



COLOMBIA

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An aerial photograph showing a large plume of white smoke rising from a fire on a steep, green hillside. The hillside shows signs of deforestation and agriculture. In the background, more hills and vegetation are visible under a clear sky.

Past, present and future dimensions of climate smart conservation: Evidence and learning from WWF-Colombia



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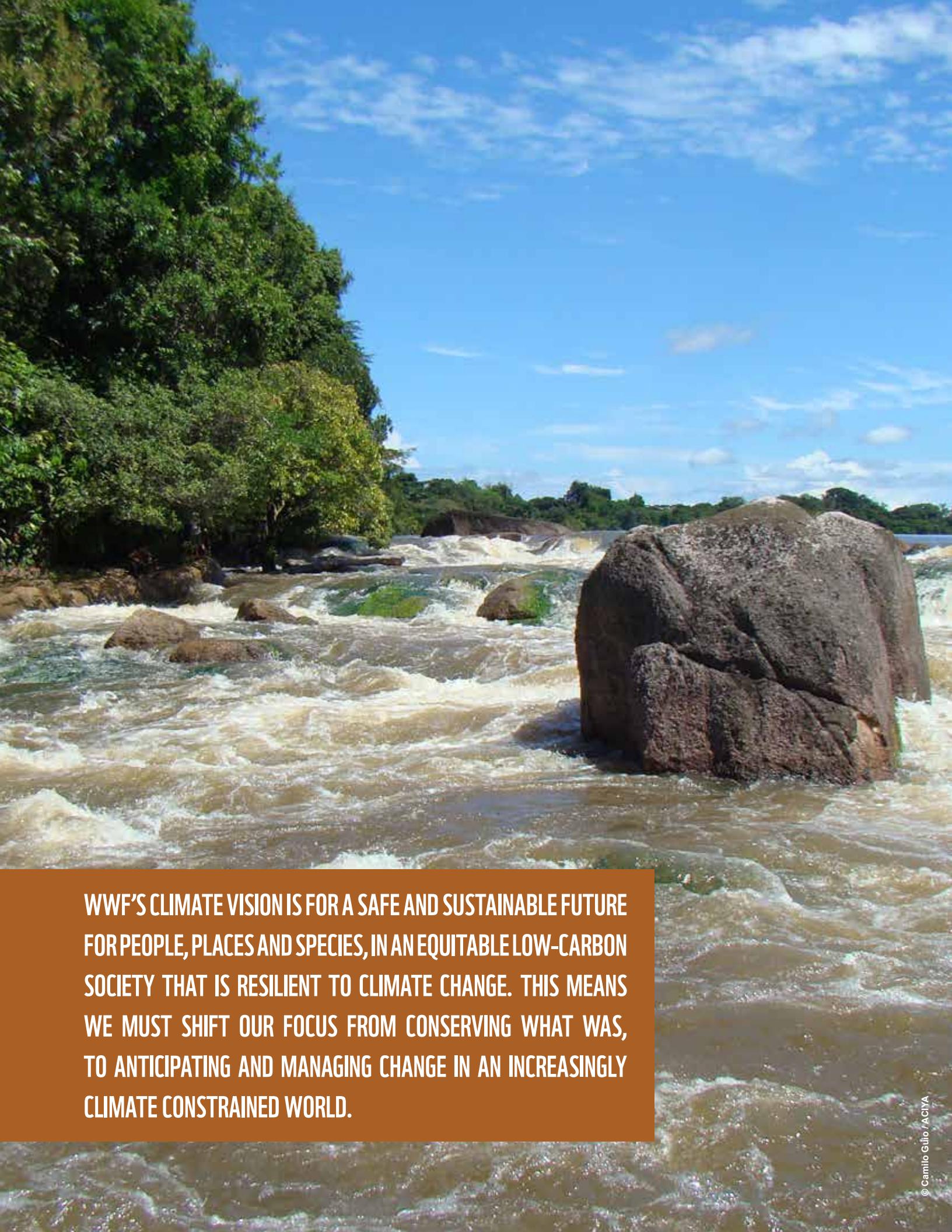
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WWF'S CLIMATE VISION IS FOR A SAFE AND SUSTAINABLE FUTURE FOR PEOPLE, PLACES AND SPECIES, IN AN EQUITABLE LOW-CARBON SOCIETY THAT IS RESILIENT TO CLIMATE CHANGE. THIS MEANS WE MUST SHIFT OUR FOCUS FROM CONSERVING WHAT WAS, TO ANTICIPATING AND MANAGING CHANGE IN AN INCREASINGLY CLIMATE CONSTRAINED WORLD.

INTRODUCTION

Global trends are not new to the practice of conservation science, as it has always been seeking robust and more sustainable practices to solve complex problems which require working with a broad range of stakeholders. Climate change is becoming very rapidly one of the most important of these “complex problems”, with a cross-cutting set of challenges that can undermine progress and increase socio-ecological vulnerability in different landscapes. Moreover, the impacts of a changing climate compound pre-existing and overlapping environmental and social stresses, including land use/land change, overexploitation of natural resources, poverty, hunger, conflict, migration, water scarcity, and the spread of disease, and therefore put conservation and development gains at risk.



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In WWF-Colombia, work on climate adaptation started in 2006. From the outset, we adopted a ‘learning by doing approach’ building upon the experience of previous and on-going projects. Subsequently, and with the support of WWF-UK, we developed a conceptual framework for the design and implementation of climate smart conservation (CSC). This is the result of exploring the role of ‘advanced learning’¹ to enable us to develop capacities and a set of practices in which climate change is addressed as a major driver that interacts with other causes of environmental loss and degradation, learning from programs and planning for evolving and investing more in learning as time goes on.

This paper describes the development of this conceptual framework, capacities and practices and the role of learning in this process. We hope other organizations, be they public, private or NGOs, which are seeking to address the reality of climate change, find insights from our experience. By being open and transparent about our own organizational learning process we hope to encourage others to engage in the types of organizational learning and change required to proactively address climate and other global drivers of environmental and social change.

1. WWF-UK (2013) Key concepts in climate change: Learning to adapt and transform. WWF-UK, September 2013

CONTEXT

The purpose of this paper is to communicate WWF-Colombia climate smart conservation work to its partners, the WWF Network, DFID and other organizations dealing with conservation/development initiatives in response to changing environmental conditions largely driven by climate variation. It sets out what WWF-Colombia has been doing on adaptation since 2006 and why, offering clarity over how Colombia's Conservation portfolio can be an example of effective learning.

The approach of our learning story is one: narrating a climate change adaptation journey (past – present – future), from the first experience of a learning process, to the current commitment to develop an adaptation of a climate smart conservation strategy. Throughout the story, different ways of conceptualizing our future adaptation and climate smart development journeys have emerged, broadening our choices and enabling us to describe them to others.

Our rationale for exploring examples of climate smart approaches/solutions is that these are potentially valuable and complementary to streams of research that focus on the many threats to priority landscapes and current and future conservation efforts.



**THE APPROACH OF
OUR LEARNING STORY
IS ONE: NARRATING
A CLIMATE CHANGE
ADAPTATION JOURNEY
(PAST - PRESENT -
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FIRST EXPERIENCE OF
A LEARNING PROCESS,
TO THE CURRENT
COMMITMENT TO
DEVELOP AN ADAPTATION
OF A CLIMATE SMART
CONSERVATION STRATEGY**

What is the Learning for Climate Adaptation Process

For almost a decade now, climate change has appeared in the WWF-Colombia conservation portfolio, marking a tendency to think of climate as major driver of transformation. This trend has also been in line with the emerging realization that the world is facing global warming and the complex synergies that it is exacerbating with other existing threats. The learning related to those dynamics (synergies between climate change and other threats) has been derived from the Learning for Climate Change Adaptation Process (LCCAP), a process that promotes WWF-Colombia thinking about the sustainability and effectiveness of its conservation approach considering the likelihood of major climate-related transformations, given the dynamics of social-ecological systems and their interaction with a changing climate.

Through the LCCAP, there is an intentional effort to assess how Climate Change Adaptation (CCA) has the potential to become a key strategy for WWF-Colombia.



Although the threats linked to climate change are manifold, the nature of the LCCAP is to provide evidence about the opportunities for WWF-Colombia, in an “emerging” context, for promoting the role ecosystems play in enabling people to adapt and for mobilizing resources for conservation. By doing so, WWF-Colombia’s LCCAP will also inform and influence decisions towards vulnerable people, places and ecosystems, and ensure that the conservation of priority places / ecosystems is incorporated into the ongoing climate and development planning processes of governments and communities. Over recent years, WWF-Colombia has taken a national leadership role on these issues, and is contributing actively within WWF’s network, but still has a long way to go in demonstrating what good adaptation really is.

The LCAAAP arose initially from a “Learning for Climate workshop” held in Cali in March 2012. This workshop was important because it engaged key WWF-Colombia’s staff in a process of learning from their own personal experience, including ‘being the change’ and transcending to other partners in conservation. Through reflecting on the implementation of successive CCA initiatives we ended up developing an ‘Integral Theory’, a system of thinking and working on CCA as well as multiple ways of seeing our priority landscapes. Rather than choosing among existing methodologies, this is an inclusive and holistic approach to different dimensions of conservation and climate risk and to advancing adaptation in a proactive manner.



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Overview of the Paper - The loops of learning

Different kinds of learning, conceptualized as ‘loops of learning’ can be identified through the climate-change-conservation work of WWF-Colombia over the last 10 years. The key breakthroughs in helping us understand the dynamics of learning are the concepts of single loop, double loop and triple loop learning (Figure 1). These concepts help us to realize and appreciate the kinds of learning that we and our partners can apply during the implementation of projects. The concepts have emerged largely from

a series of Theory of Change workshops held in Colombia and the UK with the support of WWF-UK. As a result of these workshops we have identified three phases of our work on CCA since 2006, with each phase characterized by a different kind of learning loop:

- **Phase One** - The birth of climate smart conservation. This phase was characterized by single loop learning, which is about doing the same thing more effectively, as a means to ‘doing things right’ (Lavell *et al.*, 2012)². Climate Change Vulnerability Assessment (CCVA) provide a good example of single loop learning, where the emphasis has been on continuous improvement of the CCVA approach. In this regard, most institutions, including WWF-Colombia, continue to draw on the IPCC’s vulnerability conceptual framework (2007)³.
- **Phase Two** - Consolidating and using new skills and capacities – characterized by double loop learning. By questioning current goals and strategies, double loop learning asks if the right thing is being done (Lavell *et al.*, 2012)⁴. It thus has the potential to reframe policies and practices. Through applying double loop learning, WWF-Colombia was able to reflect not only on whether deviations have occurred and how to correct them but also on whether the “IPCC CCVA rules” themselves should be changed. This kind of learning involves more “thinking outside the box” creativity and critical thinking. This learning helped our office to think through how CCA can be conceived and implemented through site specific and particular solutions. Moreover, this double loop learning has been critical to the success of WWF in becoming a trusted advisor in CCA within Colombia, especially during times of rapid climate change and its consequent risks.
- **Phase Three** - Mainstreaming our climate smart conservation approach. This phase has been characterized by triple loop learning, which involves “learning how to learn” (Lavell *et al.*, 2012)⁵. In the case of this learning story, it involves reflecting on how we learn in the first place. In this situation, WWF-Colombia

2. Lavell A, Oppenheimer M, Diop C, Hess J, Lempert R, Li J, Muir-Wood R, Myeong S (2012) Climate change: new dimensions in disaster risk, exposure, vulnerability, and resilience. In: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation* [Field, CB, Barros, V, Stocker, TF, Qin, D, Dokken, DJ, Ebi, KL, Mastrandrea, MD, Mach, KJ, Plattner, G-K, Allen, SK, Tignor, M and Midgley, PM (eds.)]. A Special Report of Working Groups I and II of the Intergovernmental Panel on Climate Change (IPCC). Cambridge University Press, Cambridge, UK, and New York, NY, USA, pp. 25-64
3. Lavell A *et al.*, (2012) *op.cit.*
4. Lavell A *et al.*, (2012) *op.cit.*
5. Lavell A *et al.*, (2012) *op.cit.*

Learning Context

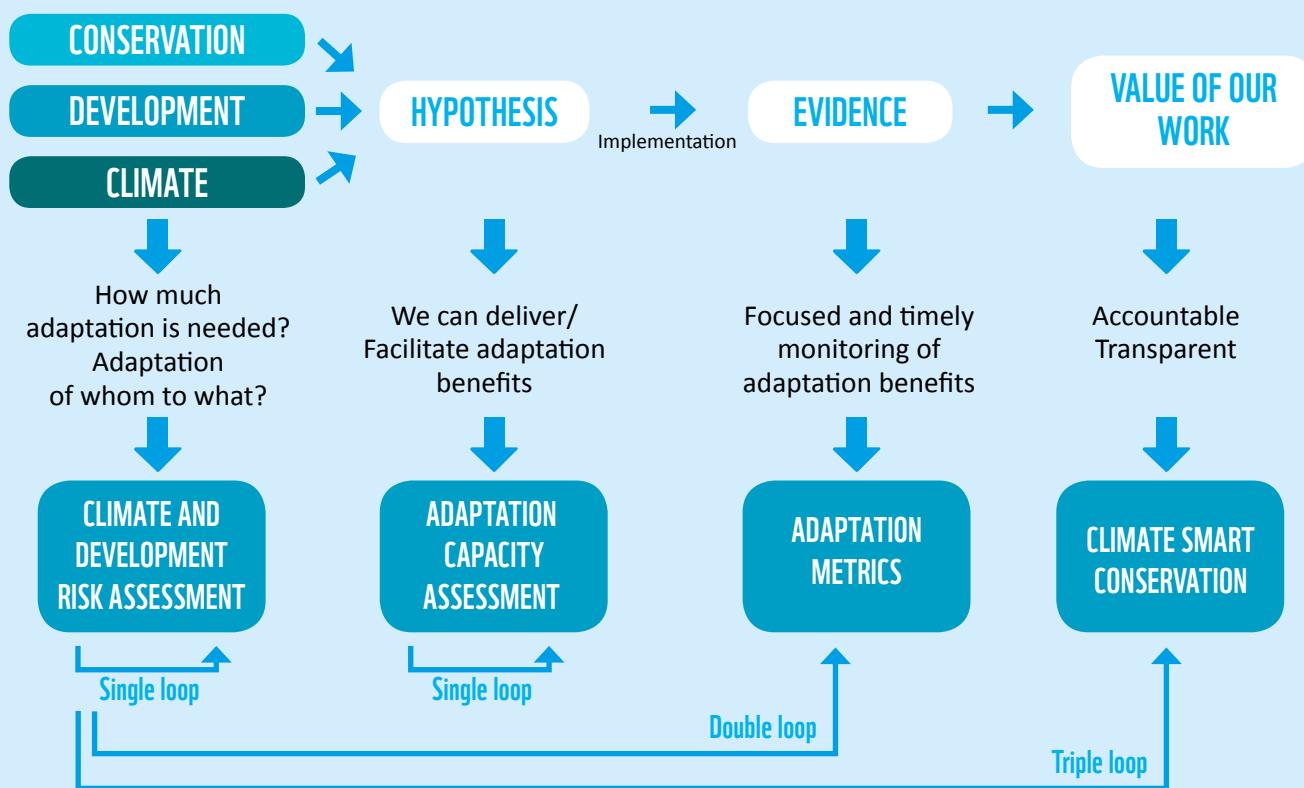


Figure 1.

is learning to reflect on how we think about the “climate change rules,” not only on whether the rules should be changed. This form of learning helps us to understand a great deal more about ourselves, particularly regarding our beliefs and perceptions of vulnerability, risk and adaptation and how we use these in designing strategies for action.

WWF-Colombia decided to write this paper as a means help us to further “make sense” of the evolving relationship between conservation and climate change adaptation, by mapping some of the changes over time both in the field and in the climate discourse, that finally led us to our particular theory and practice of climate smart conservation. By presenting thinking about conservation, climate change, risks and adaptation through the lens of different projects and initiatives, we offer a story that we hope will support the development of the reader’s own thinking. In addition, our learning-by-doing approach helps us understand how different adaptation needs and conservation practices can evolve due to particular ways of thinking, and in the context of the resources available. This is also linked to particular historical moments and to particular disciplinary traditions.

THE BIRTH OF CLIMATE SMART CONSERVATION IN WWF-COLOMBIA

Bringing climate change into our conservation work (2006 - 2008)



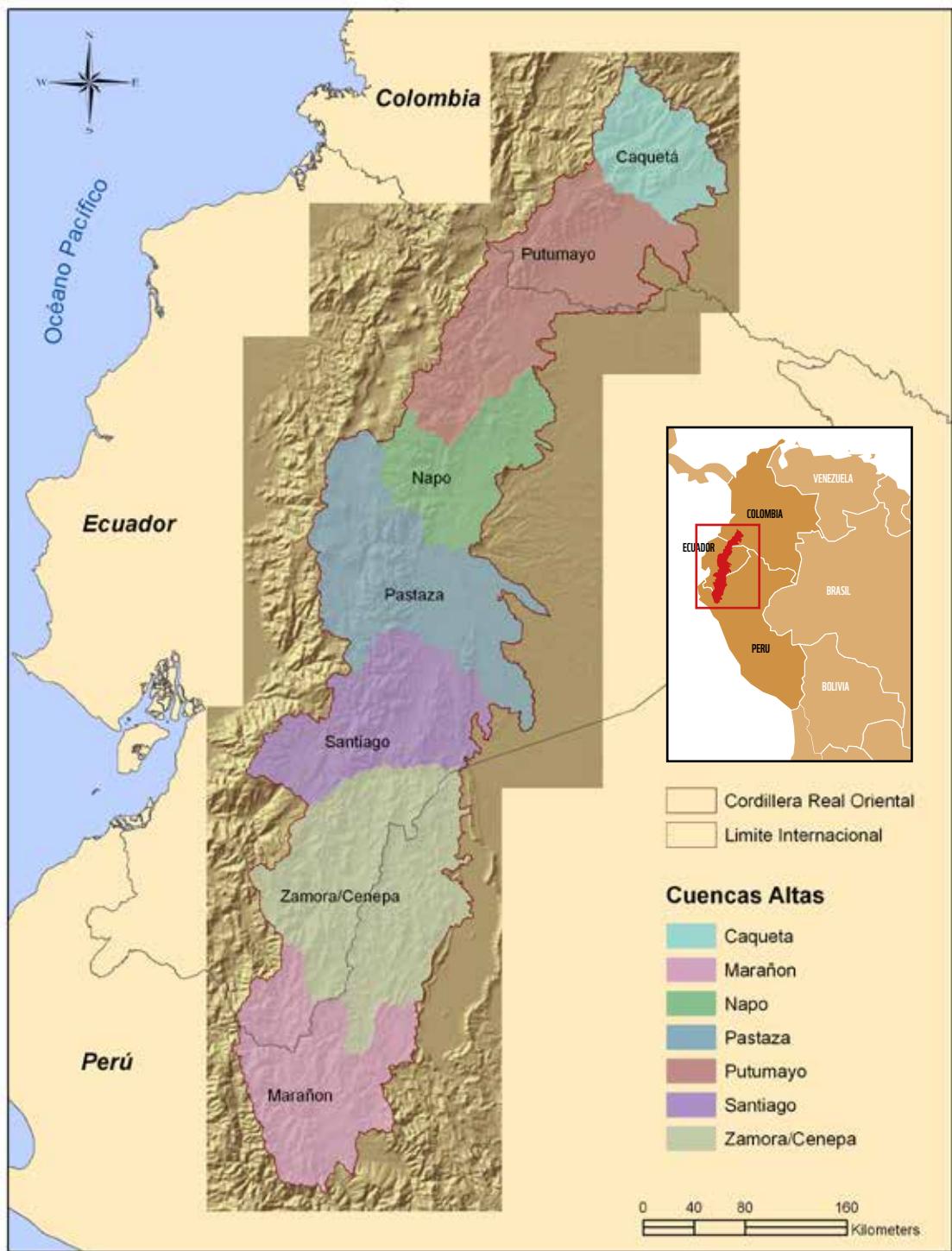
WWF-Colombia's history of working with climate change and conservation began in 2004. Around that time Mary Lou Higgins, WWF-Colombia's representative, advised Luis Germán Naranjo, who had recently been appointed as Conservation Director, to initiate work on climate change.

Her interest was a response to the slowly increasing recognition in WWF's network of the compounding effects of climate change on better known drivers of biodiversity loss. This assignment represented an entirely new subject for Luis and given the challenge of his newly acquired duties it took a while for him to connect with climate issues.

This connection was made when Luis attended a climate camp organized by WWF-US in Washington DC in November 2006. Here Luis established relationships with colleagues who were also beginning to engage on climate related work. He also attended the premiere of Al Gore's film "An Inconvenient Truth". Both events were significant for Luis; they made him realize the urgency of engaging in climate change adaptation and the strong potential of the subject to become a powerful call to action that could be used to bring new recognition of the need for conservation.

6. The Eastern Cordillera Real (ECR) is one of the most biologically and culturally diverse ecoregions in the whole of the Northern Andes, and at the same time one of the most threatened from a multitude of human induced pressures (Powell & Palminteri 2001)

A second step of WWF-Colombia's climate smart journey began in 2007 when the European Commission requested proposals addressing climate change threats to biodiversity. A multidisciplinary team of staff in WWF (Colombia and Peru Program Offices) and an Ecuadorian partner (Fundación Natura) designed a project based on the requirements of the EC funding call, and drawing on available science and information, in order to carry out a Climate Change Vulnerability Assessment (CCVA) for the Eastern Cordillera Real⁶ (ECR) of Colombia, Ecuador and Peru, as a means to propose guidelines for adaptation actions at a regional scale focusing on three priority landscapes.



Our early theory of change - Solving the puzzle (or 'solve the puzzle and follow the rules')

At the time of the EU project, WWF-Colombia's thinking about climate change adaptation practice was based on a vulnerability based conceptual framework that was favoured by the IPCC (IPCC Fourth Assessment Report: Climate Change 2007-AR4). Here our theory of change was based on "solving a puzzle" or "following the rules" - the IPCC's vulnerability assessment framework was the puzzle and "following the rules" required us to assess the vulnerability of our target landscapes to climate change through an analytical approach using the 'pieces of the puzzle' i.e. the IPCC's key concepts of exposure, sensitivity and adaptive capacity (Figure 2).

We put together the CCVA puzzle using the best available information and resources available to us and used an assessment procedure which was similar to a 'contextual analysis' which had been articulated in the IPCC 2007 report. The technical analysis were carried out by a consultant⁷ hired for the project, working under the supervision of Luis Germán and César Suárez (WWF's GIS specialist).

In doing this first CCVA, WWF-Colombia adopted for the first time a number of approaches including:

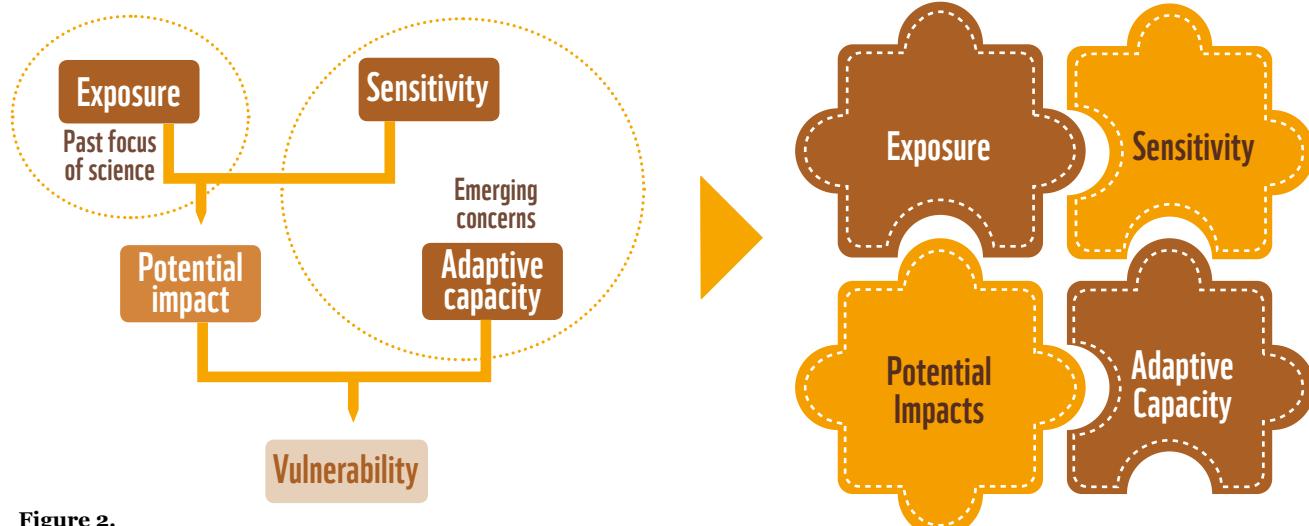


Figure 2.



- Presenting the methodological aspects of the vulnerability analysis, providing information on the Eastern Cordillera Real (ECR), choosing the systems of interest (watersheds) and the components that are more likely to be affected by climate change (e.g. species distribution, changes in life zones as proxies for ecosystems, and local livelihoods)⁸;
- Compiling and using climate information, climate change scenarios and hydro-meteorological data sets relevant to the scale of analysis;
- Gathering secondary information on the spatial distribution of biophysical information of interest (e.g. vegetation cover, species ranges, distribution of crops and other rural production systems, etc.);
- Downscaling regional models of future climate (2011-2040; 2041-2070; 2070-2100);
- Modelling expected distribution of habitats under different climate change scenarios;
- Identifying and mapping socio-economic sensitivity and adaptive capacity of human communities living in the area of interest;
- Estimating a vulnerability index combining exposure (e.g. climate change scenarios), ecological sensitivity (e.g. expected shifts of life zones, ecosystems and/or distribution of plants and animals) and adaptive capacity.

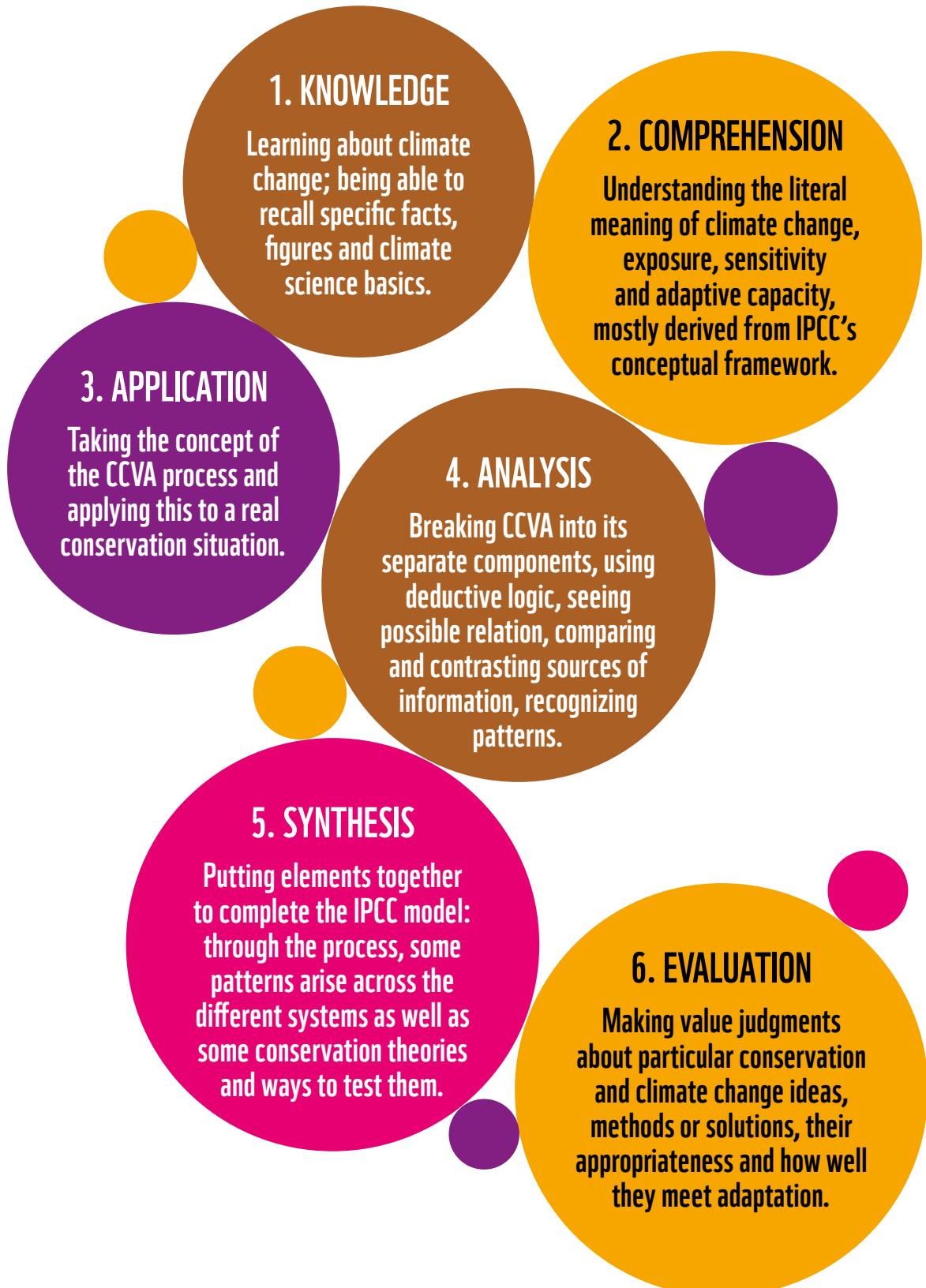
8. Adapted from: WWF (2011) *Climate change in a living landscape: Conceptual and methodological aspects of a vulnerability assessment in the Eastern Cordillera Real of Colombia, Ecuador and Peru*. Bogota: WWF-Colombia.

9. For a long time, many organizations and institutions, including WWF-Colombia, operated in one mode: IPCC's vulnerability conceptual framework (2007). This publication was positioned as an obligatory technical reference for everyone working on climate change adaptation and has been considered by some as a tipping point for adaptation thinking. When anyone started to work on Climate Change Vulnerability Assessment, IPCC's model was "turned on". When CCVAs were completed, IPCC's model was "turned off".

Due to limitations in available data and analysis, the results of the CCVA had a considerable margin of uncertainty. Nonetheless, through conducting the CCVA, we identified the need to implement adaptation measures in those watersheds of the Eastern Cordillera Real which were identified as most vulnerable according to the IPCC-based methodology applied⁹ (i.e. most sensitive to changes in habitats and with less socio economic capacity).

Beginning of our learning process

Through this first project and CCVA, WWF-Colombia learned new skills and strengthened its technical capacity. However, our examination of the underlying beliefs and assumptions embedded in the IPCC's conceptual framework was limited. The primary focus of our learning took the form of developing the following capacities within WWF-Colombia:





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As each level encompasses the skills of the previous level, with our thinking about CCVA became increasingly complex as we moved from Level 1 (knowledge) to Level 6 (evaluation). Learning, understanding and applying the basics of climate change science are lower-order skills and analysis, while synthesis and evaluation of its implications for conservation require higher-order cognitive skills.

WWF-Colombia recognized that to keep pace with other conservation organizations and to advise our Colombian partners, we needed to develop these higher order skills and strengthen and expand our team. Consequently, we attended training workshops on climate change, climate science, GIS tools and modeling techniques.¹⁰ We also appointed a Climate Change and Environmental Services Officer and committed to training our partners on these subjects¹¹.

We also came to recognize that our partners had different learning needs and goals. Here what emerges is recognition of the need to build capacity internally with WWF-Colombia, whilst simultaneously working to support capacity building of other organizations. For example, for the national institution Ideam¹², a learning goal was to compare among different regions which are more vulnerable, generally speaking, to climate change. For others (e.g. National Parks), learning meant assessing long term biophysical changes such as species' habitats in conservation sites.

10. Training included Use of climate data, modeling of ecosystem services, Climate change science, etc.

11. Mr Javier Sabogal; currently Green Economy Officer.

12. Colombian Institute of Hydrology, Meteorology and Environmental Studies. It is part of the Ministry of Environment and Sustainable Development (MADS).

CONSOLIDATING AND USING NEW SKILLS AND CAPACITIES

Opportunities for new projects (2009-2012)

Following the successful implementation of the EU-funded ECR project between 2006 and 2009, WWF-Colombia gained a reputation as a trusted advisor for climate-related conservation.

We were invited to join different national and regional climate change groups and to provide training and technical input into the development of local/national climate change policies. This coincided with increasing attention to climate change by international partners and funding agencies and resulted in WWF-Colombia receiving funding for a series of new projects for three long-running priority conservation landscapes/eco-regions: the Choco-Darien, the Northern Andes and the Northern Amazon. While these projects were framed primarily by the IPCC's 2007 conceptual framework, they also involved testing a number of new approaches:

- **Conservation Planning:** we began to include climate change as a major driver of landscape and ecosystem transformation at project and program level. Along with other “traditional drivers of change”, the first conceptual models that included “climate change” started to be developed in this period. This was also in response to the emerging realization that Colombia was facing significant climate-related impacts; WWF and our partners and stakeholders also started to evaluate the relative importance of climate as an immediate threat, compared with major conservation threats such as deforestation, over-exploitation of natural resources. For example, a MacArthur Foundation funded project (2011-2012), ranked climate change among the lowest threats to conservation targets for priority watersheds (Figure 3).
- **Capacity Building:** we hired new climate-related staff and put significant effort into developing the skills of existing staff to build the capacity of the office. New staff were recruited to help coordinate, expand and eventually mainstream our climate change-related work (i.e. a climate change officer in 2008, and a climate change adaptation specialist in 2011¹³). However significant efforts have been made to expand the skills of, and tools available to, existing staff.”

13. Capacity building involved the following approaches: (i) Dispersal of “climate smart conservation” responsibilities, resulting in a larger amount of work getting accomplished by different people among the office; (ii) working across these different scales (i.e. landscapes, river basins, protected areas); (iii) collecting and analysing raw data; (iv) to some degree, standardization of tools in order to ensure that the right information is being captured and that such information is being analysed in a way that is comparable across study areas.

	Threat	Impact		Water quality	Physical habitat quality	Biotic interactions	Flow regime	Energy sources	Severity score
1	Deforestation	Low	1						
		Medium	2	2	2		2		12
		High	3			3		3	
2	Dams	Low	1						
		Medium	2	2					14
		High	3		3	3	3	3	
3	Agriculture	Low	1						
		Medium	2	2	2		2		12
		High	3			3		3	
4	Cattle ranching	Low	1						
		Medium	2	2	2		2		12
		High	3			3		3	
5	Populated centers	Low	1	1			1		
		Medium	2		2	2		2	8
		High	3						
6	Hydrocarbons	Low	1		1		1		
		Medium	2					2	10
		High	3	3		3			
7	Mining	Low	1						
		Medium	2			2	2	2	12
		High	3	3	3				
8	Roads (railroads)	Low	1	1		1	1	1	
		Medium	2		2				6
		High	3						
9	Climate change	Low	1	1	1			1	
		Medium	2			2	2		7
		High	3						
10	Waterways and ports	Low	1					1	
		Medium	2	2		2	2		10
		High	3		3				

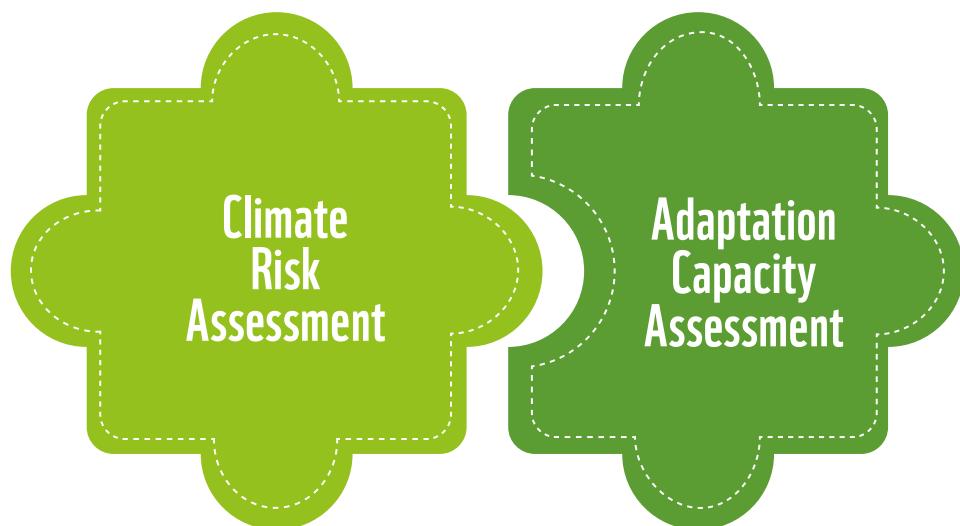
Figure 3.

- 1 Low
- 2 Medium
- 3 High

- **Building relationships:** WWF-Colombia establishes and maintains long term relations with local partners in almost all of its actions. As we expanded our work on climate change, current and new partnerships with local, national, and regional stakeholders gave us access to local climate data, regional cooperation and grassroots and indigenous knowledge and perceptions of climate-related impacts. Responding to the needs of partners played a key

role in improving and developing our approach to climate smart conservation. These partnerships also encouraged key institutions such as the Ministry of Environment and Sustainable Development (MADS), National Parks and Local Environmental Authorities (CARs) to consider the value of climate smart conservation as a key component of the national adaptation policy framework, and the need for comprehensive and integrated approaches¹⁴ at different scales. Examples of this partnership approach are our projects with MADS to strengthen the understanding and implementation of the National Climate Change policies, especially the REDD and climate adaptation components (2012-2013); projects implemented with the National Parks Authority in different national protected areas (2011-2013), and our contribution to local policy frameworks with CARs (2011-2013).

- **Integrating climate risk into our analysis:** building on the skills developed from previous and on-going projects, and with the support of different partners, we further developed the climate change vulnerability assessment approach described above by reframing the process, and consolidating two previously “stand alone” analyses: the climate risk assessment and the adaptation capacity assessment (Figure 4). These two types of analysis are complementary to each other and integration resulted in a more robust and comprehensive approach, called Climate Vulnerability and Risk Assessment (CVRA). The CVRA draws on different types of climate information data (from current-observed climate, climate variability, extreme weather events and expected climate change) and is intended to identify actual or potential impacts on conservation targets induced or related with climate manifestations, and the existing capacity to adapt to those climate risks.



14. For the purpose and context of this paper, an integrated approach refers to the synergies between conservation planning, environmental policies, disaster risk reduction and development objectives.

Figure 4.



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Building strategies with the communities

Driven by the increasing interest of different institutions and funding agencies in climate change, some projects implemented by WWF started to include “community based” actions to address different topics related to climate change. These included an ample range of issues associated with mitigation, REDD, and “climate informed” conservation and adaptation.

When these projects started to include climate information as part of their conceptual framework, the communities’ perceptions of climate risks emerged, and helped to identify the need to enhance the capacities required for addressing those risks. Examples of this “climate informed” process are the actions implemented with communities in the Amazon Piedmont, focusing on land use planning and sustainable livelihoods in the face of climate change.

Land use planning mostly refers to initiatives undertaken by owners of small-scale farms to organize different sections of their land according to, for example, environmental and climate-risk reduction criteria. The expected benefits of these efforts were to reduce the negative effects of climate variability (mainly droughts and flooding), and to maintain local biodiversity through the creation of biological corridors. The search for sustainable livelihoods consisted of participatory work aimed at finding efficient alternatives for the production of different goods, such as more resilient agriculture and milk-production.

Most recently (2012-2013), the Awa indigenous communities along the border between Ecuador and Colombia, with the support of WWF, initiated an analysis of the expected impacts of climate change within their territories¹⁵. The Awa Family analysed the effects and impacts of climate change on the four worlds of the Awa Cosmo-vision, and built their own definition and a position towards climate change, defining how to take climate change into account in their Life Plans.

¹⁵. The Awa binational territory encompasses land owned by afro-Colombian, mestizo and other indigenous communities.



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Reframing our approach through reflexive learning

During this second period (2009 - 2011) WWF-Colombia's "climate smarting" process can be considered as one in which we were fundamentally reshaping the underlying patterns of our thinking about climate change so that we became capable of doing different things.

A process of analysis occurred, where WWF became a more reflexive¹⁶ observer of itself, by asking the following questions:

"Instead of asking if a landscape is vulnerable to climate change, and by how much, can we think about how much climate adaptation is needed? What are the guiding principles to adapt to a changing climate? What do those patterns suggest about future pathways of influence?"

While these new patterns of thinking were still largely set within an act/react cycle, they caused the underlying institutional ways of thinking to start shifting. This is where most of WWF-Colombia's organizational change has been taking place, shifting from 'first generation' projects based on the IPCC-CCVA framework, to 'second generation' projects that look at the underlying patterns of climate risks and the adaptation capacities necessary for addressing those risks successfully.

Moreover, instead of only looking at "how will the landscape be vulnerable in the future?" and "what can we do now to make that landscape less vulnerable in the future?", we've moved to a process which has greater emphasis on current climate

16. Reflexivity – integral to both double and triple loop learning - is the capacity to consider critically – and break away from – our existing routines, assumptions, values, frames, norms and interests. It has a quality of open-mindedness that includes the capacity to take in multiple perspectives and viewpoints including those that challenge prevailing norms and interests. Reflexivity creates opportunities for new ways of thinking and acting at individual, group, organizational and network levels. See for example: Wals, AEJ (2007) Learning in a changing world and changing in a learning world: Reflexivity fumbling towards sustainability. *Southern African Journal of Environmental Education*, Vol.24.



ANOTHER DEFINING CHARACTERISTIC OF 2ND GENERATION ASSESSMENT IS PARTICIPATION

risks, which are perhaps easier to grapple with and which recognizes that we are already seeing impacts from a changing climate. This can be summarized on Table 1, which exemplifies the reasons for the shift to a 2nd generation of assessment. A first shift is about acknowledging, much more, that we are facing uncertainty. The flaw of not acknowledging this is that when things that were not framed with uncertainty in mind don't happen, people begin to mistrust the entire process.

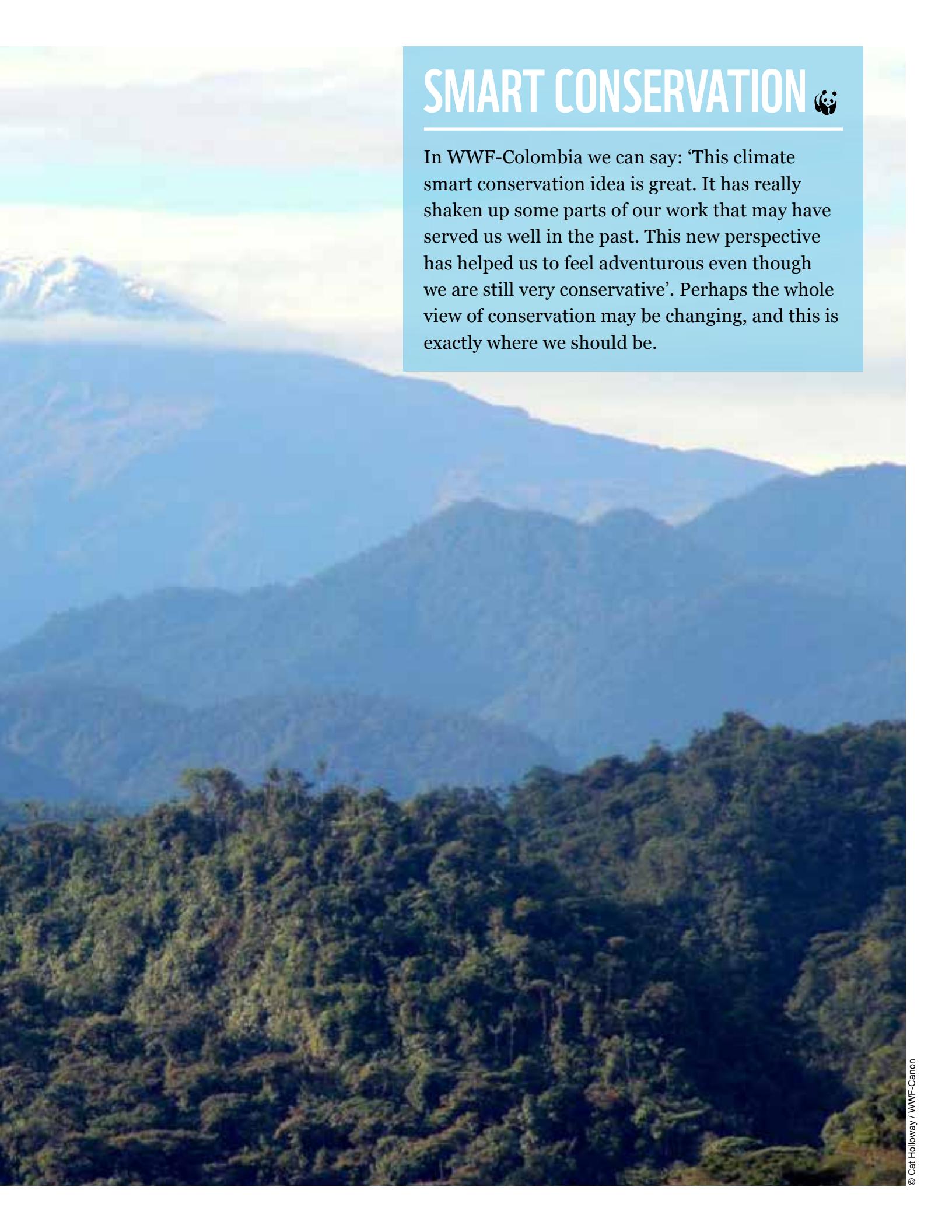
Another defining characteristic of our 2nd generation assessment is participation: this is because of the recognition that the process of doing the assessment itself contributes to building capacity of those involved to plan and prepare for climate change. Lastly, it can be noted that whereas our 1st generation assessment didn't have an explicit step to incorporate adaptation planning as part of the process, the 2nd generation approach puts much greater emphasis on this, enabling both WWF-Colombia and our partners to move to a more proactive position. As we started to address climate related challenges from a solution oriented perspective, this meant not just defending our conservation goals from expected changes in climate, but actually thinking about how to adapt them to observed and expected changes in climate in a proactive way (Table 1).

Table 1. Reframing Climate Change Vulnerability Assessment
Adapted from: Fussel and Klein (2006)¹⁷

	1 st Generation CC-VA	2 nd Generation CC-VA
Main policy focus	Not clear	Adaptation policy
Time horizon	Long term	Short-to-long term
Consideration of climate variability, non-climatic factors, & adaptation	Null-to-little	Full
Consideration of uncertainty	Null-to-little	Extensive
Integration of natural and social sciences	Low	High
Degree of stakeholder involvement	Low	High
Fundamental question	What is the vulnerability to CC?	How much adaptation is needed? Which adaptation is recommended?

17. Fussel H-M, Klein R (2006) Climate Change Vulnerability Assessment: An evolution of conceptual thinking. *Climatic Change* 75: 301–329.





SMART CONSERVATION



In WWF-Colombia we can say: ‘This climate smart conservation idea is great. It has really shaken up some parts of our work that may have served us well in the past. This new perspective has helped us to feel adventurous even though we are still very conservative’. Perhaps the whole view of conservation may be changing, and this is exactly where we should be.

MAINSTREAMING CLIMATE CHANGE ADAPTATION INTO CONSERVATION PLANNING

The first steps of the third and current phase of our climate smart conservation work were born during March 2012 ‘Learning for CCA’ workshop, which subsequently developed our LCCAP. From this workshop we began to enter a triple loop of learning, through the insight that adaptation is a learning process and that through the development and application of ‘advanced’ learning practices we can choose to shape climate smart conservation as a process of organizational and cross-organizational learning.

Integrating reflective learning into climate smart conservation (2012-ongoing)

We also realized that formulating good questions can help to shape learning and that, in a nutshell, becoming climate smart can be summarized finding good answers to good questions and not getting lost in the process. Our experience demonstrates that climate smart conservation involves reflective learning embedded in a process of ‘learning by doing’ as shown in Figure 6 below. In particular, becoming climate smart requires double loop learning in which assumptions and underlying hypotheses are questioned explicitly and future is reframed at multiple levels(individual, team, organizational, etc.). The triple loop lies in recognizing and noticing how we frame and/or reframe our activities. Flexibility is a core capacity. By reflecting back on our experience we can trace these steps in our learning by doing process:

- **Discovering the operating theory of change of our theory-in-use:** as described above, WWF-Colombia’s initial theory of change was based on the IPCC’s vulnerability conceptual framework which was applied without modification in our first project.



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- **Using critical thinking to reflect on the theory-in-use:** we used critical thinking skills to reflect on what we are learning about our theory-in-use. In addition to *what* questions, e.g. what does the vulnerability analysis tell us, we asked *how and why, and why-does-it-matter* questions? Critical reflection has played a crucial role in the personal and professional change and growth of WWF-Colombia staff and in our organizational development. Critical reflection enabled WWF-Colombia to 'let go of' and not be ruled by the vulnerability conceptual framework set out by the IPCC in 2007 and develop an approach that was good for field work. The framework became an instrument that can be adapted and used to its best effect.
- **Identifying new understandings and practices:** new meanings emerge as a result of asking what, how and why questions which lead to new practices such as integrating risk and shifting our focus to solutions and building adaptive capacity.
- **Developing our and our partners' theory of change:** organizational learning has pushed, and continues to push, WWF-Colombia not to settle on the first and obvious solution to the adaptation problem i.e. assess climate vulnerability, but to continue to look for alternative ways of seeing the situation which leads new and more effective action, e.g. assess climate risks and opportunities to increase capacity to adapt. As a result, our new theory-in-use includes: (i) looking for effective ways to reduce climate risks to conservation objectives; (ii) frequent participatory testing of theories-in-use; and (iii) facilitating learning situations in which participants and stakeholders can examine and experiment with their own theories of change to support them to move their thinking.
- **Responding to the needs of our partners:** institutions and people (in general but decision makers mainly) differ in their understanding about climate, climate change, vulnerability, risk and adaptation and are at different stages of a learning process. Recognizing this WWF-Colombia found it important to identify precisely what partners want from us as advisers in climate change adaptation. Examples of new actions developed by us to respond to the perception and needs of the different partners include¹⁸ Climate Risk Assessment and Adaptation Capacity Assessment.

18. Implemented through Climate Risk and Adaptation Capacity Assessment protocols, initially and local level protected areas in 2012 and 2013.

- **Developing different types of climate-informed analysis:** climate smart conservation requires synthesizing different types of climate change analysis including the assessment of different ecosystem services at landscape level, especially those related with water quantity and quality in selected watersheds. We are also recognizing that we need to identify metrics that enable us to show that climate smart conservation initiatives can, (or will) deliver adaptation benefits.

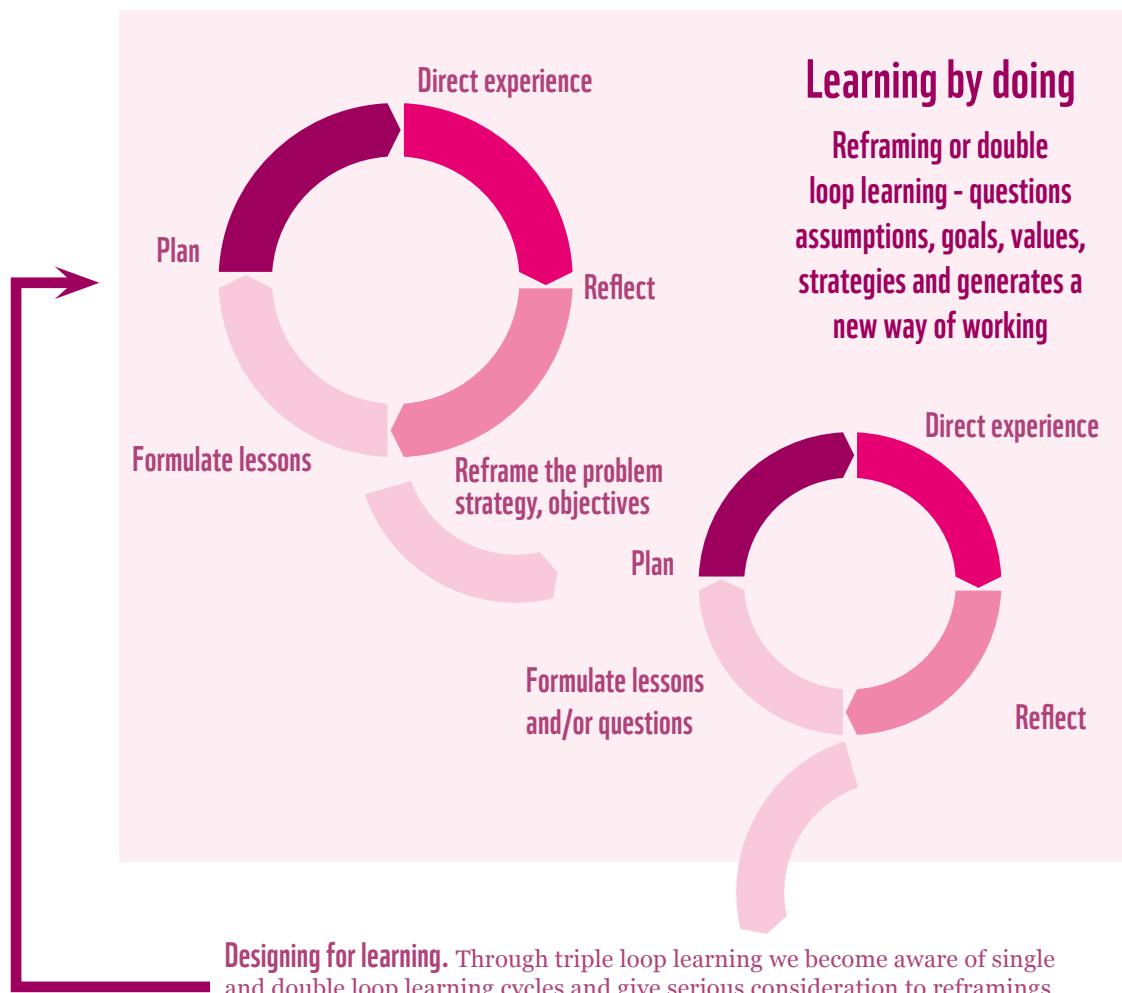


Figure 6.

Developing our climate smart conservation conceptual framework

Climate related phenomena not only affects our conservation targets, but also interacts with and modify traditional or non-climate threats to biodiversity, thereby adding to the complexity of social-ecological system within which we are operating. Some existing threats will be exacerbated while others may recede. Therefore climate smart conservation does not focus solely on climate-related threats at the expense of other threats. Rather, it adapts current ways of working and explores new ones to attempt to ensure that our strategies properly address threats such as habitat loss and fragmentation and the overexploitation of natural resources, in the face of a changing climate.

Climate smart conservation may involve conservation projects that at first sight look like “business as usual conservation” rather than climate smart conservation however there are key steps and nuances to a climate smart project cycle that set it apart. For example, while learning and adaptive management are incorporated into WWF’s Standards for Project Cycle Management, climate smart conservation work requires a much greater emphasis on learning and an on-going process of adaptive management, such that there is a greater expectation that these initiatives may evolve over time to be responsive to the ever changing environment.

Some of the most relevant insights in developing our conceptual framework, methodologies and tools are:

- Climate adaptation varies from one place to another. Therefore, it is necessary to work across **all landscapes** (i.e. ecosystems, watersheds, protected areas, farms) and at different **scales** and **levels** (i.e. regional, national, local, communities). However, no single tool can answer every question at all scales. A relatively simple framework enables us to use a set of tools flexibly and apply them to multiple scales in a given landscape.
- The use of **rapid assessment methodologies** (i.e. modified Flowing Forward and ARCA¹⁹) highlighted the need for frameworks that can be easy to understand and can rapidly organize, rank, and support the analysis of large amounts of complex information. In our pilot climate smart conservation projects, this approach helps us to build a framework that works as a container for a set of tools and the information they produce, including spatially explicit GIS based analyses as well as community level inputs which are often not explicitly geo-referenced.
- Tools need to be **flexible** and yet also have some degree of **standardization** in order to ensure that the right information is being captured and that such information is being analyzed in a way that is comparable across study areas

¹⁹. ARCA, the Spanish Word for Ark, is acronym for Climate Risk and Adaptation Capacity Rapid Assessment



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and landscapes. We have tried to standardize tools in ways that address and add value to the specific needs and context of Colombia.

- The conservation challenge becomes more complex when we take a socio-ecological perspective. Given the nature and extent of current threats to biodiversity it is already hard to implement adequate conservation strategies. Climate smart conservation should be analyzed and planned within the **wider context of socio-economic development** and it is especially important to address current drivers of change without compromising the resilience of human and natural systems. Rapid assessment methodologies highlight climate risks in a geographical context, which can be used to develop climate informed conservation and development plans which are linked geographically across different scales.
- Climate change brings **opportunities** for us if we look for them in our existing work. In Choco-Darién Coastal and Marine Protected Area sustainable community-based management of mangroves ecosystems can focus on areas where it is important for this ecosystem to enhance its inherent resilience. Protection of the mangroves forest also safeguards important refugia and protects hydro-biological resources for sustainable use by local communities. It is useful to identify such multiple benefits and where the need for climate change adaptation can strengthen the case for conservation.
- WWF-Colombia is being asked to examine climate risks, adaptive capacity and long term vulnerability in different landscapes by different partners and donors anxious to address climate change. While data, information and knowledge appear in many cases not to be sufficient, the potential social and ecological costs of inaction have promoted semi-qualitative processes that potentially address some of the risks in terms of the relative context of climate stressors (mainly changes and extremes of precipitation and temperature), and highlight alternative courses of action that strengthen adaptive capacities.

CURRENT WORK ON CLIMATE SMART CONSERVATION

In recent years (2012-2013) the Choco-Darien and Northern Andes priority landscapes have become testing grounds for a variety of adaptation approaches. We still have many questions about climate smart conservation. One of the key issues that is emerging for us is how

to address short term climate risks while bearing in mind the longer term changes. However some recent developments include:



WE HAVE ASSESSED
6 ECOSYSTEMS AND
MORE THAN 50 SPECIES
AND CARRIED OUT
ASSESSMENT PROCESSES
IN 5 COMMUNITIES

- **Mainstreaming climate change into coastal and marine national protected areas.** Since 2012, we have been developing and testing, with WWF-International, WWF-Philippines and WWF-Madagascar, a Manual for Climate Change Vulnerability and Risk Assessment (CCVRA) for Coastal and Marine Protected Areas. This project required us to deepen our understanding of current and expected changes in oceanographic conditions, monitoring and modeling of coastal and marine physical conditions and complemented our previous expertise in developing terrestrial climate change models. This project is testing six different climate vulnerability and risk assessment methodologies²⁰, applied to a range of conservation and social targets. We have assessed 6 ecosystems and more than 50 species and carried out assessment processes in 5 communities.

The most recent and perhaps most resonant experience of this process, is a shift in our and our partners' practice for doing CCVRAs. Instead of exploring opportunities to include the final results of the assessment into the Protected Areas Management Plans (PAMP), we and our local partners, mainstreamed climate change into the process for formulating PAMPs, including: (i) identifying and selecting conservation targets; (ii) assessing the ecological integrity of conservation targets, including the biological indicators that have strong correlations with current and future climate conditions; (iii) making a comprehensive Threats and Drivers of Change Assessment, that includes climate-related current and expected physical manifestations; (iv) developing risk to conservation target scenarios, including climate risks derived from the CCVRAs; and (v) identifying management strategies to be incorporated in the PAMP including possible adaptation actions. By helping to incorporate climate change into the PAMP process we are up-scaling our and our partners' impact by addressing not only the Sanquianga and Gorgona National Parks but other coastal and marine parks in the Pacific and Caribbean regions of Colombia.

20. Flowing Forward (WWF 2010.), Species Vulnerability Screening Tool (IUCN 2008), Threatened and endangered species to climate change. (EPA Methodology 2009), BAVAPA - Basic methodology for Vulnerability Assessment of Protected Areas (WWF 2012), Climate Change Vulnerability Assessment and Adaptation Planning for Mangrove Systems (WWF 2012), Resilience Assessment of Coral Reefs (IUCN 2009)



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- **Testing metrics to assess climate smart conservation.** In collaboration with CARDER, a local environmental authority, WWF-Colombia is building on previous collaboration with WWF-US and the Flowing Forward vulnerability assessment methodology to develop a new methodology for Climate Risks & Adaptation Capacity - Rapid Assessment called ARCA. This methodology will assess climate risks and adaptive capacity and develop draft adaptation plans. As part of this process WWF-Colombia has begun to explore the use of metrics to assess the benefits of climate smart conservation. The metrics that we will test through ARCA are biodiversity, communities and livelihoods and hydrological resources.
- **Developing local climate adaptation policies and plans.** Starting in 2012, WWF-Colombia is playing a key role in the development of local approaches to climate change adaptation. We are doing this in partnership with MADS which is currently supporting Regional Environmental Authorities (CARs) via the climate change local clusters. In this process, WWF-Colombia advocated a rapid assessment of climate risks and adaptation capacity needs.
- **Assessing all climate risks:** the challenge posed by climate change is immense and complex. However, in some of WWF's priority conservation places it is not the main climate-related driver of change. Inter-annual variability (i.e. El Niño events) or inter-seasonal variability (i.e. rainy/dry seasons) are causing important alterations to a number of conservation targets, even inducing change in the biological characteristics of species, changes in habitats, and/or in key environmental services. Therefore, climate smart conservation needs to include strategies related to **current climate** (mean values, fluctuations and extremes), in addition to **projected climate** (typically, climate change).
- **Identifying refugia for especially vulnerable species** as for medium and long term conservation planning linked to improving the overall connectivity of existing and future protected areas.

First practical steps to becoming climate smart

We are often asked what are the key steps to mainstreaming climate change adaptation into conservation planning and can these steps be broken down into “sizable bites” to avoid overwhelming practitioners and creating a barrier to change. These are our thoughts in answer to these questions:

- **Share climate adaptation responsibilities:** climate change adaptation is not the responsibility of one individual in WWF-Colombia but is shared by a number of people. Sharing the responsibility for mainstreaming has also increased the amount of work being accomplished which also builds traction.
- **Develop a coordinated strategy:** as climate change adaptation continued to grow it became evident that a unified vision was needed to coordinate our efforts. We are developing a climate smart strategy to guide our own climate change adaptation, mitigation, REDD and low carbon development actions.
- **Review existing conservation activities:** WWF-Colombia initiated a complete review of its conservation planning efforts using the WWF program network standards to better integrate climate change considerations into our conservation activities and planning. At least an annual periodical review and adaptive management is the essence of climate smart conservation.
- **Engage senior level champions of climate adaptation:** the mandate to become a climate smart organization has been given by senior staff. It is and regularly revisited at organizational meetings where progress and updates are discussed openly.
- **Build capacity:** Incorporating climate change considerations into existing and future work will require staff to develop new skill and capacities. WWF-Colombia has invested in its current staff e.g. the GIS team has recently attended workshops to help them build their climate modeling skills.

REFLECTING ON OUR TRANSFORMATIONAL PROCESS

Final thoughts

In WWF-Colombia our learning process has involved both thinking and feeling and sometimes we have felt surprised or even shocked by where this has led us. Different questions have arisen for us such as: “can we deliver, add value, and be accountable for the adaptation benefits envisioned in our conservation projects?”, “will our present conservation targets persist in a changing climate?”. Despite the challenges, WWF-Colombia is continuously observing its practice of climate smart conservation, assessing itself and looking for answers to these questions.

While incremental learning and reframing presented in the previous sections may be quite common, transformational change is more challenging because of the difficulty of detecting the implicit patterns that underlie our conservation work. Seeing these patterns “unmasks” us, and shows if what we’ve been doing is or isn’t working the way we envisioned. It requires tenacity to stay with this process of unmasking as we resist facing anything that is at odds with our self-image. However unmasking is necessary if we are to be proactive in adapting to existing and future climate change.

Our Definition of Climate Smart

Be climate smart means to understand that climate is dynamic and interacts with other environmental conditions and therefore offers complex and variable scenarios for ecological and social systems that needs to be addressed by visionary goals that consciously and deliberately consider the risks, challenges and opportunities of a changing climate.





EL RÍO

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To stop the degradation of the planet's natural environment and to build a future in which humans live in harmony with nature.

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