to apply this framework within the education and training program for each civilian and military mission team. Depending on the students like diplomats, military engineers or functional specialists the education material can be made more specific for their domains. Therefore the possibilities to include this framework in the CCOE trainings should be explored. Especially, *'because the described peace mechanism principles are essential must haves in the DNA mindset of every functional specialist'* (Post, 2015). Consequently, it is advised to include parts of the new policy framework in every 1CMI-Co training exercise. In addition, the new developed policy framework is an appropriate training tool for NATO staff. Therefore it is recommended to investigate the possibilities how the framework can be taught in a CIMIC or Military Engineering lecture at the NATO School.

Inclusion in the Integrated Approach and other existing policies and doctrines. The new framework provides the Netherlands government with a tool to fulfil an important role on the international playing field of stabilisation- and crisis management operations. In order to succeed the implementation in missions, the new policy framework should be applied and supported at the top decision-making levels. Therefore, it is advised to include the new policy framework as an underlying, official and in-depth specific document how to apply and implement the Integrated Approach with regards to water related issues (Leidraad Geïntegreerde Benadering).

[28] CCOE: Civil-Military Cooperation Centre of Excellence (NATO).

[29] HDV: Higher Defence Collage / Executive Master of Security and Defence at the NLDA (Netherlands Defence Academy).

In addition, inclusion in the planning doctrine of the civil-military cooperation (J9 CIMIC) specialist of DOPS, is strongly advised. Furthermore, by conducting a workshop with the water management specialists of 1CMI-Co, the new policy framework can be translated into actual 1CMI-Co policy. In addition, it is recommended to investigate how the new policy framework in its totality or specific parts can be included or supplemented in other policies and doctrines currently present within of the Ministries of Defence and Foreign Affairs.

Unique niche capability within the NATO alliance. When the *Integrated Water Management Development Framework for Stabilisation Operations* is added as official policy within the Integrated Approach (Leidraad Geïntegreerde Benadering) the Netherlands possesses an unique capability within the NATO alliance. In combination with the high level and unique capabilities of 1CMI-Co functional water specialists and the 105 Water Construction Unit and the Water Drilling Detachment of the Army Corps of Engineers, the Netherlands Armed Force can play a fundamental role in enhancing future NATO, UN and EU stabilisation- and crisis management operations.

Verification & Optimisation. It will be interesting to verify and optimise the framework based upon its implementation within a major exercise of the First German/Netherlands Corps (1GER/NLD). Within NATO this unit is leading in the actual implementation of the Integrated or Comprehensive Approaches. Because multiple NATO and partner nations, global NGOs and IOs cooperate within these exercises, this will be the perfect platform to verify and test the new policy framework. Based on the identified lessons learned, the new policy framework can be optimised. Furthermore, awareness is created at multiple NATO member states, their appropriate organisational levels including the participating global NGOs and IOs. Thereby the change of implementation in a stabilisation- and crisis management operation is significantly increased.

Mission Implementation. It is recommended to investigate the implementation possibilities in a country the Netherlands contributes to a stabilisation operation and/or has bilateral water Development Assistance & Cooperation Strategy programs (Water OS programma). Regarding Mali and Afghanistan, this is the case. Furthermore, as displayed in figure 1.3 "Overall present Water Risk" the water risks are high and extremely high in both countries. Because water issues are probably effecting the security situation, water management is also a part of the solution. Therefore, Mali and Afghanistan are interesting implementation opportunities:

- **Mali.** Presently, the Netherlands Armed Forces contributes to the Multidimensional Integrated Stabilisation Mission in Mali (MINUSMA). Mali is also one of the focus countries within the Water Development Assistance & Cooperation Strategy of the Netherlands ministry of Foreign Affairs. Since a Dutch stabilisation forces is present and water management activities are already conducted by the Netherlands ministry of Foreign Affairs including multiple partners within the Netherlands Water Partnership (NWP), Mali possesses an unique implementation opportunity. For example, the Netherlands ministry of Foreign Affairs, can initiate water management as a long-term development theme within Mali. When regarded appropriate by the UN, the new policy framework can be implemented within the unstable and water scarce northern part of Mali.
- **Afghanistan.** Currently, the Netherlands Armed Forces contributes to the NATO Resolute Support mission. The majority is stationed in the city Mazar-e-Sharif located in North-Afghanistan. In the same area the Dutch NGO Cordaid already supports water management projects, since water scarcity and quality is an expected root-cause of future conflict between up- and downstream actors in the agriculture based economy.

The Netherlands Army Corps of Engineers, 1CMI-Co, the Netherlands Defence Academy, the Netherlands ministry of Foreign Affairs, NATO, the Dutch NGOs Cordaid and Naga Foundation plus the Dutch knowledge institutes Deltares and the Delft University of Technology have expressed their interests in a possible cooperation regarding the implementation of the new policy framework.

13.2 Additional Research Recommendations

The new policy framework is designed to be directly implementable after publication of this research report. As concluded in chapter 11, the new developed policy framework is ready for implementation.

Consequently, the amount of additional reached recommendations is limited. However, during the research multiple additional research suggestions emerged. Per subject these are elaborated in this paragraph.

Investigate Interrelations. Water fulfils vital socioeconomic functions and provides the basic needs within each society. Due to the importance of water, the new policy framework will influence and will be influenced by multiple water and non-water related issues. Multiple factors are expected to have a significant influence on the new policy framework, but are not treated in-depth in this research due the set time limitation. Therefore it is recommended to investigate how these factors influence and can be influenced by the new policy framework through a SWOT-analysis (strength, weakness, opportunity, threats):

- Root-causes of conflict (water and non-water related).
- Water as a weapon: medium or tool in warfare, destabilisation activities and socioeconomic political leverage instrument.
- Law: international, national and water law.
- Economics: micro- and macroeconomic policies and water economics.
- Local culture: socio-political relations and issues, water and its relation with gender issues, political system related issue and investments, historical developed processes and developments which effect the current socioeconomic and political systems, religion, ethnical backgrounds, etc.
- Water education.
- Effects and influences of corruption on water governance systems.

Based on the outcomes, it is recommended to developed appropriate mitigation measures. Also, it is advised to exploit and synchronise the opportunities.

Framework development for other Campaign Plan Development Themes. The structure and way of thinking developed within the new policy framework can also be applied for the development of the other Campaign Plan Development Themes, like; Governance, Rule of Law, Security Apparatus, Education, Social Protection, Infrastructure & Rural Development, Healthcare and Economic Activities. Therefore it is recommended to develop an similar framework for all other 1CMO-Co networks; Politics, Military, Economy, Social, Infrastructure and Information.

Develop mitigation strategies. Due to the scale of water management it is sensitive to be undermined by strategies of the opponents. To mitigate these risk, it is advised to develop mitigation strategies and actions based on a broad collection of possible undermining scenarios.

Management of local initiatives. Within the new policy framework the activities are planned, prepared, implemented and executed through cooperation by the participating partners within the Civil-Military Water Group. During phase 5, Implementation & Execution, it will be likely that the mission team will receive reconstruction and development proposals from local non-participating actors. How to manage these are not incorporated in the research. It is recommended to develop a standard procedure how these proposals should be managed. Also, how proposals from individuals who are supporting the armed insurgency or other opposing military forces need to be managed, should be incorporated in this procedure.

Monetary benefits models. It is advised to investigate if there are appropriate models to calculate the monetary benefits and disadvantaged of specific water management related investments, like: economic pay back or return of investment models.

Additional appropriate interaction levels. Coordination and cooperation are motioned as the interaction levels between the civilian and military actors and local stakeholders. Participation has although multiple levels. It is advised to investigate which other interaction levels are appropriate at what moment in time.

Application of Serious Gaming. Serious gaming in combination with system dynamics models, remote sensing and mobile apps applications can play an important role within the mediation and negations process of water conflicts in (post-)conflicts areas. This is also applicable for the Constructive Conflict Approach and Public Participation GIS. Therefore, it is advised to investigate this potential and it's constrains.

References

AIMS (2004), Afghan Agriculture. *Average monthly rainfall & Average Seasonal Temperature*. http://afghanag.ucdavis.edu/country-info/e-afghan-ag-maps-1 Last consulted on February 2014.

AIV (2009), Adviesraad Internationale Vraagstukken (Advisory Council on International Affairs). *Crisisbeheersingsoperaties in Fragiele Staten - De noodzaak van een samenhangende aanpak.* March 2009.

Aqua-Pure (2015). *Hydrological Cycle.* http://www.aquapure.com/your-water/hydrological-cycle Last consulted on 17 February 2015.

Arsel, M. & Spoor, M. (2010). *Water, Environmental Security and Sustainable Rural Development - Conflict and Cooperation in Central Eurasia.* Routledge ISS studies in Rural livelihoods. Routledge, Taylor & Francis Group, London and New York.

Assaf, H. (2010). *Integrated Water Resources Management - Arab Environment WATER*. Arab Forum for Environment and Development, Chapter 6.

Bemmel, I. van & Eikelboom, A. (2014), TNO. *Collaborative Decision Making Process for Complex Defense, Security and Stability Challenges.* NATO (North Atlantic Treaty Organization) & STO (Science and Technology Organisation).

Bemmel, I. van, Eikelboom, A. & Hoefsloot, P. (2010). *'Comprehensive and iterative planning' in Uruzgan - De ontwikkeling van het Uruzgan Campaign Plan.* Militaire Spectator, Vol. 179, No. 4, pp. 196-209.

Berg, P van den (2014), Cordaid. *Validation Interview* - See Appendix N.

Biswas, A. (2008), Third World Centre of Water Management, Atizapán, Mexico. *Integrated Water Resources Management: Is It Working?* Water Resources Development, March 2008, Vol. 24, No. 1, pp. 5-22.

Bliek, J. van der (2015), International Water Management Institute. *Water Conflicts - Multi scales and Dimensions.* Presentation at Dispuut Watermanagement Seminar: Water as a Weapon, 9 January 2015. Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Water Management, Water Resources Section.

Bot, B (2006), Minister Netherlands ministry of Foreign Affairs from 2009 until 2007. *Saving Democracy in a World of Change.* Speech at Georgetown University, Washington D.C.

Both ENDS & Gomukh (2011). *Involving Communities; A Guide to the Negotiated Approach in Integrated Water Resources Management.* Amsterdam, the Netherlands.

Both ENDS (2012). *Approach with Caution: a learning process on three approaches to sustainable development.* Amsterdam, the Netherlands.

Both ENDS (2013). *The Negotiated Approach to IWRM: Building blocks, tools, material and cases.* Amsterdam, the Netherlands.

Brears, R. (2014), Johns Hopkins Water Institute *Integrated Water Resources Management (IWRM) in Asia-Pacific.* http://water.jhu.edu/magazine/integrated-water-resources-management-iwrm-in-asia-pacific/ Last consulted on 25 July 2014.

Bruijn H. de & Heuvelhof E. ten (2008). *Management in Networks on multi-actor decision making.* Routledge Tylor & Francis Group, New York.

CCOE (2012), Civil-Military Cooperation Center of Excellence. *CIMIC Field Handbook, 3rd edition, 2012.*

Chalmers, M. (2004). *Spending to Save: An Analysis of the Cost Effectiveness of Conflict Prevention versus Intervention after the Onset of Violent Conflict.* University of Bradford, Department of Peace Studies, Centre for International Cooperation and Security.

Chubbs, L. (2015), North Atlantic Treaty Organisation - Supreme Headquarters Allied Powers Europe (NATO - SHAPE). *Validation Interview* - See Appendix N.

CIA (2014). *The World Factbook: Afghanistan. https://www.cia.gov/library/publications/the-world-factbook/geos/af.html* Last consulted on February 2014.

Climateapp (2015). *Adaptation Solutions.* http://www.climateapp.org/ Last consulted on 31-03-2015. Developed by Bosh Slabbers, Deltares, Grontmij, Witteveen+Bos & KNMI.

Clingendael (2014). *Strategische Monitor 2014 - Een Wankele Wereldorde.*

Coning, C. de (2008). *The United Nations and the Comprehensive Approach.* Danish Institute For International Studies (DIIS), Copenhagen.

Cooten, G. van (2015), Royal Netherlands Army. *Validation Interview* - See Appendix N.

Cremers, P. (2014), Royal Netherlands Army. *Validation Interview* - See Appendix N.

Cuppen, C. (2012). *Legitimation of flood management.* PhD. Report, Delft University of Technology, Engineering, Policy and Management.

Cuppen, E. (2012), Delft University of Technology, faculty of Technology, Policy and Management. *Diversity and constructive conflict in stakeholder dialogue: considerations for design and methods.* Policy Sciences, Vol. 45, No. 1, 2012.

Daalen, C., Bots, P., Heuvelhof, E. ten, Lukosch, S., Lukszo, Z., Poel, I. van der, Ruijgh-van der Ploeg, M., Saanen, N., Steenhuisen, B., Voort, H. van der & Warnier, M. (2014). *Lecture notes: Introduction to Designing Multi-actor systems.* Delft University of Technology, Faculty of Technology, Policy and Management.

Dietz, T., Ostrom, E. & Stern, P. (2003). *The struggle to govern the commons*. Science, December 2003, Vol. 302, No. 5652, pp. 1907-1912.

DRR-Team (2014), Dutch Risk Reduction Team. *DSS WATER.* http://www.drrteam-dsswater.nl/?page_id=619 Last consulted on 23-11-2014.

Dutchwatersector (2014). *News & Events.* http://www.dutchwatersector.com/ Last consulted on 23-11-2014.

Elp, L. van (2012). *'Heading upstream' - Transforming a water conflict in north Afghanistan: from narratives to transformative capacities.* Master Thesis Report, Radboud University Nijmegen.

Emmes, M. (2012). *For a coherent German Government policy towards fragile states - Interministerial Guidelines.* Botschaft der Bundesrepubliek Deutschland: Federal Foreign Office, Federal ministry of Defence & Federal ministry for Economic Cooperation and Development.

Enserink, B., Hermans, l., Kwakkel, J., Thissen, W., Koppenjan, J. & Bots, P. (2010). *Policy Analysis of Multi-Actor Systems.* LEMMA, The Hague.

Ertsen, M. (2014). *Lecture notes: Water Systems, People and Society (CIE4410).* Delft University of Technology, faculty of Civil Engineering and Geosciences, Department Water Management, Water Resources Section.

EU (2013b). *The EU's comprehensive approach to external conflict and crises.* European Commission, High Representative Of The European Union For Foreign Affairs And Security Policy.

EU (2013a). *Council Conclusions on EU Water Diplomacy.* Council of the European Union - Foreign Affairs Council Meeting.

EUROCONSULT (1989). *Agricultural Compendium: For Rural Development in the Tropics and Subtropics.* Third revised edition. Amsterdam: Elsevier Science Publishers B.V. Produced and edited by EUROCONSULT, agricultural and civil engineering consultants of Arnhem, The Netherlands; commissioned by the Ministry of Agriculture and Fisheries, The Hague, The Netherlands.

FAO (1997), Food and Agriculture Organisation of the United Nations. *Crafting institutional arrangements for community forestry - Field Manual 7.*

FAO (2015). *Food and Agriculture Organisation of the United Nations - AQUASTAT:* http://www.fao.org/nr/water/aquastat/main/index.stm Last consulted on 18 February 2015.

Feitelson, E. (2002), Department of Geography, The Hebrew University of Jerusalem, Israel. *Implications of shift in the Israeli water discourse for Israeli-Palestinian water negotiations.* Political Geography, Vol. 21, pp. 293-318.

FFP (2014). *Fund for Peace - The Fragile States Index 2014.*

Fishstein, P. (2012). *Briefing Note: Winning Hearts and Minds in the Uruzgan Province.* Feinstein International Center, Tufts University,. Somerville USAr.

FOI (2011), Swedish Defence Research Agency. *The Impact of Climate Change on Human Security in the Zambezi River Basin: A pre-study with a focus on Chinde District in Mozambique and Bulawayo in Zimbadbwe.*

Gabriëlse, R. (2007). *A 3D Approach to Security and Development. Connections.* The Quarterly Journal, 2008, Vol. 6, No. 2, pp, 67-47.

Genderen, R. van & Rood, J. (2011). *Water Diplomacy: a Niche for the Netherlands?* Institute of International Relations - Clingendael. The Hague, The Netherlands.

Genderen, R. van & Rood, J. (2012), Catholic University Leuven & University of Leiden. *Waterconflicten en de rol van waterdiplomatie.* International Spectator, July/August 2012, Vol. 66, No 7/8, pp. 346-349.

Gerlak, A., Lautze, J. & Giordano, M. (2011), University of Arizona & International Water Management Institute, Colombo, Sri Lanka. *Water resources data and information exchange in transboundary water treaties.* Int. Environ. Agreements, December 2011, Vol. 11, pp. 179-199.

Gerring, J. (2007). *Case Study Research: Principles and Practice.* Cambridge University Press, 2007.

Goor, L. van de & Major, C. (2012). Clingendael Conflict Research Unit (CRU). *How to make the comprehensive approach work - Preparation at home is key to effective crisis management in the field.* CRU Policy Brief, No. 21, March 2012.

Gourbesville, P. (2008), University of Nice-Sophia Antipolis. *Challenges for integrated water resources management.* Physics and Chemistry and the Earth, February 2008, Vol. 33, pp. 284-289.

Government of Afghanistan (2009), ministry of Commerce & Industry (MOCI). *Afghanistan SME Development Strategy.*

Government of the Netherlands (2011). *Final evaluation: Netherlands contribution to ISAF, 2006-2010.*

Graaf, B. de (2010). *The Dutch mission in Uruzgan - Political and military lessons.* Atlantisch perspectief, journal for international relations and security policy, Vol. 34, No. 7, pp, 18-22.

Grandia, M. (2009). *The 3D approach and counterinsurgency - A mix of defence, diplomacy and development - The case of Uruzgan*. Master thesis report, University of Leiden.

GWP (2000), Global Water Partnership. *Integrated Water Resources Management.* TAC (Partnership Technical Advisory Committee) Background Papers, No. 4, pp. 22.

GWP (2004), Global Water Partnership. *Catalyzing Change: A handbook for developing integrates water resources management (IWRM) and water efficiency strategies.*

Haddadin, M. (2002), Special Counselor to HRH Prince El Hassan Jordan. *Water issues in the Middle East challenges and opportunities.* Water policy, June 2002, Vol. 4, pp. 205-222.

Harston, J. (2013), Assistant Secretary-General, United Nations *Peacekeeping in 2013 - Peace Support and Stabilisation Operations from a United Nations perspective.* NATO School, Germany.

HCSS (2014), The Hague Centre for Strategic Studies. *Strategic Monitor 2014 - Four Strategic Challenges.*

HDC (2015). *Hydrologic Data Collection - The Water Cycle.* http://www.hydrologicdata.com/water-cycle.html Last consulted on 24 February 2015.

Heijman, B. (2014). *Lecture notes: Design Drinking and Waste Water Treatment Plants.* Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Water Management, Sanitary Engineering.

Hevner, A. R., March, S. T., Park, J., & Ram, S. (2004). *Design science in information systems research.* MIS Quarterly, Vol. 28, No. 1, pp. 75–105.

Hoes, O., Leeuwen, P., Giesen, N. (2010). *Lecture notes: Polders.* Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Water Management, Water Resources Section.

Hofstede, G., Hofstede, G. J., & Minkov, M. (2010). *Cultures and Organisations: Software of the Mind: Intercultural Cooperation and its Importance for Survival.* New York, USA: McGraw Hill.

Homan, K. (2014), Netherlands Institute of international Relations 'Clingendael'. *Strategisch geduld en de geïntegreerde benadering*. Atlantisch Perspectief - Ontwikkelingssamenwerking, vrede en veiligheid, nr. 4, April 2014.

Hoss, F. (2010). *A comprehensive assessment of Multilayered Safety (Meerlaagsveiligheid) in flood risk management.* Master Thesis, Delft University of Technology, Civil Engineering Hydraulic Engineering Section.

ICA (2012), Intelligence Community Assessment. *Global Water Security.* U.S. Department of State.

ICPR (2015). International Commission for the Protection of the Rhine. *International Cooperation & Water Framework Directive.* http://www.iksr.org/en/index.html Last consulted on 9 May 2015.

IDPS (2011), International Dialogue on Peacebuilding and Statebuilding. *A NEW DEAL for engagement in fragile states.*

Islam, S. & Susskind, L. (2013). *Water Diplomacy: A Negotiated Approach To Managing Complex Water Networks.* RFF Press, New York.

Jeffrey, P. & Seaton, R. (2004), School of Water Sciences Cranfield University UK. *A Conceptual Model of 'Receptivity' Applied to the Design and Deployment of Water Policy Mechanisms.* Environmental Sciences, Vol. 1, No. 3, pp. 277-300.

Johnson, J. & Cook, M. (2013). *Policy Design: A New Area of Design Research and Practice.* Complex Systems Design & Management 2013, Springer International Publishing Switzerland 2014.

Joint Chiefs of Staff (2013), United States Department of Defence. *Counterinsurgency - Joint Publication 3-24.*

JØnch-Clausen, T. & Fugl, J. (2001), Global Water Partnership (GWP), DHI Water & Environment, Denmark. *Firming up the Conceptual Basis of Integrated Water Resources Management.* Water Resources Development, July 2001, Vol. 17, No. 4, pp. 501-510.

JØnch-Clausen, T. (2004), Global Water Partnership (GWP), Denmark. *"...Integrated Water Resources Management (IWRM) and Water Efficiency Plans by 2005"; Why, What and How?*

Jonkman, S. (2007). *Loss of life estimation in flood risk assessment - Theory and applications.* Ph.D. Discussion, Delft University of Technology, Civil Engineering Hydraulic Engineering Section.

Karvčik, M., Pokorný, J., Kohutiar, J., Kováč, M. & Tóth, E. (2008). *Water for the Recovery of the Climate - A New Water Paradigm.* Typopress-publishing house s.r.o., Košice.

Kasselmann, H-J. (2011), Centre for Technology and National Security Policy, Institute for National Strategic Studies, Washinton DC, U.S. *Change of Attitude, Change of Conduct: Achieving Effectiveness in Implementing*

the Comprehensive Approach. Capability Development in Support of Comprehensive Approaches - Transforming Internationals Civil-Military Interactions - Chapter 15, December 2011.

Kim, M-S. (2012), department of Speech, University of Hawaii at Monoa. *World peace through intercultural research: From a research culture of war to a research culture of peace.* International Journal of Intercultural Relations, January 2012, Vol. 36, No. 1, pages 3-13.

King, G., Keohane, R.O. & Verba, S. (1994). *Designing Social Inquiry, Scientific Inference in Qualitative Research.* Princeton, NJ: Princeton University Press.

Kleijn, J. (2014), Netherlands ministry of Foreign Affairs. *Validation Interview* - See Appendix N.

KNMI (2014). *KNMI DataCentrum - Waarnemingen & rekenmodellen* https://data.knmi.nl/portal/KNMI-DataCentre.html#location=59.81%3B72.91%3B37.4%3B29.14 Last consulted on February 2014.

Koninklijke Landmacht (2011). *Doctrinepublicatie 3.2.2 - Commandovoering.*

Koninklijke Landmacht (2014a). *Operationeel Concept Landoptreden.*

Koninklijke Landmacht (2014b). *Doctrine Publicatie 3.2 - Landoperaties*.

Koolhof, F. (2014), ViAfrica and 1CMI-Co, Royal Netherlands Army. *Validation Interview* - See Appendix N.

Kruif, M. de (2014), Lieutenant-General, Commander of the Royal Netherlands Army. *Landmacht.* Jaargang 64, Nummer 9, 11 november 2014.

Kuechler, B. & Vaishnavi, V. (2008). *On theory development in design science research: anatomy of a research project.* European Journal of Information Systems, Vol. 17 No. 5, pp. 489–504.

Lier, J & Kreuk M. (2013). *Lecture notes: Wastewater Treatment.* Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Water Management, Sanitary Engineering.

Lijn, J. van der (2011). *3D 'The Next Generation' - Lessons Learned from Uruzgan for Future Operations.* Netherlands Institute of international Relations 'Clingendael' & Cordaid, the Hague.

Lopez, J. (2009). *The Multiple Lines of Defense Strategy to Sustain Coastal Louisiana.* Journal of Coastal Research Vol. 54, pp. 186-197.

LTO (2009). *Three Years Later: A socio-political assessment of Uruzgan Province from 2006 to 2009.* The Liaison Office, Kabul, Afghanistan.

LTO (2010), *The Dutch Engagement in Uruzgan: 2006 to 2010.* The Liaison Office, Kabul, Afghanistan.

LTO (2012). *Uruzgan: 18 months after the Dutch / Australian Handover*. The Liaison Office, Kabul, Afghanistan.

Lucius, G.J. (2015), Netherlands ministry of Foreign Affairs and 1CMI-Co, Royal Netherlands Army. *Validation Interview* - See Appendix N.

Maier, R. (2010). *Early Recovery in Post-Conflict countries: A conceptual Study.* Clingendael Institute, The Hague, The Netherlands.

Maill (2007). *Emergent Conflict and Peace Change.* Basingstoke: Palgrave Macmillan.

Mansveld, D. (2006). *Water Management, Livestock and the Opium Economy in Afghanistan - A case Study.*

Marslow, A. (1943). *A Theory of Human Motivation*. Psychological Review, July 1943, Vol. 50, No. 4, pp. 370-396.

Matthijssen, C.J. (2014). *Van 3D naar geïntegreerde benadering - Een beeld van de ontwikkelingen sinds Uruzgan.* Militaire Spectator, 2014, Vol. 183, No. 5.

Matthijssen, C.J. (2015), Royal Netherlands Army. *Validation Interview* - See Appendix N.

Mays, L., Antoniou G. & Angelakis, A. (2013), Arizona State University, University of Patra & Institute of Iraklion, National Foundation for Agricultural Research. *History of Water Cisterns: Legacies and Lessons.* Water, November 2013, Vol. 5, pp. 1916-1940.

Ministerie van Buitenlandse Zaken (2011). *Focusbrief Ontwikkelingssamenwerking.*

Ministerie van Buitenlandse Zaken (2012). *Water voor Ontwikkeling.*

Ministerie van Buitenlandse Zaken (2013). *Internationale Veiligheidsstrategie - Veilige Wereld, Veilig Nederland.*

Ministerie van Buitenlandse Zaken (2014). *Leidraad Geïntegreerde Benadering - De Nederlandse visie op een samenhangende inzet op veiligheid in fragiele staten en conflicten.* Ministerie van Buitenlandse Zaken, Ministerie van Defensie, Ministerie van Buitenlandse Handel en Ontwikkelingssamenwerking & Ministerie van Veiligheid en Justitie (Juli 2014).

Ministerie van Buitenlandse Zaken, Ministerie van Defensie, Ministerie van Ontwikkelingsamenwerking, Ministerie van Economische Zaken (2005). *Wederopbouw na gewapend conflict.*

Ministerie van Veiligheid en Justitie (2007). *Strategie Nationale Veiligheid.*

Ministry of Defence (2013). *Netherlands Defence Doctrine.*

Mitchell, S. (2006), department of Political Science, University of Iowa, USA. *Introduction to special issue: conflict and cooperation over international rivers.* Political Geography, Vol. 25, pp. 357-360.

Moel, P., Verbeek, J., Dijk, J. (2012). *Drinkwater - Principes en praktijk.* Delft University of Technology, Water Management Academic Press.

Molenaar, W. & Toorn, A (2012) *Lecture notes: Waterpower Engineering.* University of Technology, Faculty of Civil Engineering and Geosciences, Department Hydraulic Engineering, Section Hydraulic Structures and Flood Risk.

Mostert, E. & Raadgever, G. (2008), Delft University of Technology. *Seven rules for researchers to increase their impact on the policy process.* Hydrology and Earth Systems Sciences, August 2008, Vol. 12, pp. 1087-1096.

Mostert, E. (2003), RBA Centre, Delft University of Technology. *Conflict and co-operation in international freshwater management: a global review.* Intl. J. River Basin Management, 2003, Vol. 1, No. 3, pp. 1-12.

NAGA (2015). *Water for the recovery of the planet, How local changes can have a global impact - Scientific Whitepaper.* Naga Foundation & SamSamWater Foundations, March 2015.

Nations Online (2014). *Afghanistan Map.* http://www.nationsonline.org/oneworld/map/afghanistan_map.htm Last consulted on February 2014.

NATO (2003). *Urban Operations in the Year 2020.* Research and Technology Organisation North Atlantic Treaty, France.

NATO (2010). *Active Engagement, Modern Defence.* Strategic Concept for the Defence and Security of the Members of the North Atlantic Treaty Organization.

NATO-EAPC (2014). *Water and food security.* Euro-Atlantic Partner Council: Joint Health, Agriculture and Food Group (JHAFG).

NATO (2014). *Organisation.* http://www.nato.int/cps/en/natohq/organisation.htm Last consulted on 23-11-2014.

NATO-RM (2015). *NATO Review Magazine: Hybrid war - hybrid response?* http://www.nato.int/docu/review/2014/russia-ukraine-nato-crisis/Russia-Ukraine-crisis-war/EN/index.htm Last consulted on 26 February 2015.

Nowak, M. (2006). *Five Rules for the Evolution of Cooperation.* Program for Evolutionary Dynamics, Department of Organismic and Evolutionary Biology, and Department of Mathematics, Harvard University, Cambridge. Science 314, 1560.

NWP (2014), Netherlands Water Partnership. *Deelnemers.* http://www.nwp.nl/over-nwp/deelnemers Last consulted on 23-11-2014:

OCHA (2014), UN Office for the Coordination of Humanitarian Affairs. *Saving Lives Today and Tomorrow - Managing the risk of humanitarian crises.*

OECD (2013), Organisation for economic co-operation and Development. *Water security for better lives - A summary for policymakers.*

Onencan, A. (2014), Delft University of Technology. *Validation Interview* - See Appendix N.

Ostrom, E. (1996). *Crossing the great divide: coproduction, synergy, and development*. World Development, Vol. 24, pp. 1073-1087.

Pahl-Wastl, C. (2006), Institute for Environmental Systems Research, University of Osnabrück, Germany. *The implications of complexity for integrated resources management.* Environmental Modelling & Software, March 2006, Vol. 22, pp. 561-596.

Partnersvoorwater (2014). *Water OS programma.* Last consulted on 23-11-2014. http://www.partnersvoorwater.nl/?page_id=74

Post, H. (2015), Waterboard Rees & Wieden and 1CMI-Co, Royal Netherlands Army. *Validation Interview* - See Appendix N.

Radif, A. (1999), Dhabi Enterprises Inc., Canada. *Integrated water resources management (IWRM): an approach to face the challenges of the next century and to avert future crises.* Desalination, November 1999, Vol. 124, pp. 145-153,.

Ramsbotham, O., Woodhouse, T. & Miall, H., (2011). *Contemporary Conflict Resolution: The prevention, management and transformation of deadly conflicts - Third Edition.* UK, Cambridge: Policy Press.

Ravesteijn, W., Annema, J., Bauma, J., Jachtman, E., Taebi, B. (2013). *Lecture notes: Technology Development & Impact Assessment.* University of Technology, Faculty of Technology, Policy and Management, Department Values, Technology and Innovation, Section Ethics/Philosophy of Technology.

Rientjes, S. (2015). *Civil-Military Interactions: The Uruzgan Experiment.* Reconstruction Afghanistan: Civil-Military Experiences in Comparative Perspective - Chapter 6. Contemporary Security Studies.

Rijksoverheid (2009). *Nationaal Waterplan.*

Rittel, H. & Webber, M. (1973), University of California. *Dilemmas in a General Theory of Planning).* Policy Science, 1973, Vol. 4, pp. 155-169.

Rogers, P. (2007). *Towards Sustainable Security: Alternatives to the War on Terror.* London: Oxford Research Group.

Royal Dutch Embassy Kabul (2006). *Civil Assessment URUZGAN Province Afghanistan - Executive Summary.* Kabul, Afghanistan.

Royal Netherlands Army (1999). *Peace Operations - Army Doctrine Publication III.*

Royal Netherlands Army (2003). *Combat Operations Against an Irregular Force*.

Sadoff, C. & Grey, D. (2002), The World Bank. *Beyond the river: the benefits of cooperation on international rivers.* Water Policy, Vol. 4, July 2002, pp. 389-403.

Salman, M.A. (2007), International Water Resources Association. *The United Nations Watercourse Convention Ten Years Later: Why Has it Entry into Force Proven Difficult?* Water International, March 2007, Vol. 32, No. 1, pp. 1-15.

Savenije (2007). *Lecture notes: Hydrology of Catchments, Rivers and Delta's.* Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Water Management, Water Resources Section.

Savenije, H. & Zaag, P. van der (2008), Delft University of Technology & UNESCO-IHE Institute for Water Education. *Integrated water resources management: Concepts and issues.* Physics and Chemistry and the Earth, February 2008, Vol. 33, pp. 290-297.

Simon, H. (1969). *The sciences of the artificial.* MIT Press, Cambridge.

Swain, A. (2011), department of Peace and Conflict Research, Uppsala University Sweden. *Water wars: fact or fiction?* Futures, October 2011, Vol. 33, No. 8-9, pp. 769-781.

SWP & ZIF (2013). *Toolbox Crisis Management - From Civilian Crisis Prevention to Peacebuilding: Principles, Actors, Instruments.* Stiftung Wissenschaft und Politik (SWP) - German institute for International and Security Affairs & Center for International Peace Operations (ZIF). C. Major, T. Pietz, E. Schöndorf, W. Hummel.

SWWM (2015), Sustainable Sanitation and Water Management. *Stormwater Management*. http://www.sswm.info/category/concept/water-cycle Last consulted on 27-06-2015.

Tak, N. (2015), North Atlantic Treaty Organization - Supreme Headquarters Allied Powers Europe (NATO - SHAPE). *Validation Interview* - See Appendix N.

Travers, T. & Owen, T. (2007). *Peacebuilding While Peacemaking: The Merits of a 3D Approach in Afghanistan.* University of Oxford, February 2007.

Uhm, P. van (2012), former chief of defense of the Netherlands Dutch Armed forces from 2008 until 2012. *Speech: Landelijk Congres Wijkgericht Werken 2012, Haarlemmermeer.* http://www.youtube.com/watch?v=82hubymwkhE Last consulted in March 2014.

UN (2015). United Nations. *Charter of the United Nations.* http://www.un.org/en/documents/charter/ Last consulted on 9 May 2015.

UNEP (2003), United Nations Environment Programme. *Afghanistan: Post-Conflict Environmental Assessment.*

UNEP (2008), United Nations Environmental Programme. *Vital water graphics - An overview of the State of the World's Fresh and Marine Waters - 2nd Edition:* http://www.unep.org/dewa/vitalwater/index.html Last consulted on 25 February 2015.

UNEP (2009). United Nations Environmental Programme. *From conflict to peacebuilding: the role of natural resources and the environment.*

UNEP (2012), United Nations Environment Programme. *Integrated Water Resources Management - Planning Approach for Small Island Developing States; Guidelines, Methods and Tools.*

UNSD (2015). *United Nations Sustainable Development Summit 2015.* http://www.un.org/sustainabledevelopment/ Last consulted on 19 September 2015.

UN-University (2013). *Water Security & the Global Water Agenda - A UN-Water Analytical Brief.*

USAID (2013), United States Agency for International Development. *Water and Development Strategy 2013-2018.*

USAID (2013), United States Agency for International Development. *Water & Conflict: A Tool for Programming.*

USGS (2008), by Tera Williams-Sether. *Streamflow Characteristics of Streams in the Helmand Basin Afghanistan.* U.S. Agency for International Development

USGS (2015). *The USGS Water Science School - The World's Water:* http://water.usgs.gov/edu/earthwherewater.html Last consulted on 24 February 2015.

Vavier, M. (2014). *The contribution of Serious Gaming to the Negotiated Approach - Applying game design to groundwater management in Khalna, Bangladesh.* Master Thesis Report, Delft University of Technology.

Vellinga, T. (2013). *Lecture notes: Ports and Waterways 1.* Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Hydraulic Engineering, Section Rivers, Ports, Waterways and Dredging Engineering.

Ven, F. van de (2011). *Lecture notes: Water Management in Urban Areas.* Delft University of Technology, Faculty of Civil Engineering and Geosciences, Department Water Management, Water Resources Section.

Ven, F. van de (2014), Deltares. *Validation Interview* - See Appendix N.

Verhagen, H. (2014). *Lecture notes: Coastal Zone Management.* University of Technology, Faculty of Civil Engineering and Geosciences, Department Hydraulic Engineering, Section Coastal Engineering.

Verschuren, P. & Doorewaard, H. (2010). *Designing a Research Project - Second Edition*. The Hague, Eleven International Publishing.

Vogelaar, A. (2013), Netherlands Defence Academy - Faculty of Military Sciences. *Technical Evaluation Report: Collaboration in a Comprehensive Approach to Operations.* NATO (North Atlantic Treaty Organization) & STO (Science and Technology Organisation) October, 2013. Collaboration in a Comprehensive Approach to Operations: Effective Collaboration in Joint, multinational, Multiagency Teams and Staff.

Waterbouwdag (2014). *Deelnemers.* http://www.waterbouwdag.nl/ Last consulted on 23-11-2014.

WEF (2015). *World Economic Forum - Global Risks 2015, 10th Edition.*

Weinthal, E., Troell, J. & Nakayama, M. (2011), Nicholas School of the Environment - Duke University USA, International Water Program, Environmental Law Institute - Washington DC USA & Division of Environmental Studies - The University of Tokyo Japan. *Water and post-conflict peacebuilding: introduction.* Water International, March 2011, Vol. 36, No. 2, pp. 143-153.

WF (2015). *Water Footprint* http://www.waterfootprint.org/?page=files/home Last consulted on 25 February 2015.

Wolf, A. (1998), department of Geosciences, Oregon State University. *Conflict and cooperation along international waterways.* Water Policy, April 1998, Vo 1, No. 2, pp 251-265.

Wolf, A. (July 2007), department of Geosciences, Oregon State University. *Shared Waters: Conflicts and Cooperation.* The Annual Review of Environmental Resources, July 2007, Vol. 32, pp. 241-269.

WRI (2015). *World Resources Institute - AQUEDUCT Measuring and Mapping Water Risk, Water Risk Atlas:* http://www.wri.org/our-work/project/aqueduct/aqueduct-atlas Last consulted on 16 February 2015.

WSSC (2015). *Wastewater Treatment.* https://www.wsscwater.com/education-and-recreation/about-wastewater/wastewater-treatment.html Last consulted on 30-03-2015.

WWAP (2003). *Water for People, Water for Live*. UNESCO. World Water Assessment Programme - The United Nations World Water Development Report.

Yin, R. (2003). *Case Study Research Design and methods, 3rd edition.* SAGE Publications.

Zeitoun, M. & Mirumachi, N. (2008), Grantham Institute on Climate Change and the Environment, London School of Economics and Political Science & Department of Geography, King's College London. *Transboundary water interaction 1: reconsidering conflict and cooperation.* Int. Environ. Agreements, September 2008, Vol. 8, pp. 297-316.

Zeitoun, M., Mirumachi, N. & Warner, J. (2010), School of International Development, University of East Anglia & Department of Geography, King's College, London, UK & Disaster Studies, Wageningen University, Wageningen, The Netherlands plus Department of Public Administration, Erasmus University, Rotterdam, The Netherlands. *Transboundary water interaction 2: the influence of 'soft' power.* Int. Environ. Agreements, September 2010, Vol. 11, pp. 159-178.