

Water Governance & Spatial Planning No more Dark Skies Because of Climate Changes

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Key words: water quality, water quantity, spatial planning, land consolidation, ecoservice system, climate change, water governance

SUMMARY

While excesses in our climate become more and more extreme. Balancing between mitigation and adaptation we try to adjust to climate changes best we can. We have to, for we want to secure agricultural land use, to keep feeding people.

It is vital for all involved to work together, as there are many factors and many stakeholders to take into consideration when addressing climate change. The urge to work together is strengthened by the problems that are experienced in daily life, these are the extremes mentioned above.

Creating awareness is the first step, once collaboration has formed. From there on engagement and action follow.

Ecoservice systems are a key driver to work on our environment, as they deliver us benefits from nature. It is the cement between economy and ecology, we need to secure them in order to keep benefitting from them. Healthy soil, maintaining a nutrient cycle, vibrant soil life are all ecoservice systems. In the Delta Programme we work on securing ecoservice systems.

Water and soil management mainly focus on improving water quality.

Both water quality as water quantity are important factors in climate change. Regulating water quantity has a spatial component and will often be addressed to in integrated development projects in our rural and urban areas. Land consolidation can play a part in this, as these processes combine different measures with different goals and different stakeholders.

After successfully implementing a project, sharing the results are important for further awareness and encouraging more to follow. Thereby slowly clearing the dark sky of climate change.

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1. INTRODUCTION

In every day live we slowly become more and more aware of changes in our environment. In general people are ready to take action against climate changes. But what do you do? A diagram that shows us perfectly how to create the best results with our efforts is The Golden Circle. It is originally meant for organisations, but I find it works rather well on this subject too. The circle operates from the inside out. Starting with why you do what you do and with that creating a solid base for your actions.

WHY Climate Changes are affecting our environment in such a way that we cannot ignore them anymore. We have to take action, to secure among other things our food production for our own well-being in future and that of those around us.

HOW By creating awareness that we have to change and finding each other, to work together.

WHAT In working together on mitigating and adapting actions, making actual adjustments in our environment and the way we use it.

In my job at Cadastre Land Registry and Mapping Agency (Kadaster) I work in spatial planning. And working in this field realisation dawns bit by bit that we can make a change. We can use our spatial planning tools to really make a difference. How? Read along and you'll find out.

The Golden Circle

WHAT

Every organization on the planet knows WHAT they do. These are products they sell or the services

HOW

Some organizations know HOW they do it. These are the things that make them special or set them apart from their competition.

WHY

Very few organizations know WHY they do what they do. WHY is not about making money. That's a result. WHY is a purpose, cause or belief. It's the very reason your organization exists.

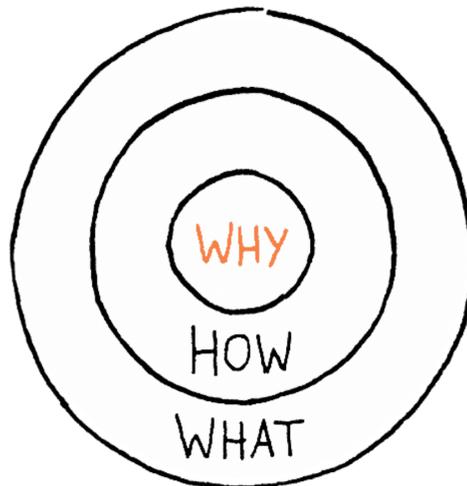


Fig. The Golden Circle
Source: www.smartinsights.com

2. CLIMATE CHANGES ARE HOT

2.1 Extremes become more extreme

All around the world we experience changes in our environment as a result of shifting's in the climate. Some we can adapt to, while others ask for more drastic actions in future, because they cause more critical changes. Climate changes in the Netherlands, they seem contradictory at first. More water and more draught at the same time. However looking more closely experience shows that extremes occur, both in winter as well as in summer. We have to deal with extreme heat in summer and

Fig. 1.2 Urgent issues in Dutch Climate Effects
Source: Dutch National Climate Adaptation Strategy

flooding's in winter, the latter as a cause of excessive water. Water that comes to our delta from surrounding countries and water which we receive through extreme rainfall within our own region.

The figure below show us what issues are critical to pay attention to on short term and how all together the effects aggravate each other.

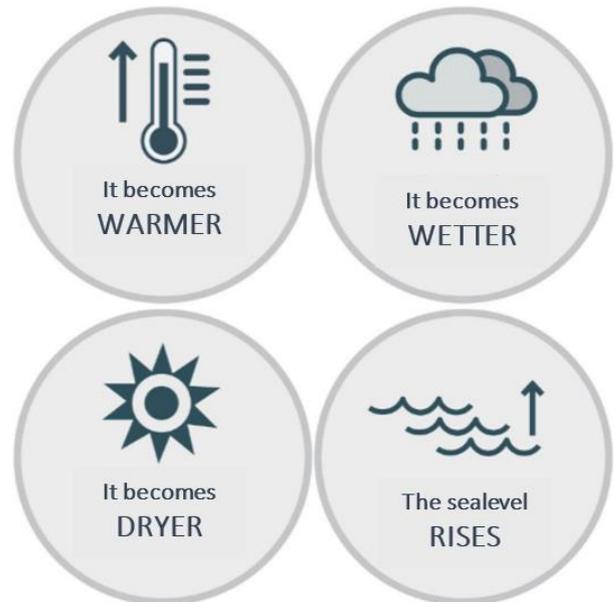


Fig. 1.1 The four extreme changes in the Dutch climate



Fig. 1.2 Urgent issues in Dutch Climate Effects
Source: Dutch National Climate Adaptation Strategy

2.2 How can we secure our agricultural land us in time of climate change?

That is the key question. Worldwide how can we feed people in the future? Or in other words secure the land farmers use for their crops and kettle. What can we do to reduce the effects of the extremes as mentioned above?

Climate changes effect both the environment as well as men's health. Focus in this survey will be on the first. Which adjustments can we make in our water management, supported by our spatial planning, in order to cope with the changes around us.

EXTREMES become more EXTREME

“Ice chunks from heaven” damage cars in Brabant

'IJsbrokken uit de hemel' beschadigen auto's in Brabant

LIVE | Flinkere regen- en onweersbuien zorgden vandaag voor problemen. In Rotterdam viel een dode. Hij werd galektroucederd in een plas water in zijn kelder. In Breukelen hield een valwind huis. In de Randstad is al voor minstens 20 miljoen euro schade aangericht. Vooral Brabant werd vanavond getroffen door enorme hagelstenen.

Redactie 23-06-16, 21:38 | Laatste update: 24-06-16, 18:01

ZLTO Someren dringt aan op noodmaatregelen na stormschade extreem noodweer

SOMEREN - ZLTO Someren dringt bij de gemeente aan op noodmaatregelen om de mensen die schade hebben geleden door het noodweer, op korte termijn te hulp te schieten. De ZLTO Someren spreekt van een noodtoestand.

Source: www.algemeenblad.nl

Wat als je camping of hotel onder water staat?

30 juni 2016 om 18:01 door Hans Ching

Natte voeten op de camping. Foto: ANP

Het regent steeds vaker en steeds harder. Soms met bakken tegelijk, soms meer dan vijftien uur aan één stuk.

Het regende hard in grote delen van Nederland. Het regende in België, en in Frankrijk en in Duitsland was het eerder dit jaar ook al raak.

Lees ook: Het regent, het regent... en wat duurt dat lang

Niet alleen de bewoners hadden daar last, grote groepen toeristen werden niet zo hard getroffen. Ondergelopen bungalowparken, weggespoelde tentjes of onbegaanbare strandwegen naar hotels. Maar wat doe je dan als gestrande toerist?

Source: www.metro.nl

BEWIJS VERZAMELEN

„Foto's maken, klagen en de accommodatie in gebreke stellen”, is het advies van Dennis Heemstra, jurist bij DAS. „Als je huisje is ondergelopen of de camping onder water staat dan kan de eigenaar het product waar je voor betaald hebt niet leveren. Maar om dat te bewijzen, is het wel goed om daar beeldmateriaal van te hebben. Ergens blijven zitten en thuis pas een klacht indienen, is ook niet verstandig. Dan is het vaak al te laat.”

Het regent harder en vaker en dat wordt alleen maar erger. Volgens het *RNNM* zal de hoeveelheid zware neerslag de komende honderd jaar toenemen. En met het water stijgt ook de kans op overlast. Alleen deze lente waren er zowel in Frankrijk, Duitsland, België en Verenigd Koninkrijk zware overstromingen. Ook in Nederland stonden al heel wat straten blank.

KANS OP GELD

Het kan dus geen kwaad om te weten wat je moet doen als ergens in een buitenland de hemel op je hoofd leegloopt. Wie er op tijd bij is, heeft namelijk een goede kans om geld terug te krijgen.

„We krijgen hier wel heel veel vragen over, maar echt een zaak wordt het meestal niet” zegt Heemstra. „Hotel- en campingeigenaren hebben er natuurlijk ook baat bij om het netjes te regelen. Zeker als het om relatief kleine bedragen gaat.”

Ingewikkelder wordt het als niet de vakantiebestemming maar de weg daarnaar toe ondergelopen is. Heemstra: „Ook dan kun je vaak kosteloos annuleren, maar dan moet je niet bij het vakantieverblijf, maar bij je verzekering zijn. Een annuleringsverzekering heeft meestal wel een bepaling dat een onbereikbaar geworden vakantiebestemming gratis geannuleerd kan worden.”

What If your campsite or hotel floods?

Almost 2.200 hectares of potatoes and unions not harvested

Climate change: A threat to WORLD PEACE

Klimaatverandering: een bedreiging voor vrede

11-10-2019

De bezorgdheid over de gevolgen van klimaatverandering brengt wereldwijd miljoenen mensen op de been. Tijdens protesten en klimaatstakingen laten ze blijken dat de klimaatcrisis een halt moet worden toegeeroepen.

En terecht. PAX werkt op veel plekken waar de oorzaken en gevolgen van klimaatverandering duidelijk zichtbaar zijn. Van de vervuulende kolenindustrie in Oost-Europa tot de verwoestijning in Darfoer. En van de verdroging van graslanden in Irak tot de dreigende stijging van het zeeniveau in Colombia. Klimaatverandering veroorzaakt in deze gebieden een tekort aan schoon drinkwater, voedsel en natuurlijke hulpbronnen. Deze tekorten werken conflict in de hand. Deze conflicten kunnen beurtelings weer impact

Water Governance and Spatial Planning (10396)
 Charlotte Gillet (Netherlands)

Nieuwe Oogst | NIEUWS | VEEHOUDERIJ | AKKER- & TUINBOUW | REGIO | VIDEO

AKKERBOUW | FRUITTEELT | GROENTETEELT | SIERTTELT

▲ © Hajjo Dodde

Bijna 2.200 hectare aardappelen en uien niet geoogst

AKKERBOUW | HAJJO DODDE | 05 FEB 2020 OM 13:23:00R

Nederlandse akkerbouwers hebben afgelopen najaar bijna 1.800 hectare aardappelen en 380 hectare zaaiuien niet kunnen oogsten vanwege de natte weersomstandigheden.

Dit blijkt uit de definitieve oogstraming waarvan het Centraal Bureau voor de Statistiek (CBS) vorige week de cijfers publiceerde. Het betaalde **Nederlandse areaal aardappelen was in 2019 in totaal 167.613 hectare**. Daarvan wordt uiteindelijk volgens de verwachting van het CBS 165.823 hectare daadwerkelijk geoogst.

FIG Working Week 2020
 Smart surveyors for land and water management
 Amsterdam, the Netherlands, 10–14 May 2020

3. BALANCE IS THE KEY

If it rains, you take an umbrella. You can still go outside, but the rain won't affect you as much. You won't get wet. But what happens if the rain becomes so extreme that an umbrella won't suffice? That's the point where you have to adjust, or in other words adapt. Maybe you stay inside, maybe you take the bus or maybe you invent some new protection against the heavy showers.

In climate change we face similar phenomenon's. Sometimes you can protect yourself or your land in a sufficient way, to minimize and even reduce the effects of the change in your environment. For example the summers are warmer than they were before. The ground therefore becomes drier and farmers will start to use extra water to secure their harvest. But at some point the balance tips. There is only so much you can do to protect yourself from the changes around you. When the point comes that you cannot prevent or reduce the effects of climate change, than it is time to adapt yourself or the way you use the land or run your farm. The latter we call adaption, the former is mitigation (see figure below). In our example the balance point will be that the water becomes so scarce, that farmers cannot save their harvest and it will be lost for consumption. We will have to think of another way to make sure this won't happen. This can be a different type of crop, which is more accustomed to dry circumstances, maybe a change in grounds nearby or some other measures. In this report you will get accustomed to different possibilities, focus will be mainly on awareness that water management and spatial planning can offer relief in times of changes around us. It is always a case of balancing between mitigation and adaptation, as we need to reduce the effects of a situation (which is mitigation) but also adapt to it once the effects become too extreme.

Climate change *mitigation* refers to the efforts to reduce or prevent emission of greenhouse gases that causes a worldwide increase of temperature. *Adapting* to climate change refers to the adaption of the environment to the consequences of climate change. Mitigation and adaption are complementary. We need both: preventing the increase of temperature as well as measures to adapt the environment to the consequences of climate change.



Fig. 2.1 The difference between mitigation and adaptation Source: National Adaptation Strategy

4. A “How to” guide in water governance

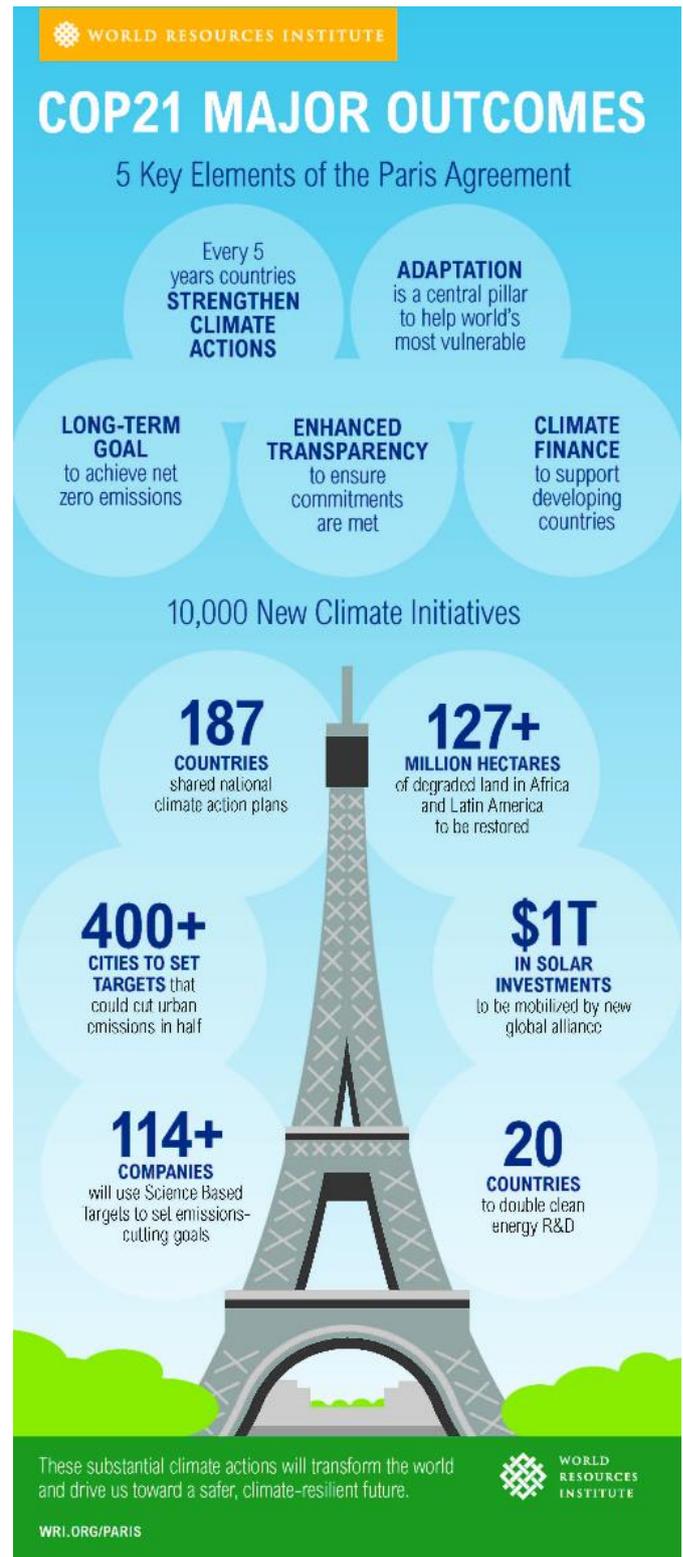
4.1 Public & private sector working together creating awareness

Water management is secured in the national Delta Programme. A programme which was started to adapt and mitigate to climate changes. Up until the start of this programme in 2010, actions in climate changes were often addressed from the top down. Initiated by governments. In the delta programme we work together public and private sector, side by side.

Working together is crucial. People see this value more and more. Find solutions together, for the challenges we face. Feeling the pain of changes around us and wanting to take responsibility, urges many private parties into action. This collaboration creates awareness. It is therefore an important conclusion of the Paris Agreement of the United Nations Congress on Climate Change in 2015 and one of the pillars (adaptation) of the agreement that enhances this statement:

"While ambitious mitigation action is essential, it will be equally important to encourage individual and collaborative actions to prepare for and adapt to the adverse impacts of climate change."

Fig. 3.1 The conclusions of the 2015 Paris Agreement on Climate Change



And also in the Dutch National Climate Adaptation Strategy, see figure 3.2 below, it is clear that climate proofing is a joint undertaking.

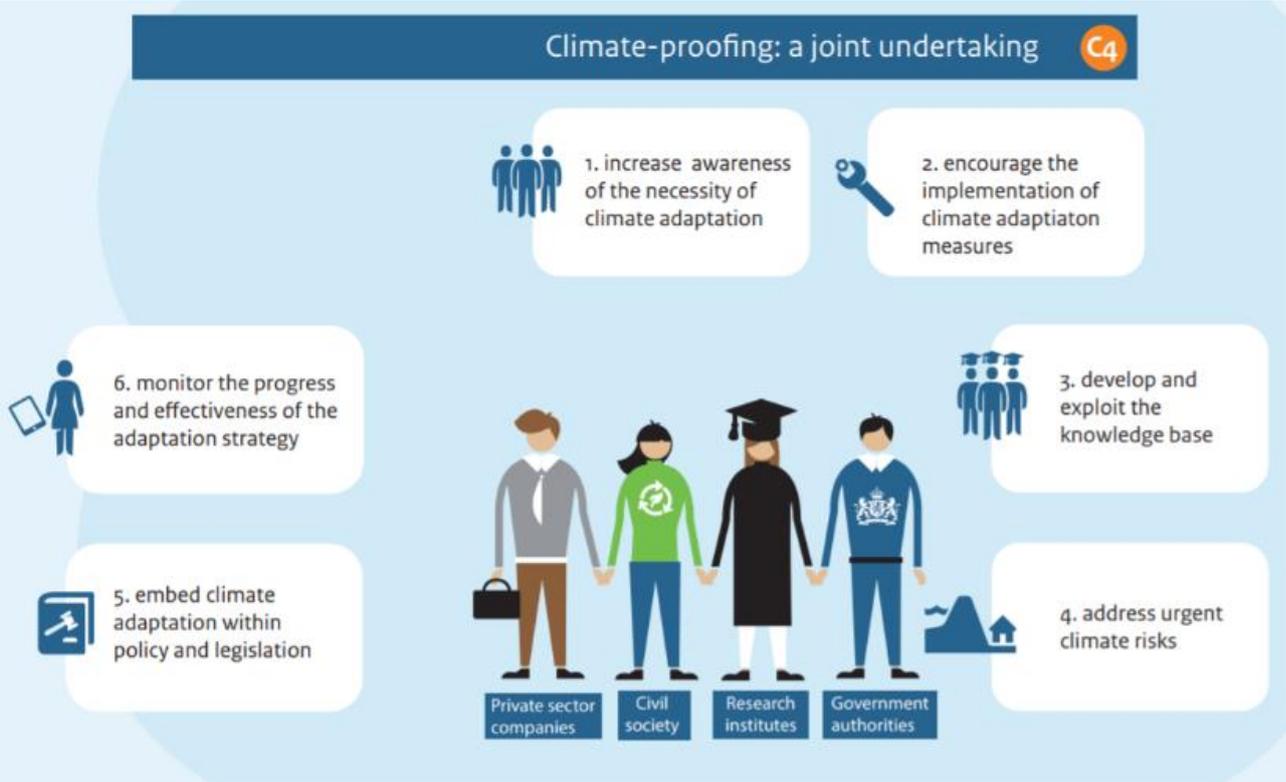


Fig. 3.2 Dutch National Climate Adaptation Strategy: Adapting with ambition

4.2 Sustainable land use in Delta Plan Agricultural Water Governance

Nature supplies us with lots of different benefits. For example she provides us with food, raw materials and fresh water. But she also regulates our ecosystems. Think about trees, filtering air and improving air quality. She supports our ecosystem by maintaining a nutrient cycle and soil life which provides a healthy soil. We call these benefits ecosystem services.

Sustainable and smart use of soil provides us with several different ecosystem services, which both private and public sector can benefit from. That is the reason why it has become an important motive in policymaking, for it connects economy to ecology. Ecosystem services embody sustainability and why this is important. Soil management goes hand in hand with water management. Together they produce healthy food, provide cleaner water and help in the solving climate changes. A healthy bottom can buffer more water and CO₂. Well executed soil & water management can strengthen the agricultural sector economically and also fill in the social cultural needs around water management. Awareness is all important. Because the sector, in this case the farmer, has to make the change there is lots of attention for farmers who want to take action in soil management.

The ultimate goal in Delta Plan Agricultural Water Governance (DAW), an implementation plan of the Delta Programme mentioned before is to work together on a sustainable growth in agricultural production, that at the same time goes together with solving issues in water quality and water quantity.

To sustainably solve water matters in the long term, we need a good soil formation. A good quality soil retains more water and is able to hold minerals and plant protecting products for a longer period. Which in turn means a farmer has to use less of them. Awareness grows that soil in a healthy condition in the long run will deliver the most benefits for both production and nature. And that is exactly the aim the Delta Plan.

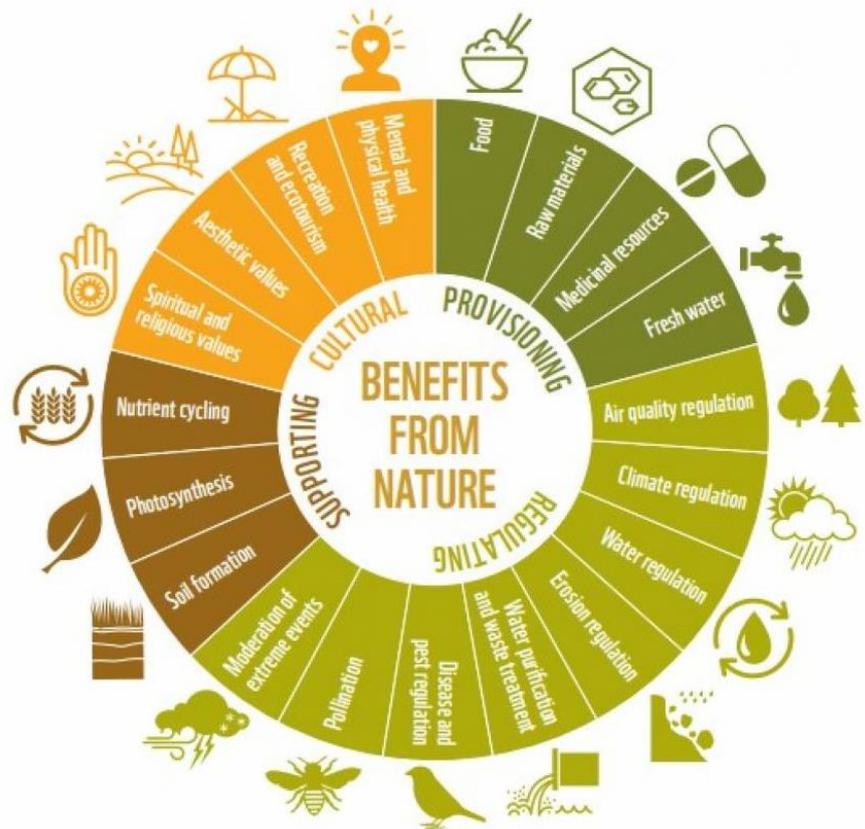


Fig 3.3 Ecoservice Systems

Source: <http://www.fsc.nl/> (WWF 2018, living planet report)

Matters of water quantity often are addressed in spatial development projects, often together with improving agricultural structure through for example land consolidation processes. Water quantity needs actual space. For example to reduce the risk of flooding's, you have to give room to rivers where they can temporarily store excess water. That is where a spatial point of view becomes all important.

4.3 Taking action

Knowing what is important (awareness) and committing to it (engagement), is the starting point for taking action (figure 3.4). Now that we know what to change we can make the difference.



Fig 3.4 Journey of awareness in the Delta Plan

Threads that are addressed in the Delta Plan are:

- Erosion
- Decrease in organic matter
- Pollution
- Salination
- Soil compaction
- Loss of biodiversity
- Landslides and floods

Advise and support are available to secure water and soil quality:

- Adjustments to protect damage caused by water surplus
- Adjustments to prevent freshwater shortages and damage caused by draught
- Usage of machines and techniques to better adjust the use of manure and plant protection products to the need of the crop.
- Techniques to prevent nutrients and plant protection products seeping from properties into the ground.
- Measures protecting minerals not to seep from the ground, so they will be available for crops for a longer period.
- Improving soil structure so water will be retained or drained. Think about percentage organic matter, presence of soil life.
- Construction of buffers and nature friendly riverbanks to prevent emission of harmful fluids to surface water.

Once works have been executed, sharing the knowledge is an important part of the ongoing process of awareness. Making sure others will follow in taking action.

5. Conclusions

We cannot wait, or do nothing. Climate change asks for action, as the process of our changing environment has started and cannot be reversed. By adapting and mitigating actions we however can protect our surroundings to make sure we can keep our ecoservice systems intact.

The Delta Plan supports and works together with stakeholders to improve water quality and regulate water quantity in order to address climate change, through former mitigating and adapting measures.

It is all important to share knowledge of water and soil management in order to take the right actions. Working together is crucial, for everyone has to partake to really make the difference. And when landowners experience extreme changes on their land, they know they have to take action.

In regulating water quantity we need our spatial planning instruments, as you need actual space to complete the actions necessary for regulating the water. Instruments as land consolidation can help with this and at the same time form an integrated way to also work on different matters, for example improving agricultural structures.

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BIOGRAPHICAL NOTES

Charlotte Gillet is senior advisor in the department of spatial planning at the Dutch Cadastre, Land Registry and Mapping Agency. In 2001 she successfully graduated from Van Hall Larenstein university of applied sciences and holds a Bachelor of Science in Landscaping Architecture and Environment Management with a specialization in Land development & Landscape Engineering. She assisted committees in formal land consolidation procedures. Currently, she works on product and process quality & innovations in the domain of land management and spatial planning and is advisor in (participatory) land consolidation for the eastern provinces of the Netherlands.

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