



Austrian Adaptation policy approach: From development to implementation and MRE

Andrea Prutsch

Workshop in Zagreb, 8th of September 2016

Questions to be addressed and discussed with you:

From climate models →
Impacts/vulnerabilities →
Adaptation measures →
Monitoring/Evaluation

Which sectors
need to be
addressed?

How to
implement
adaptation
measures?

How to prioritize
adaptation
measures?

How to involve the
“right” stakeholders
– focus on regional
level and private
sector?

How to mainstream
adaptation and how
to assure coherence
between sectors?
→ Coordination

.....

Climate change affects Austria already today...



Glacier retreat

© Bild: Gletscherarchive.de



Less snow cover

© Bild: APA/Hildenbrand



Change in vegetation

© Bild: McDowall



Heat

© Bild: ORF/Hochmuth



Heavy local percipitation

© Bild: ORF/Hadler



Floodings

© Bild: Landespolizeidirektion Oö

Adaptation is on the agenda since 2007, triggered by...

1) ... experienced climate change impacts in the past → Austria faces already yearly climate related damage costs of approx. **700 Million Euro** (from 2001-2010)

Summer
2016



Adaptation is on the agenda since 2007, triggered by...

- 1) ... experienced climate change impacts in the past → Austria faces already yearly climate related damage costs of approx. 700 Million Euro (from 2001-2010)
- 2) ... international and European policy processes on Climate change adaptation

International:

- Kyoto Protocol 2005 (Article 10b) under the UNFCCC process → Requests for national adaptation initiatives
- Paris Agreement 2015 → Strengthen adaptation as second column of climate policy, provides funding within Green Climate Fund
- UNFCCC Communications → to be delivered every 4 years, reporting on adaptation should be considered in a comprehensive way (new guidelines available)



Adaptation is on the agenda since 2007, triggered by...

... experienced climate change impacts in the past → Austria faces already yearly climate related damage costs of approx. 700 Million Euro (from 2001-2010)

2.) ... international and European policy processes on Climate change adaptation

European:

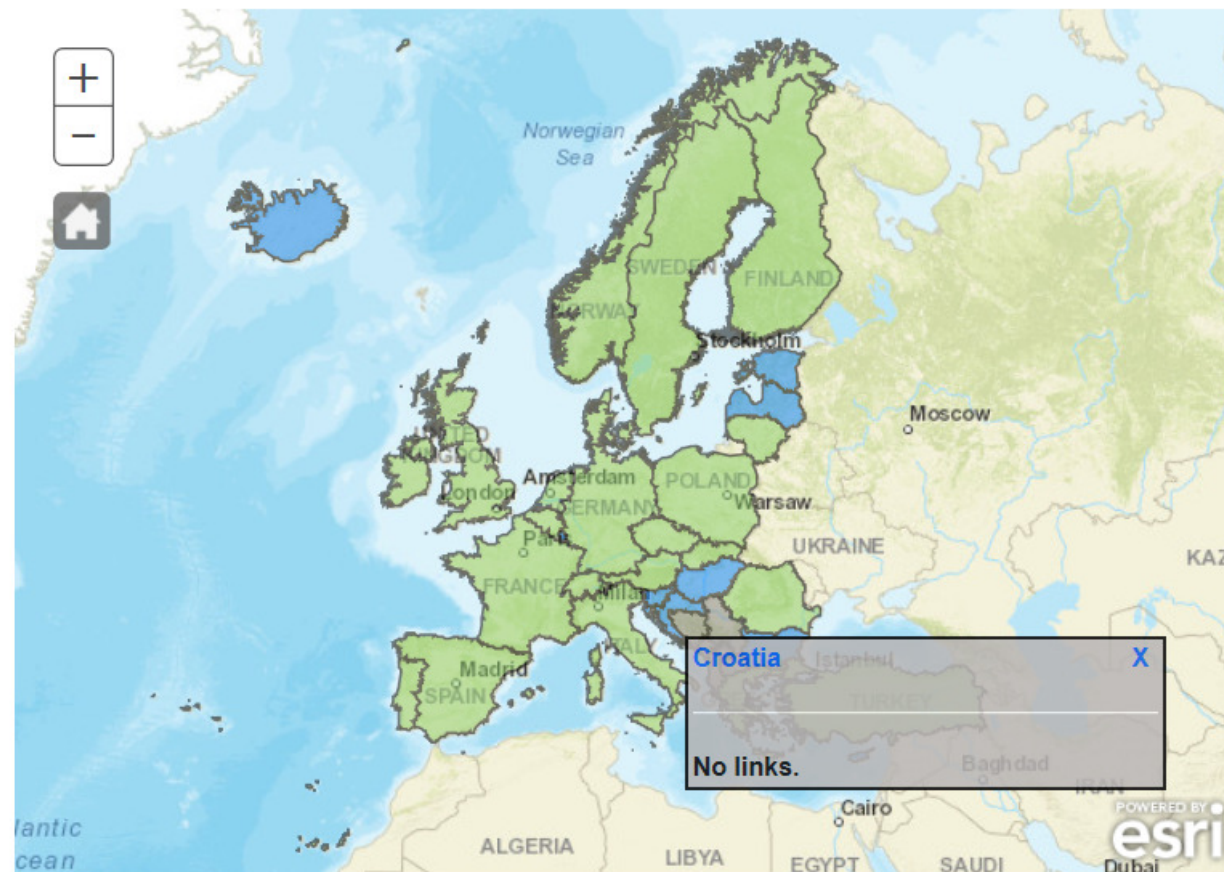
- Adaptation on the agenda since 2005
(establishment of working group on adaptation)
- Green paper on adaptation in 2007 followed by a White paper on adaptation in 2009
- EU Adaptation strategy available since 2013 → revision planned for 2016/2017
- Website CLIMATE-ADAPT launched → climate-adapt.eea.europa.eu/



Quelle: kallejipp/photocase.com

Information on Climate-ADAPT: Country Information




Select a country to go to country's page:



Choose Thematic Map:

National adaptation strategy

[Show Thematic Map](#)

-  No links available for this theme
-  Links available for this theme
-  Currently no information available

[\[Disclaimer\]](#)



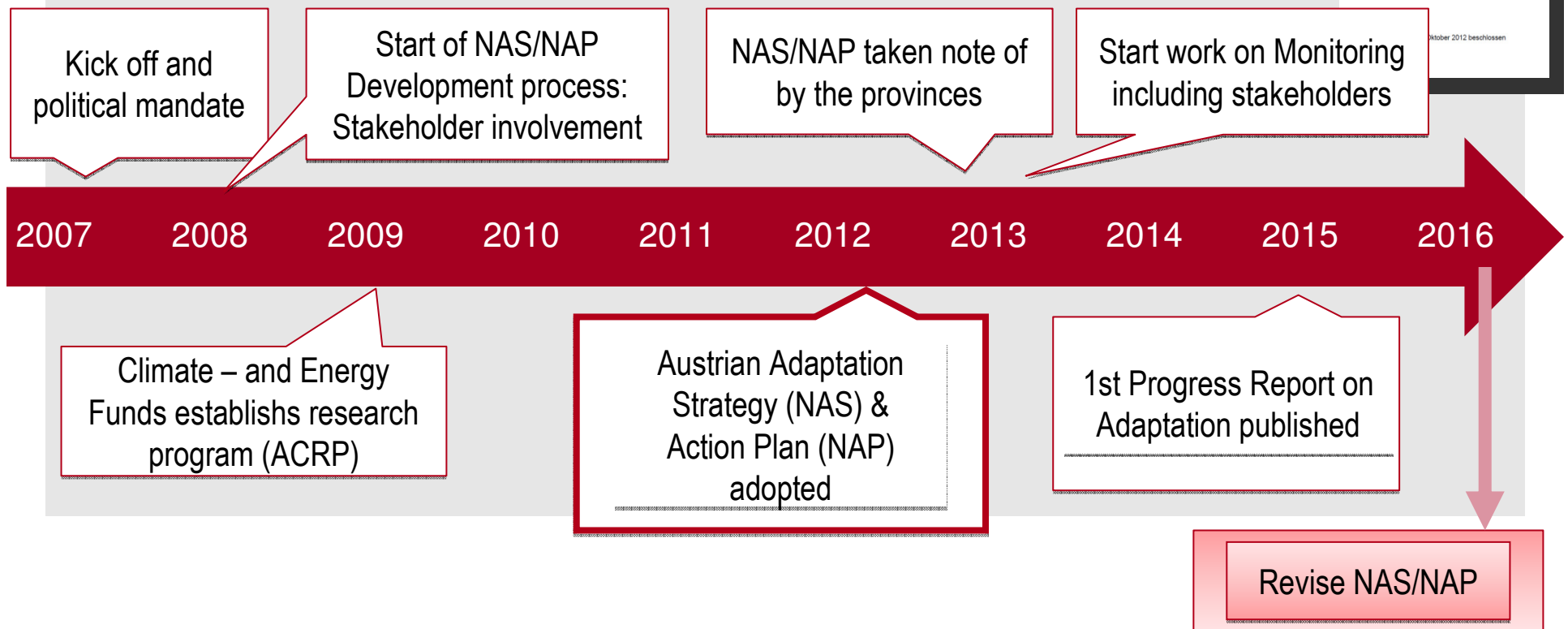
Adaptation policy development process in Austria

Austrian adaptation policy process

Main responsibility, process owner:

Federal Ministry of Agriculture, Forestry,
Environment and Water Management

Support unit: Environment Agency Austria



Development process of NAS/NAP (2008-2012)

Sector-specific input documents

including information on climate change and vulnerability

E-Mail survey with scientists

AustroClim including approx. 600 climate change and impact scientists

Revised sector-specific input documents

including adaptation options

1-2 sector specific workshops with scientists &

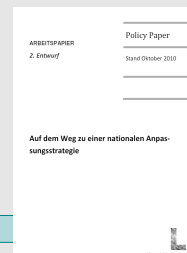
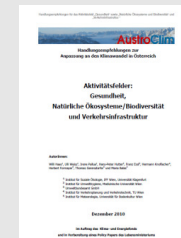
Presentation of results at public meetings (called informal WS)

Integration into „Policy Paper“

(gradually developed into NAP)

Consultation rounds on NAS /NAP drafts

sent by responsible Ministry



health, ecosystems &
biodiversity,
transport infrastructure

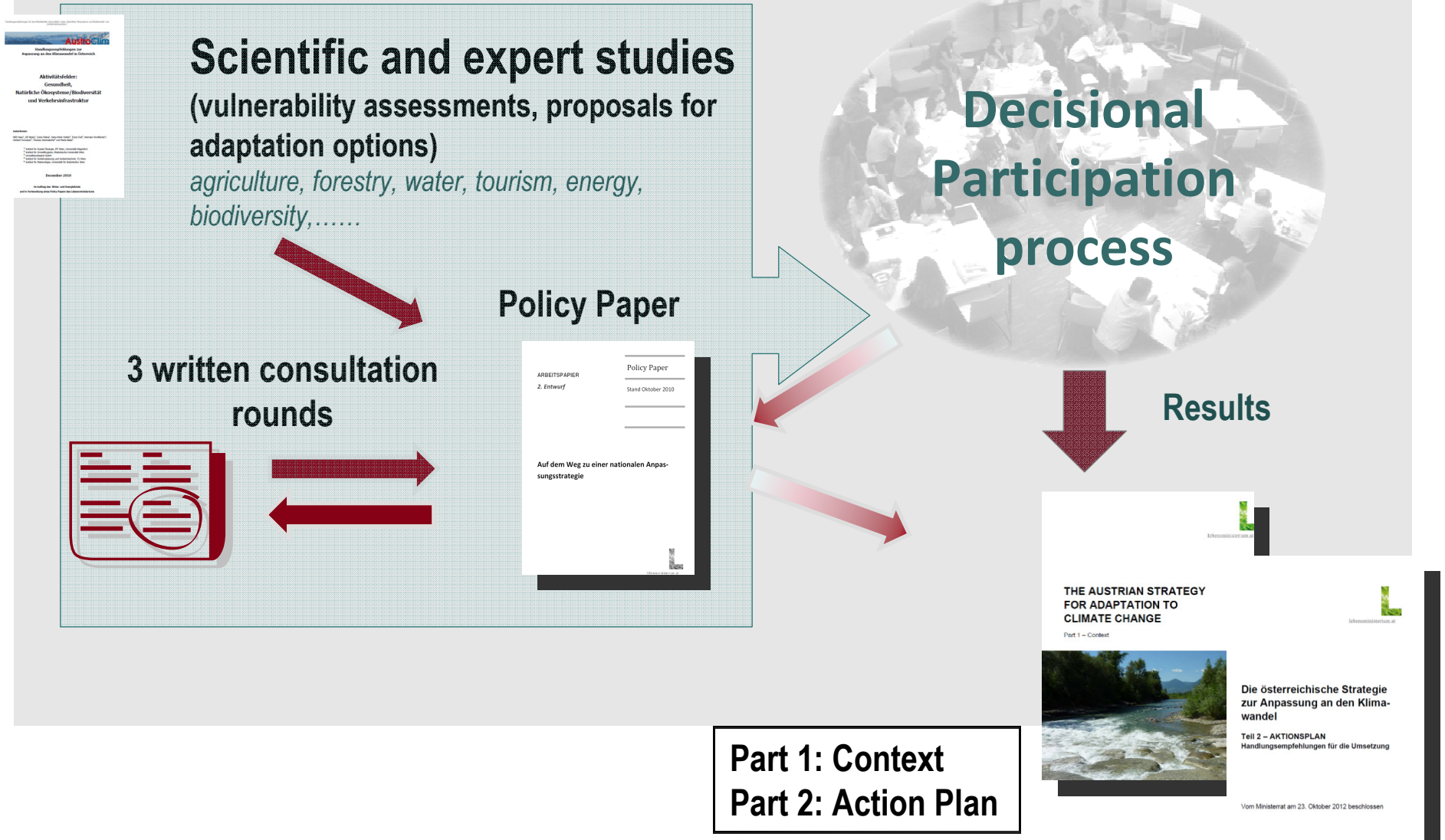
Participation process



agriculture, forestry, water, tourism, energy, natural
hazards, housing & construction,



Development process of NAS/NAP (2008-2012)



Informative

cf. section 4.1

Consultative

cf. section 4.2

Decisional

Decisional participation
process with non-state
actors equally alongside
multi-level state actors

cf. section 4.3

Resulting policy documents

Overview of stakeholder involvement in Austria

2007

2008

2009

2010

2011

2012

- 1.
- 2.
- 3.
- 4.
- 5.
- 6.

Web portal
on adaptation
incl. database

Adaptation
newsletter

ongoing

Online survey with
scientists

13 workshops with
scientists
First adaptation
recommendations for
ten sectors (reports)

Online survey with
public on
adaptation

1st Consultation
round on policy paper

2nd Consultation
round on policy paper

4 workshops with
scientists within
funded research
projects
First adaptation
recommendations for
four sectors

3rd Consultation
round on draft
NAS/NAP

Workshop for
final agreement of
NAS/NAP

1st Phase:
5 full-day workshops
on adaptation
recommendations
for first five sectors

2nd Phase:
9 half-day plus 2 full-day
workshops on adaptation
recommendations
for next five sectors

1st DRAFT
Policy Paper
Towards a National
Adaptation Strategy

2nd DRAFT
Policy Paper
Policy Paper
Towards a National
Adaptation Strategy

DRAFT
NAS and NAP
for Austria

FINAL
NAS and NAP

Target groups:

- Public
- Scientists
- State and non-state actors

Source:
Prutsch et al.
unpublished

Decisional Participation process

- Conducted by the **Environment Agency Austria** in close cooperation with responsible Ministry and Kyoto Forum (steering group)
- **16 workshops** from **2009-2011**
- **106 institutions** (>670 persons) actively involved
- **Composition of participants:**
 - 1/3 federal ministries, provincial authorities, large businesses / service providers
 - 1/3 organized interest groups: social partners, chambers, etc.
 - 1/3 social/environmental NGOs, civil society organizations, private companies (e.g. insurances)



Objectives:

- ❖ Raise awareness
- ❖ Provide a platform for exchange
- ❖ Improve the NAS/NAP quality
- ❖ Enhance the acceptance
- ❖ Facilitate the implementation

Decisional Participation process

Stakeholder analyses

Relevant stakeholders were identified through questions such as:

- ✓ **Who** can influence decisions in regard to adaptation?
- ✓ **Who** is responsible for implementing (and financing) the potential adaptation action?
- ✓ **Who** can increase the effectiveness of the adaptation action through participation or decrease its effectiveness by non-participation?
- ✓ ...

Invitation to nominate 2 representatives who have the mandate to bring in the organizations interest and report back

Decisional Participation process

Stakeholders role

- Stakeholder's role can be described as “**practical experts**” complementing the adaptation recommendations provided by scientist (discussion base = Policy Paper)
- Influence on „**corner stones**“ of the strategy



Decisional Participation process – lessons learned

KEY MESSAGE:

Overall, it **had effects** (i.e. it raises awareness, builds capacities and facilitates exchange, enhanced the quality of the policy document), but that it is not able to overhaul the **weaknesses** of comprehensive policy strategies

Recommend to be specific on ...

- ✓ purpose of process
- ✓ roles of involved parties
- ✓ tasks for stakeholders
- ✓ expected outcomes and use of outcomes
- ✓ limits of process



Experiences and reflections with focus on Formulation

- Step-wise, iterative and sector-based approach, combining the development of NAS and NAP, was a **very long and complex process**, partly difficult to communicate
- **Participation of various stakeholders** in policy formulation contributed positive to the process as it helped to raise awareness on the issue, build capacities, improved the quality of the policy documents, etc.
- Strong role of **science** at the beginning of the policy formulation process added to the quality of the policies and enhanced the acceptance of the adaptation options → interaction throughout the development process was limited and could have been increased
- **Missing vertical** (with public authorities on sub-national levels) and **horizontal** (with other Ministries on national level) **coordination in formulation stage** → took place within the decisional participation process together with non-state stakeholders → high-level controversies over who is responsible for what were difficult to solve



Adaptation policy decision process

Political adoption of the Austrian NAS/NAP



- approved by the Austrian Council of Ministers on Oct. 23rd 2012
- taken note of by the provinces („Landeshauptleutekonferenz“) on May 16th 2013

Download: <http://klimaanpassung.lebensministerium.at>

National Adaptation Strategy and Action Plan

- Country-wide strategic framework for joint, coordinated, coherent action
- Integrated, comprehensive, broad strategy with sectoral approach

Two parts

Part I: Strategic framework and context

- Including: policy objectives, information on climate change impacts, guiding principles, prioritization criteria, cross-cutting recommendations for implementation, social aspects

Part II: Action Plan

- 14 activity fields (sectors)
- 132 recommendations for action
- High level of concreteness, specifies many concrete starting points for implementation

Part I: Context

Table of Contents

Table of Contents

1	Introduction	3
2	Political Environment	7
3	Objectives	15
4	Development of the Austrian Adaptation Strategy	19
5	Climate Change in Austria	23
5.1	Global Climate Scenarios	23
5.2	Regional Climate Scenarios for Austria	25
5.3	Anticipated Future Effects of Climate Change Based on Climate Scenarios for Austria	32
6	Challenges to Adaptation	39
7	Social Aspects of Climate Change	43
8	Guiding Principles of Adaptation	51
9	Criteria for Prioritizing the Recommendations for Action	55
10	The Status Quo of Adaptation in Austria – Federal State Initiatives	59
11	Research Environment and Research Needs	71
12	Good Practice	77
13	Communication and Education	95
14	Global Context	99
15	Recommendations for Action	103
15.1	Overall Principles	103
15.2	Tabular Compilation of Recommendations for Action	104
16	Resource Requirements in the Course of Adaptation to Climate Change	123
17	Outlook and Further Steps	127
18	References	133



THE AUSTRIAN STRATEGY FOR ADAPTATION TO CLIMATE CHANGE

Part 1 – Context



Austrian Adaptation Strategy (Context)

Overall aim

- to reduce anticipated **negative impacts** of climate change on Austria's society, economy and environment
- to use **positive effects** of climate change and allow synergies
- to provide an **overall framework** in which adaptation should take place

Overall principles

- Preventive action in line with the precautionary principle
- Flexible and/or robust measures (win-win, no-regret, co-benefits)
- Making use of synergies through cooperation (e.g. mitigation)
- Considering interdependencies between sectors and avoiding conflicts
- Avoiding maladaptive outcomes (unsustainable pathways, negative external effects)

Part II: Action Plan

Activity fields

- Agriculture
- Forestry
- Water cycle and water management
- Tourism
- Energy – focus electricity industry
- Construction and housing
- Natural hazard management
- Disaster management
- Health
- Ecosystems and biodiversity
- Transport infrastructure and mobility aspects
- Spatial planning
- Economy / industry / trade
- Cities – urban open and green spaces

Content items elaborated for each activity field

- General description of activity field
- Summarized vulnerability estimation for activity field
- General principles of action for activity field
- Recommendations for action:

Measures follow the same structure ...

3.1.4.2 Verstärkte Etablierung und Förderung von wassersparenden Bewässerungssystemen sowie Verbesserungen in der Bewässerungsplanung

Ziel	Effizienzsteigerung in der Bewässerung und der Wassernutzung durch den Einsatz moderner technologischer Entwicklungen, die eine Optimierung der Bewässerung hinsichtlich Zeitpunkt und Menge erlauben
Bedeutung	<p>In Folge der Anpassung an den Klimawandel wird es regional unterschiedlich zu einer Ausweitung der Bewässerungsflächen und -intensität kommen. Diese Entwicklung ist unter Bedachtnahme auf die langfristige regionale Situation und Wasserverfügbarkeit zu steuern. Der pflanzenverfügbare Wassergehalt des Bodens spielt für den Wasserhaushalt eines Pflanzenbestandes eine zentrale Rolle. Die Wasserverfügbarkeit wird insbesondere durch die Niederschlagsverteilung bestimmt. Anbaugelände mit einer geringen Wasserrückhaltekapazität, einer ungünstigen klimatischen Wasserbilanz und/oder hohen Sommertemperaturen werden besonders betroffen sein. Bei einigen Kulturen wird die Bewässerung zur Qualitäts- und Ertragsicherung unerlässlich sein. Dies gilt insbesondere für die bereits heute trockensten landwirtschaftlichen Produktionsgebiete im Osten Österreichs. Fachleute gehen allerdings davon aus, dass das Einsparungspotenzial durch den forcierten Einsatz effizienter Bewässerungssysteme den zusätzlichen Wasserbedarf infolge des Klimawandels übersteigt. Da die künstliche Bewässerung auch einen erheblichen Kostenfaktor darstellt, haben sich in der jüngeren Vergangenheit wassersparende Systeme zunehmend etabliert und werden in Zukunft eine besondere Bedeutung erlangen. Besonderes Augenmerk muss dabei auf eine effiziente und nachhaltige Wassernutzung gerichtet werden.</p> <p>Darüber hinaus sind moderne Bewässerungssysteme energiesparend und bodenschonend. Zusätzlich können eine flächen- und zeitgenaue Planung und Dokumentierung der Bewässerung unter Bedachtnahme auf den Niederschlag und den Wasserbedarf der Pflanzen eine Effizienzsteigerung in der Bewässerung mit sich bringen.</p> <p>Generell ist anzumerken, dass die Wirtschaftlichkeit von Bewässerungsanlagen maßgeblich von der Höhe der Energiepreise, der gewählten Bewässerungstechnologie (Investitionskosten), eventuellen Wasserbereitstellungskosten und den Preisen für die pflanzenbaulichen Produkte bestimmt wird.</p>
Bezug zu anderen Aktivitätsfeldern	Es besteht ein enger Bezug zum Aktivitätsfeld Wasserhaushalt und Wasserwirtschaft. Aufgrund der Wechselwirkung zu ökologischen Aspekten bzw. zu konkurrierenden Nutzungen (Wasserversorgung, energetische Nutzung) ist hier besonders auf eine ganzheitliche Vorgehensweise Bedacht zu nehmen. Für die Umsetzung sind österreichweite Basisdaten zur Wasserentnahme aus dem Grundwasser bzw. aus Oberflächengewässern durch die Landwirtschaft (siehe auch entsprechende Maßnahme im Aktivitätsfeld Wasserhaushalt und Wasserwirtschaft) erforderlich. Weitere Schnittstellen bestehen zu den Aktivitätsfeldern Energie, Ökosysteme/Biodiversität und Wirtschaft.

Bezug zu bestehenden Instrumenten	<p>Die – bewilligungspflichtige – Wasserentnahme wird im <i>Wasserrechtsgesetz</i> geregelt.</p> <p>Basisinformationen zur Wasserentnahme aus Grundwasser bzw. aus Oberflächengewässern hinsichtlich der wasserrechtlich bewilligten Anlagen finden sich in den Wasserinformationssystemen der Länder (WIS).</p>
Stand der Umsetzung	Die künstliche Bewässerung stellt einen erheblichen Kostenfaktor dar, was mit ein Grund dafür ist, dass sich in jüngerer Vergangenheit zunehmend wassersparende Systeme etabliert haben. Es ist davon auszugehen, dass effiziente Bewässerung in Zukunft eine besondere Priorität erlangen wird.
empfohlene weitere Schritte	<ul style="list-style-type: none"> • Erhebung der tatsächlichen Wassernutzungen, da in manchen Gebieten die Summe aller wasserrechtlich festgelegten Konsense mitunter das Dargebot übersteigt; • Regelung der Entnahme von Wasser aus öffentlichen Gewässern. Prüfung eines eventuell vorhandenen diesbezüglichen Anpassungsbedarfes bei der Erteilung von Genehmigungen; • Schaffung von Anreizen zum Umstieg auf wassereffiziente Bewässerungssysteme (z. B. Investitionsförderung); • Forschung zur langfristigen regionalen Wasserentnahmefähigkeit eines Gebietes und der Bedarfsentwicklung unter Berücksichtigung regionaler Klimaszenarien sowie zur Effizienz von Bewässerungsanlagen hinsichtlich Energie- und Wasserverbrauch; • Informations- und Beratungsinitiativen im Rahmen des umfassenden bestehenden Bildungsangebotes.
möglicher Ressourcenbedarf	Für die Einarbeitung eines österreichweiten Basisdatensatzes zur tatsächlichen Wasserentnahme aus dem Grundwasser bzw. aus Oberflächengewässern durch die Landwirtschaft sind Mittel bereitzustellen. In Forschungsprogrammen sind Ressourcen für relevante Fragestellungen vorzusehen.
mögliches Konfliktpotenzial	Nutzungskonflikte um die Ressource Wasser (Trink- und Nutzwasser, energetische Nutzung etc.) sind insbesondere in Regionen, die bereits heute trockenheitsgefährdet sind, zu erwarten.
HandlungsträgerInnen	Bund, Bundesländer, Gemeinden, Interessenvertretungen, universitäre und außeruniversitäre Forschungseinrichtungen, Landwirtinnen und Landwirte, Industrie
Zeithorizont	Allenfalls erforderliche Forschungsaktivitäten zur langfristigen regionalen Wasserentnahmefähigkeit können kurzfristig veranlasst werden. Verstärkte und gezielte Informations- und Beratungsoffensiven im Rahmen der bestehenden Bildungsangebote können kurzfristig umgesetzt werden. Mittelfristig sind ökonomische Anreize für die Etablierung wassereffizienter Bewässerungssysteme denkbar.

Analysis of cross-sectorial interactions

Agriculture

Nr.	Titel	FW	WW	T	E	B/W	SvN	K	G	Bio	V	Ro	W	St	KS
3.1.4.7	Überprüfung der Standort-eignung aufgrund sich än-dernder klimatischer Bedin-gungen und Erarbeitung von Empfehlungen für die Wahl einer an den Standort ange-passsten Kulturpflanze	+	+							+/-	⚡		+		+
3.1.4.8	Risikominimierung sowie Entwicklung und Ausbau von Instrumenten der Risiko-streuung						+					+	+		
3.1.4.9	Integrierte Landschaftsge-staltung zur Bodensicherung und Verbesserung der Ag-rarökologie inklusive der Erhaltung und Pflege von Landschaftselementen		+	+			+/-			+					+
3.1.4.10	Erhalt bestehender Almflä-chen und Revitalisierung aufgelassener Almen			+			+/-			+					
3.1.4.11	Optimierung der Glashaus-kultur hinsichtlich Energie-, Wasser- und Kühlungsver-sorgungspläne		+												
3.1.4.12	Förderung des Tierschutzes und der Tiergesundheit unter veränderten klimatischen Verhältnissen														

+	generally positive effects on other activity fields / recommendations for action
+/-	in principle positive effects on other fields; realisation of synergies or occurrence of conflicts depends on approach to planning and implementation
⚡	conflicts of interests or usage with other fields are likely

Experiences and reflections with focus on Decision

- NAS/NAP is very **comprehensive** with high level of detail → compendium of knowledge, but difficult to guide the implementation process
- NAP supports **mainstreaming** in a meaningful way
 - Entry points (e.g. instruments) in other sectors/policies identified
 - Recommendations/measures are often cross-cutting
 - Cross-sector relations and conflict potentials consistently described
- **Implementing actors** identified, but not assigned → no commitment could be reached
- Criteria for **prioritizing** actions provided → setting priorities was proposed to the implementation process
- **Resource needs** addressed in qualitative terms, but not quantified → therefore, the level of detail is not appropriated
- General statement on **financing** is included in NAS → should happen within existing public budgets



Implementation of adaptation

Implementation process

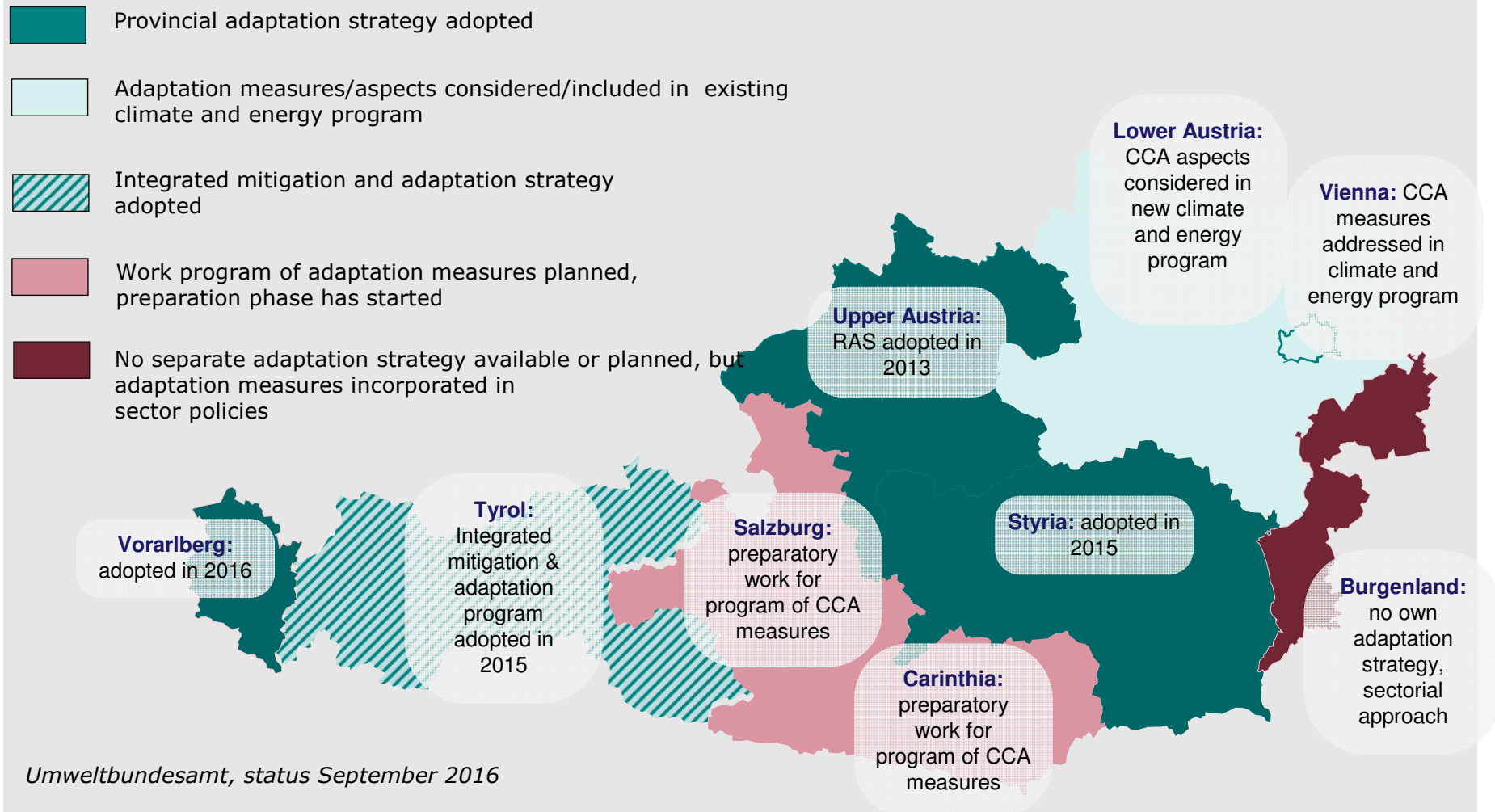
- **Work Program of the Austrian Federal Government 2013-2018:** Evaluation and implementation of NAS stated as a goal
- **Vertical coordination** of NAS implementation between Ministry and provincial states (climate coordination officers) still works mostly in informal ways
 - no permanent institutionalized coordination body
 - benefits from institutional and personal relationships built during participatory strategy development

Implementation process – some highlights 😊

- **Most provinces** have adopted (or are currently working on) Regional Adaptation Strategies



Implementation in the provinces – status & planned



Implementation process – some highlights 😊

- **Most provinces** have adopted (or are currently working on) Regional Adaptation Strategies
- **Mainstreaming efforts** enhanced (e.g. CAP, forest policies, health)
- **Communication and awareness raising** increased – website, newsletter, brochure, videos, workshops in provinces and regions, etc.



> Home

Klimawandel-Anpassung in Österreich

In Wissenschaftskreisen wird an einem menschenverursachten Klimawandel nicht mehr gezweifelt. Aktuelle Studien zeigen, dass selbst durch einen vollständigen Stopp des Ausstoßes von Treibhausgasen eine weitere Temperaturerhöhung unvermeidbar ist. Deshalb werden in den letzten Jahren notwendige Schritte zur Anpassung an die nicht mehr abwendbaren Folgen des Klimawandels diskutiert. Die zentrale Frage dabei lautet: wie können wir unterschiedliche Bereiche ausrichten, dass sie auch unter geänderten Klimabedingungen zukunftsfähig sind?

Anpassungsaktivitäten können jedoch keineswegs Klimaschutzbemühungen ersetzen! Für eine zukunftsfähige Entwicklung unserer Gesellschaft sind sowohl Klimaschutzaktivitäten als auch Anpassungsmaßnahmen notwendig.

Diese Web-Seite des Umweltbundesamtes fokussiert auf die Anpassung und bietet Ihnen eine Fülle an Information zum Thema Klimawandel und Umgang mit dessen Auswirkungen.

AKTUELLES:



Klimawandel in bewegten Bildern

Wenn die Dachwohnung ein eigenes Kraftwerk für die Klimaanlage braucht, ist bei der Anpassung an den Klimawandel etwas schiefgelaufen! Auf unterhaltsame Weise zeigen zwei Kurz-Videos mit welchen Auswirkungen des Klimawandels bis Mitte des Jahrhunderts zu rechnen ist und worauf bei einer nachhaltigen Anpassung geachtet werden muss.

Was steht uns bevor?
Gut angepasst?

www.klimawandelanpassung.at

Communication

NEWSletter

Nr 19 | Juni 2016

Politik | Forschung

Anpassungspraxis | Schwerpunktthema | Europa | Aktuelles

Sehr geehrte Damen und Herren,

der Newsletter zu Klimawandel und Anpassung informiert Sie über aktuelle Entwicklungen aus der Politik, Beispiele aus der Praxis sowie interessante Projekte und Veranstaltungen. Das Schwerpunktthema beschäftigt sich diesmal mit dem Schutz von Gebäuden vor sommerlicher Überhitzung. Die nächste Ausgabe ist für September 2016 geplant.

Das Klimawandel-Anpassungsteam vom Umweltbundesamt wünscht einen schönen Sommer und ein informatives Lesevergnügen.

Aus der Politik

Klimapolitik in Österreich

Österreich setzt das Pariser Klimaschutzabkommen um

Am 21. Juni 2016 hat der Ministerrat das Pariser Klimaschutzabkommen genehmigt. Dieses Abkommen sieht eine Begrenzung der globalen Erwärmung auf deutlich unter 2 °C sowie die Entwicklung hin zu einer CO₂-neutralen Wirtschaftsweise bis zur 2. Hälfte des Jahrhunderts vor. Fast gleichzeitig erfolgte der Startschuss zur Erarbeitung einer langfristigen Energie- und Klimastrategie.

Mehr...

Walden für den österreichischen Wald

Österreichische Waldstrategie 2020+
Im Rahmen des Österreichischen Walddialogs wurde in den letzten Jahren „Die Österreichische Waldstrategie 2020+“ vom BMLFUW in Zusammenarbeit mit 15 Organisationen erarbeitet. Ziel ist es, durch die Sicherstellung einer nachhaltigen Waldbewirtschaftung die vielfältigen Aufgaben und Funktionen des Waldes auch zukünftig zu erhalten und zu verbessern.

Klimawandel – Was tun?



Newsletter

Dialogue events in the provinces

- **Interactive workshops** with provincial stakeholders conducted by the EAA
- Offer by the Ministry to provinces to promote NAS/NAP and kick off/support strategy building processes in provinces
- Important for **capacity building**:
 - demonstrates commitment from federal level and supports provincial climate officers in their work
 - coupling and “translating” the NAS/NAP to specific requirements of the provinces
- **Very positive resonance**: continuation and extension to other target groups → regions → 12 further workshops are financed and planned for 2016/2017



Implementation process – some highlights 😊

- **Most provinces** have adopted (or are currently working on) Regional Adaptation Strategies
- **Mainstreaming efforts** enhanced (e.g. CAP, forest policies, health)
- **Communication and awareness raising** increased – website, newsletter, brochure, videos, workshops in provinces and regions, etc.
- **First APCC report** on climate change, mitigation and adaptation published in 2014



First APCC report on climate change, mitigation & adaptation

TABLE OF CONTENTS

VOLUME 1 – Climate Change in Austria: Drivers and Manifestations

- Chapter 1: The Global Climate System and Causes of Climate Change
- Chapter 2: Emissions and Concentrations of Radiatively Active Atmospheric Trace Constituents
- Chapter 3: Past Climate Change in Austria
- Chapter 4: Future Climate Developments
- Chapter 5: Synthesis, Conclusions and Perspectives

VOLUME 2 – Climate Change in Austria: Environmental and Societal Implications

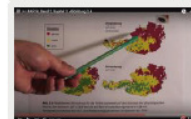
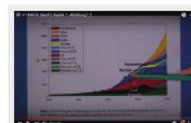
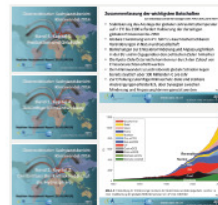
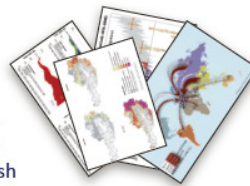
- Chapter 1: On Coupling of Driver and Response Systems and on Evaluating Consequences of Climate Change
- Chapter 2: Climate Change Impact on the Hydrosphere
- Chapter 3: Climate Change Impact on the Biosphere and Ecosystem Services
- Chapter 4: Climate Change Impact on Geospheres
- Chapter 5: Climate Change Impact on the Pedosphere
- Chapter 6: Climate Change Impacts on the Anthroposphere

VOLUME 3 – Climate Change in Austria: Mitigation and Adaptation

- Chapter 1: Mitigation and Adaptation to Climate Change
- Chapter 2: Agriculture and Forestry, Water, Ecosystems and Biodiversity
- Chapter 3: Energy and Transport
- Chapter 4: Health, Tourism
- Chapter 5: Production and Buildings
- Chapter 6: Transformation Paths

AVAILABLE ONLINE:

- **FULL REPORT**
complete (1096 pages) or as single chapters
- **SUMMARIES**
Summary for Policymakers and Synthesis, approx. 130 pages in German and English
- **SYNOPSIS**
Main findings, summarised on 12 pages, available in German and English
- **GRAPHS**
All figures and tables of the report
- **SLIDES**
Essential messages and figures of each chapter, prepared for lectures and talks
- **VIDEO CLIPS**
Brief explanation of the slides' contents by the respective authors
- **LITERATURE DATABASE**
Searchable, including grey literature



- Austrian Assessment Report 2014 (AAR14) follows the model of the IPCC Assessment Reports
- more than **200 scientists** contributed to the state of knowledge on climate change in Austria
- resulted into a comprehensive and detailed scientific assessment of the state of knowledge for Austria (**>1,000 pages**)

Implementation process – some highlights 😊

- **Most provinces** have adopted (or are currently working on) Regional Adaptation Strategies
- **Mainstreaming efforts** enhanced (e.g. CAP, forest policies, health)
- **Communication and awareness raising** increased – website, newsletter, brochure, videos, workshops in provinces and regions, etc.
- **First APCC report** on climate change, mitigation and adaptation published in 2014#
- Various **research projects** to support implementation carried out, such as the study on cost of inactions (COIN), costs of private/public adaptation (PATCHES, PACINAS), adaptation tools to support municipalities (FAMOUS, CC-ACT), etc.



Research in Austria

Research programmes

■ **Austrian Climate Research Program (ACRP)**, operated by Climate and Energy Fund: strategically aligned with policy-making; regularly funding projects in support of NAS/NAP implementation

■ **StartClim**: financed by donor consortium (ministries, prov. governments, private sector)

Research community

■ **CCCA – Climate Change Center Austria**: network of research and brokerage institutions founded in 2011

- CCCA has 23 full and four supporting members
- CCCA is a contact point for researchers, politicians, the media, and the public for all questions concerning climate research in Austria
- Three operational bodies: (1) Coordination office, (2) Service Centre, (3) Data Centre

New regional climate scenarios for Austria

- Joint procurement by Ministry of Environment and the 9 provinces
- **Best available historical data and latest climate simulations** (until 2100) for Austria on a 1x1km grid
- Optimized preparation for decision-makers
- Fact sheets for each province available and for each municipality (if requested)



Vorläufiger Entwurf - 01.07.2016

Research project for policy support



COIN – Costs of Inaction

- Quantitative assessment of the **costs of climate change** in Austria (without planned/anticipatory adaptation, without further mitigation)
- **COIN** draws a clear picture of the cost sensitivities for 13 fields of activity (→ from NAS/NAP) for priority impact chains, incl. macro-economic effects
- Large project consortium (lead: Wegener Center, Graz), financed by Austrian Climate and Energy Fund
- **Internationally unique!**
- Wide media coverage, strong public attention
- Provides **strong arguments** to motivate and convince stakeholders to take action



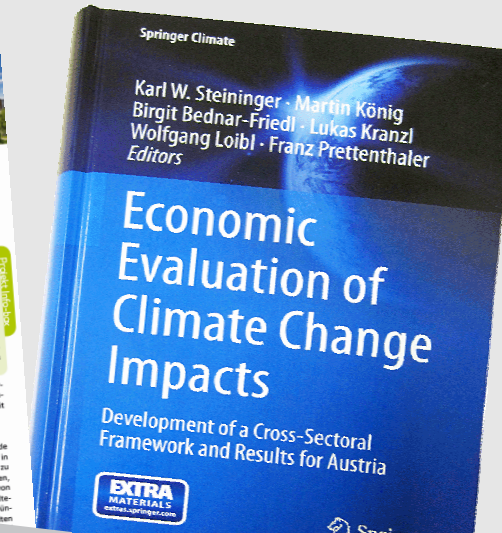
Effective communication products

Highly readable summary formats:

- 8-page summary
- Fact sheets
- ACRP special issue in narrative style
- Scientific book publication
- “Road touring” of consortium members

Results:

<http://coin.ccca.at/>



Research project for policy support

FAMOUS and CC-ACT – Foster adaptation on regional & local level

Lead: Environment Agency Austria

Partner: University of Natural Resources and Life
Sciences,
Umweldachverband and UKCIP (for CC-ACT)

AIM: Facilitate the adaptation process to climate change
in Austrian regions and communities

HOW: Develop handbook on adaptation, but also more interactive
training material to build capacity on regional/local level

Learn from existing approaches

1. Analyse of 49 **peer-reviewed articles** on barriers in adaptation policy making → **Classification** of 16 barriers according the policy cycle
2. Screening of **32 guidelines** for adaptation policy making → **Findings** on how barriers are addressed and what they suggest to **overcome**

Learn from case studies

1. Select **two sectors** and assess how they deal with climate change adaptation within their responsibilities → **Tourism** in Upper Austria and **flood protection** in the Waldviertel region
2. **Assess** case studies based on literature review and interviews → Results on current state of play in these two sectors and better **understanding** on **multi-level governance** in Austria

Existing work
in this field

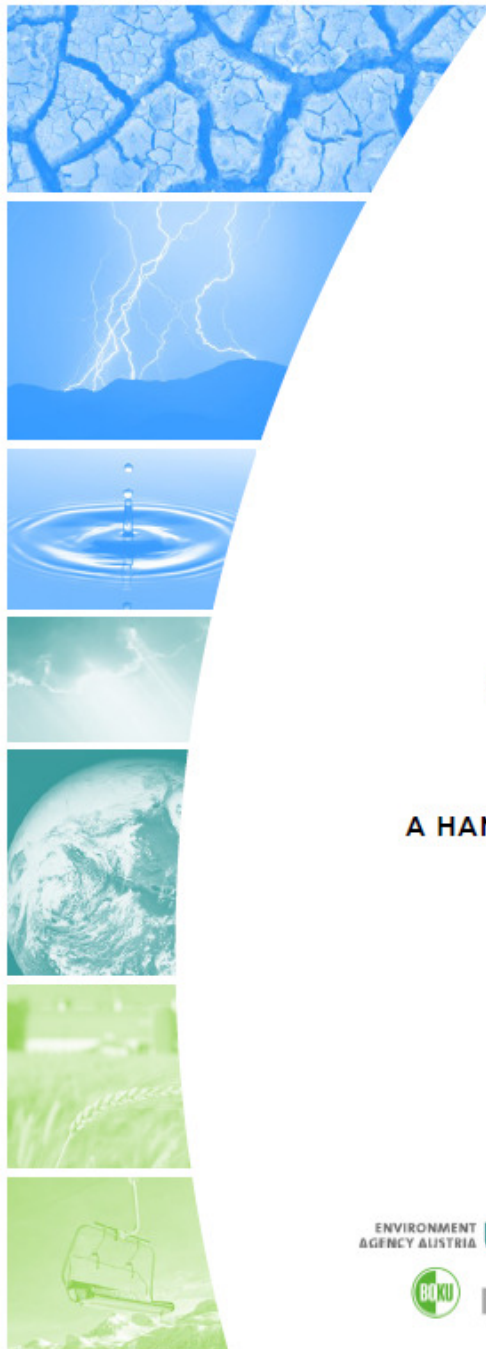
FAMOUS Handbook on adaptation

Input from
advisory board

Core:

Involvement of **potential users** in the development process (via 5 workshops, written consultation process)





ENVIRONMENT
AGENCY AUSTRIA

umweltbundesamt^U

Methods and Tools for Adaptation to Climate Change

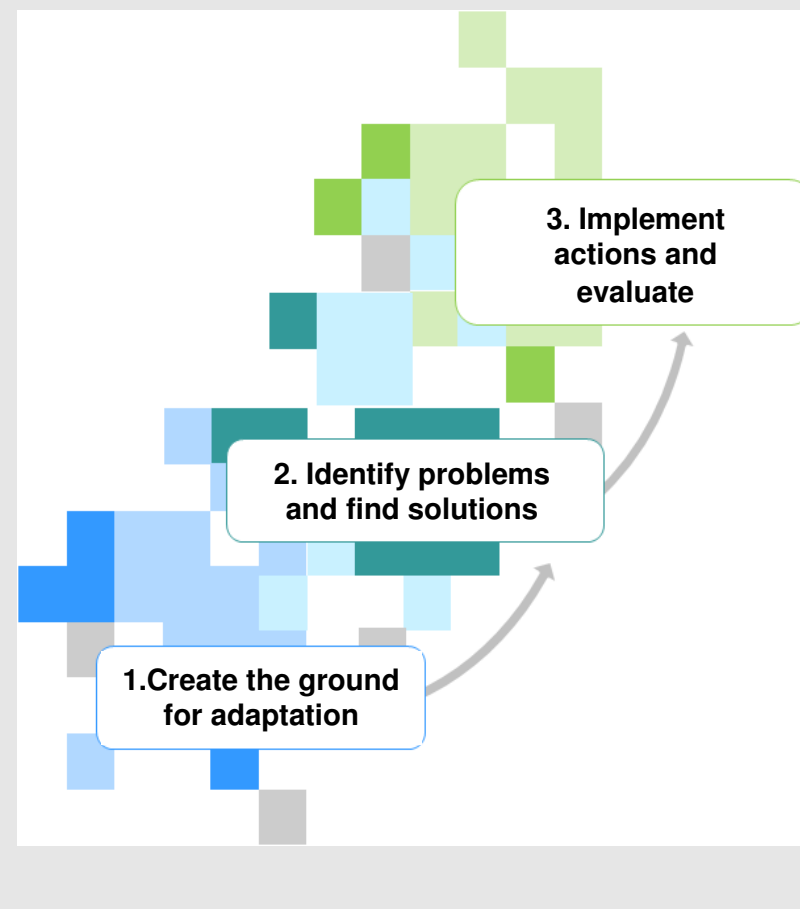
A HANDBOOK FOR PROVINCES,
REGIONS AND CITIES

ENVIRONMENT
AGENCY AUSTRIA **umwelt**bundesamt^U



InFER | Institute of
Forest, Environmental, and Natural Resource Policy

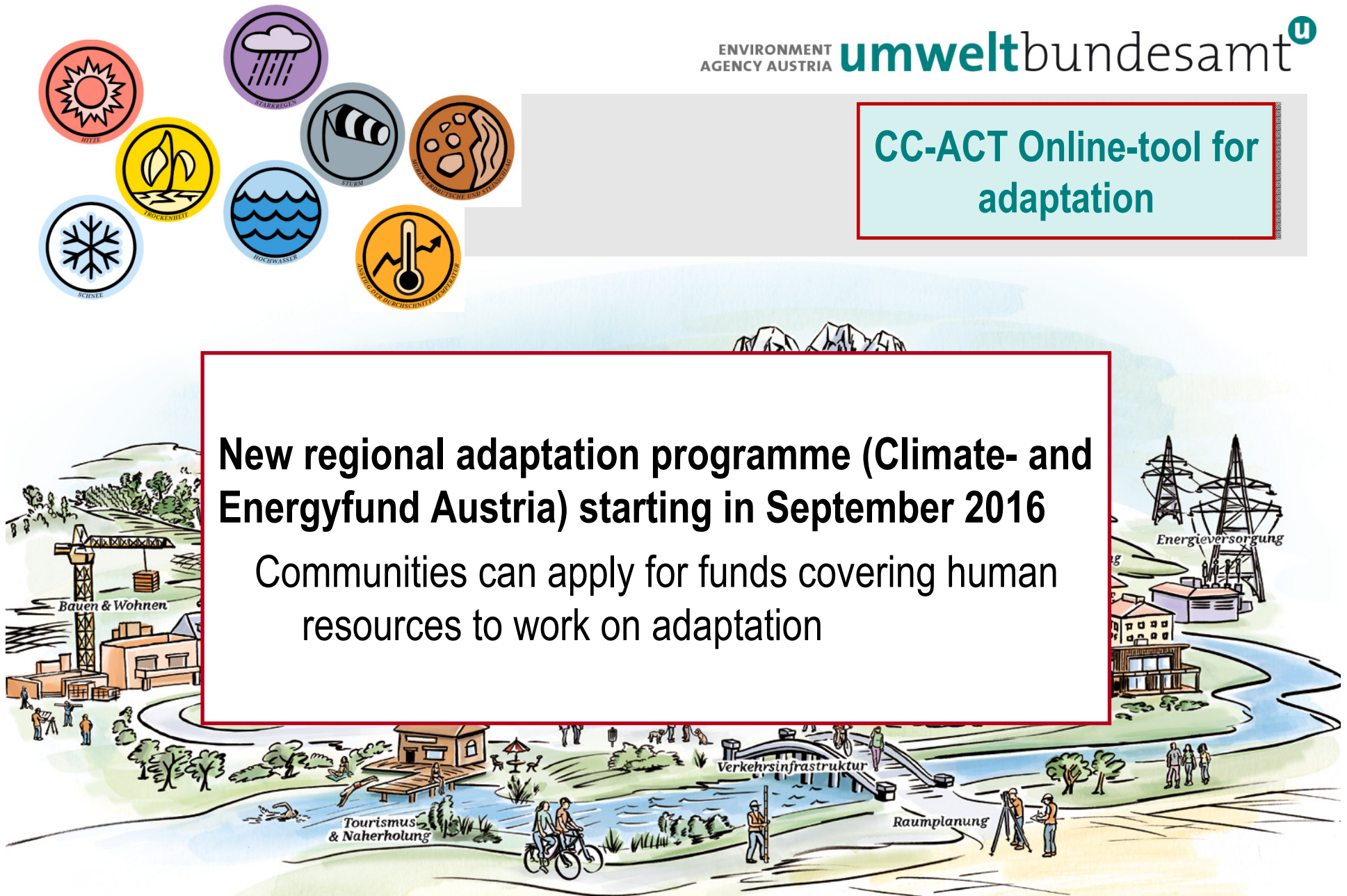
FAMOUS Handbook on adaptation



CC-ACT Online-tool for adaptation

New regional adaptation programme (Climate- and Energyfund Austria) starting in September 2016

Communities can apply for funds covering human
resources to work on adaptation



Experiences and reflections with focus on Implementation

- **Cooperation-based, “soft” network mode of governance** with predominantly voluntary instruments → works in relation to capacity building and awareness raising
- Ministry for Environment is **not in the position** to ask other Ministries or the provinces to implement adaptation measures recommended in the NAS/NAP → implementation of measures happen mainly on a **voluntary base** → other adaptation-relevant measures are undertaken by Ministries, but not necessarily under the heading of “adaptation” or in the context of the NAS/NAP → **difficult to steer** and coordinate the cross-cutting issue of adaptation
- **Implementation plan between Federal Environmental Ministry and Provinces** established to agree on a few specific measures to be implemented → for 2016 → working group on **increased private initiative** in case of extreme weather events and stronger joined efforts to **support adaptation on regional level** (i.e. with regional workshops, a brochure with best-practice)

We may not forget: Adaptation is a (learning) process



Monitoring: Approach and Lessons learned

Monitoring → 1st Progress Report

Goals and purpose

- To provide an overview on the **implementation progress** of adaptation based on the Austrian NAS and NAP
- To identify **adaptation gaps and further adaptation needs**
- To provide information on **key trends** of impacts/vulnerabilities
- To create a **basis** for **revision** of the **strategy**
- To create **added value** for all concerned stakeholders



Source: de.123rf.com

Kick-off
Jan. 2013

Stakeholder
Workshop
Sept. 2013

Expert
survey &
workshop

M framework
March 2014

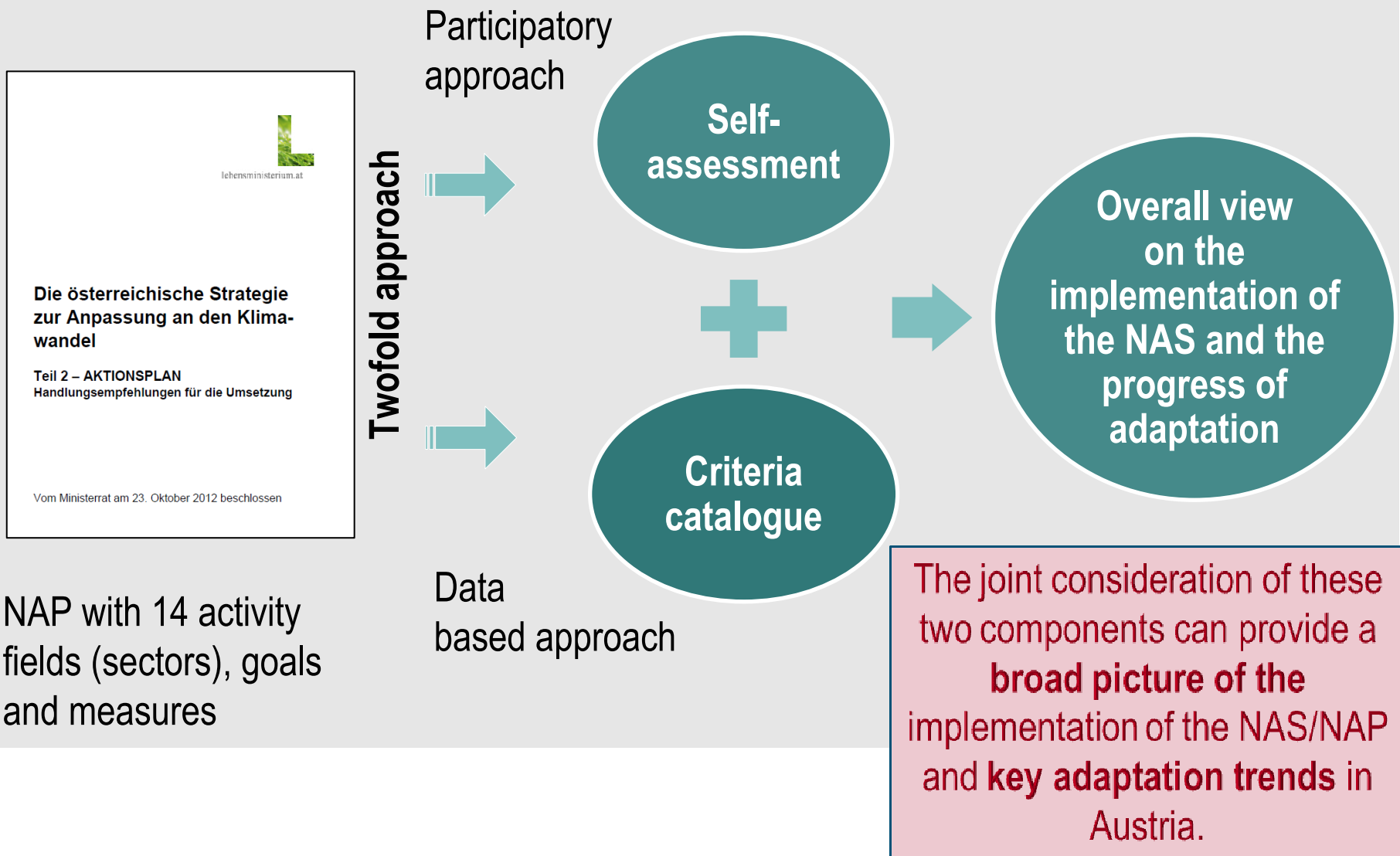
Data
gathering and
analysis

Final Progress
Report
October 2015

Development principles

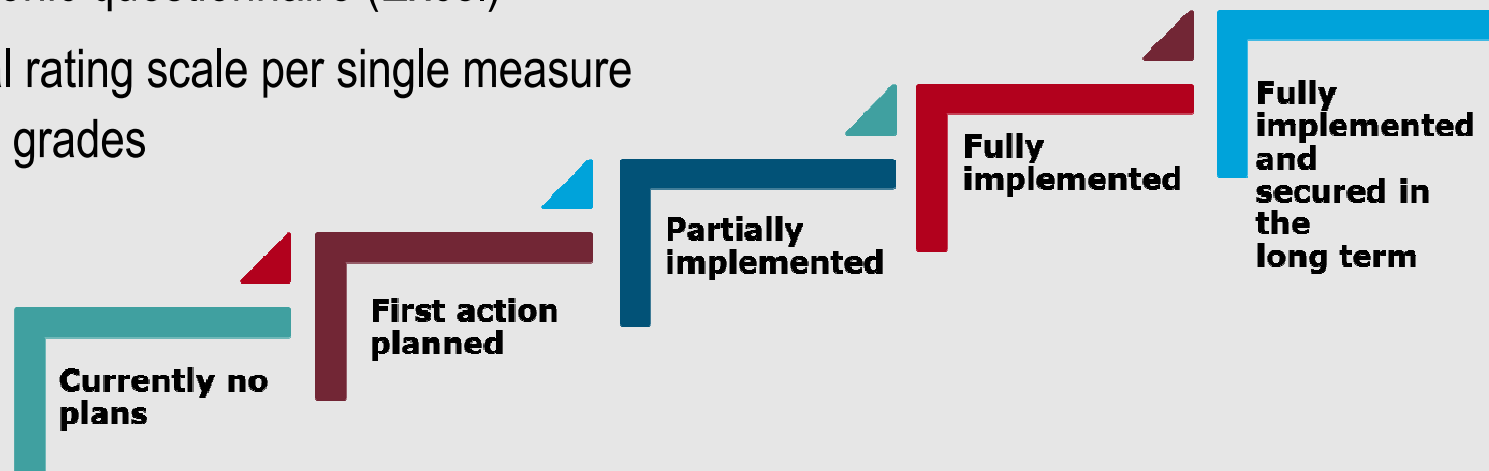
- Efficient system with limited efforts
 - Pragmatic approach
- Easy-to-manage and multi-purpose
- Use of existing data, no gathering of new quantitative data

Overall monitoring approach



Ad Self-Assessment

- **What to monitor?** – (Policy) implementation process; stage of implementation of the actions (132) of the NAP
- **Who monitors?** – relevant stakeholders from all 14 sectors (ministries, provinces, organized interest groups)
- **How to monitor?**
 - Electronic questionnaire (Excel)
 - Verbal rating scale per single measure with 5 grades

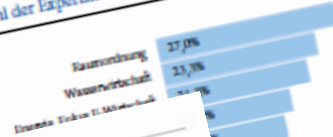


Ad Criteria catalogue

- **What to monitor?** – Responses (implementation of actions/measures); climate impacts (where data or knowledge about effects of climate change are missing)
- **How to monitor?**
 - Set of criteria: 3-5 key criteria for each activity field (sector)= 45 criteria in total
 - Mix of quantitative and qualitative criteria, incl. cross-cutting criteria
 - Responding to adaptation goals of the activity fields
 - Requirements (selection):
 - clearly relevant for adaptation, able to show adaptation trends
 - based on existing data sources (or collectable with little effort)
 - measurable on national level
 - data collection repeated on an appropriate timeframe
 - robust, statistically validated data
 - selected in agreement with experts

Results...

Abbildung 62: Anteil der Einstufung „vollständig / vollständig und langfristig umgesetzt“ an der Gesamtzahl der ExpertInnenbefunde pro Aktivitätsfeld



ENVIRONMET
AGENCY AUSTRIA

Abbildung 56 Anteil der versiegelten Fläche am Dauerwohnungsraum

Versiegelte Fläche (%) (berechnet nach politischer Region)

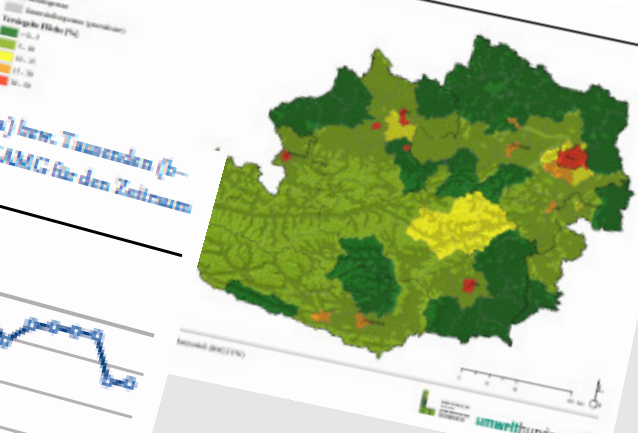


Abbildung 57: Aufreife in Millionen (a) bzw. Tausenden (b) jungen Wärscheln der ZAMG für den Zeitraum Oktober 2014

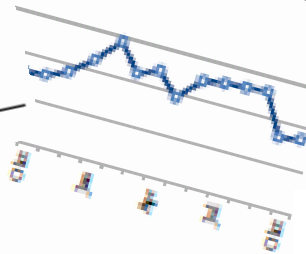
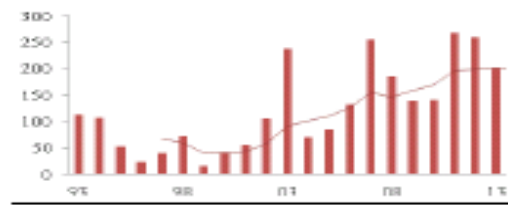


Abbildung 8: Jährliche Waldbrandhäufigkeit 1993–2014 (Daten: Institut für Waldbau 2014). Linie: gleitendes Fünfjahresmittel



Anteil der Grünflächen im Siedlungsraum

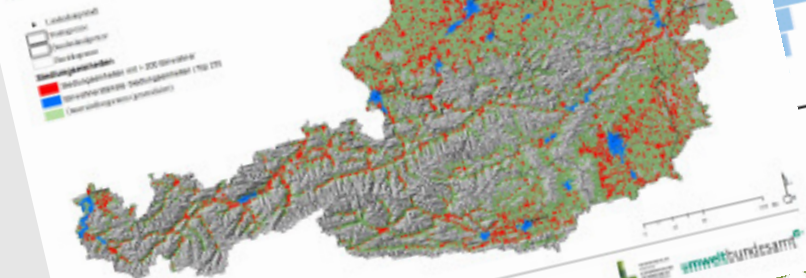


Abbildung 30: Siedlungseinheiten in Österreich in den Jahren 1990, 2005 und 2013 (Daten: Statistik Austria, eigene Darstellung)

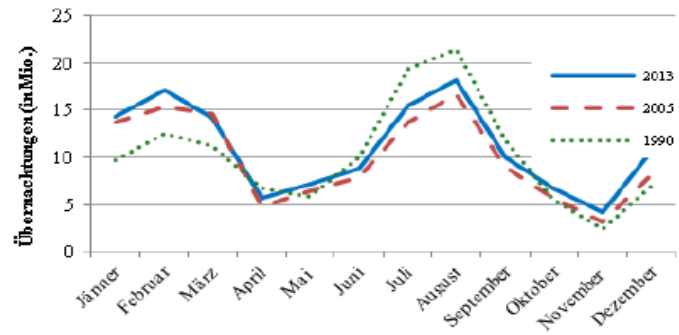


Abbildung 2: Biologisch bewirtschaftete Fläche (in 100 000 ha; alle Bioetriebe) 2000–13



Wirkungen der ... 2009 bis 2013*		
Bundesland	Durchgängigkeit Höhe in m	Morphologie Länge in km
B	46,3	12,20
K	127,3	5,43
NÖ	241,4	67,50
OO	283,6	25,26
S	76,8	7,24
ST	121,9	7,75
T	40,4	0,43
V	9,3	4,15
W	9,6	17,67
	956,6	147,62

(Quelle: EPC, Berechnungen BMLFUW)

1st Progress report on Adaptation for Austria concludes...

... **measures** recommended in the NAP **have been** or **are being implemented** in all activity fields

... partly strong **differences** in progress **between sectors**

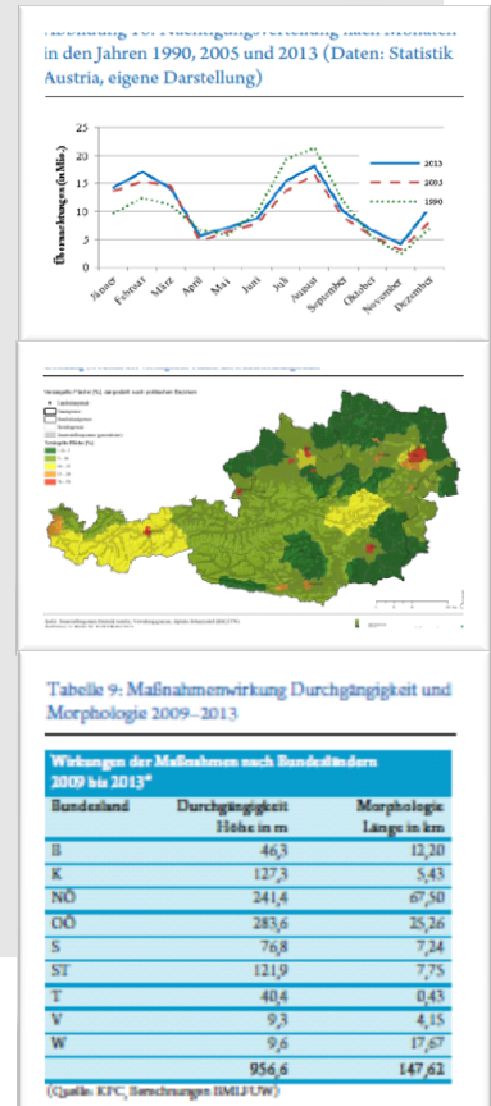
... **positive examples** of sectors (e.g.):

- Forest management
- Water management
- Natural hazard management
- Agriculture

→ **Substantial adaptation gaps** still persist...

Experiences and reflections with focus on Monitoring

- Monitoring scheme development and implementation process was **resource-intensive**
- **Not** all aspects of adaptation processes are “**measurable**”
 - Criteria often allow only partial or indirect statements
 - Criteria allow different ways of interpretation => carefulness in interpretation of results
- **Participation of stakeholders** in concept development and via survey has contributed to awareness-raising, communication and coordination of NAS
- Highly **useful information base** for forthcoming 1st revision of NAS/NAP
- Still open **how to do evaluation** of adaptation policy → European wide an open and new issue






Adaptation journey continues...

**Update and advancement of the NAS/NAP policy documents →
1st draft was send out for consultation in mid 2016**

Integration of new research results (COIN, AAR2014, etc.) and from
1st progress report, recommendation of new adaptation measures



THANKS YOU!

ENVIRONMENT
AGENCY AUSTRIA **umwelt**bundesamt^U



Contact

Andrea Prutsch

P: +43 1 31304 3462

E-Mail: andrea.prutsch@umweltbundesamt.at

Umweltbundesamt
www.umweltbundesamt.at

Zagreb ■ 8 September 2016