

Science
for [life]

Institute of Geomatics

Thomas BAUER
Institute of Geomatics
BOKU University



Co-funded by
the European Union

Introduction

▪ Dr. Thomas Bauer

Senior Lecturer at BOKU University (since 2003)

Institute of Geomatics



Academical background

- Master in Geography/Cartography (University of Vienna)
- PhD in Remote Sensing (Technical University of Vienna)

Teaching courses (bachelor/master level) in:

- Geographical Information Systems
- Remote Sensing



www.boku.ac.at

Agenda

- **Institute of Geomatics**
 - Objectives
 - Research
 - Teaching
- **International teaching projects**
 - appear
 - ERASMUS+

Institute of Geomatics

Objectives, Projects

Science for [life]

Team Geomatics

Head of Institute: Dr. Francesco VUOLO

1 professorship (Univ.Prof.) – currently vacant

8 research assistants (Senior Scientists and Senior Lecturers)

9 research assistants (third-party funding)

3 non-academic staff

5 external lecturers

<http://www.rali.boku.ac.at/geomatics/personen/>



Wilhelm-Exner-Haus, Peter-Jordan-Straße 82, 2. Stock



About 850 students per year attend the courses of the Institute of Geomatics

Selected topics: Agriculture: Optimizing irrigation



Sentinel-2 satellite images (repetition rate: 5 days) to observe plant growth



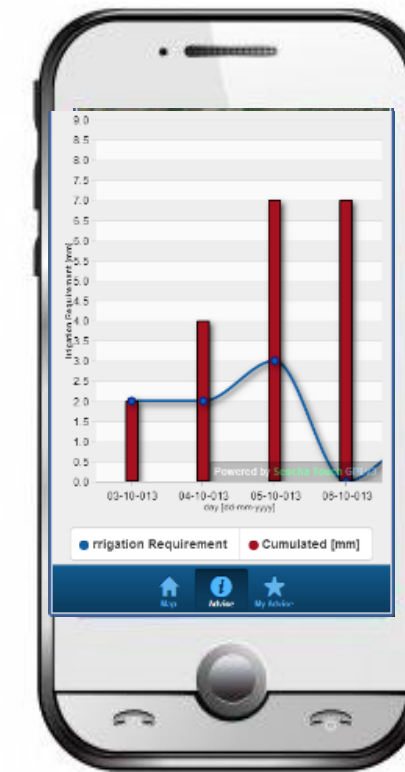
Local meteorological data for real-time analysis during the irrigation season



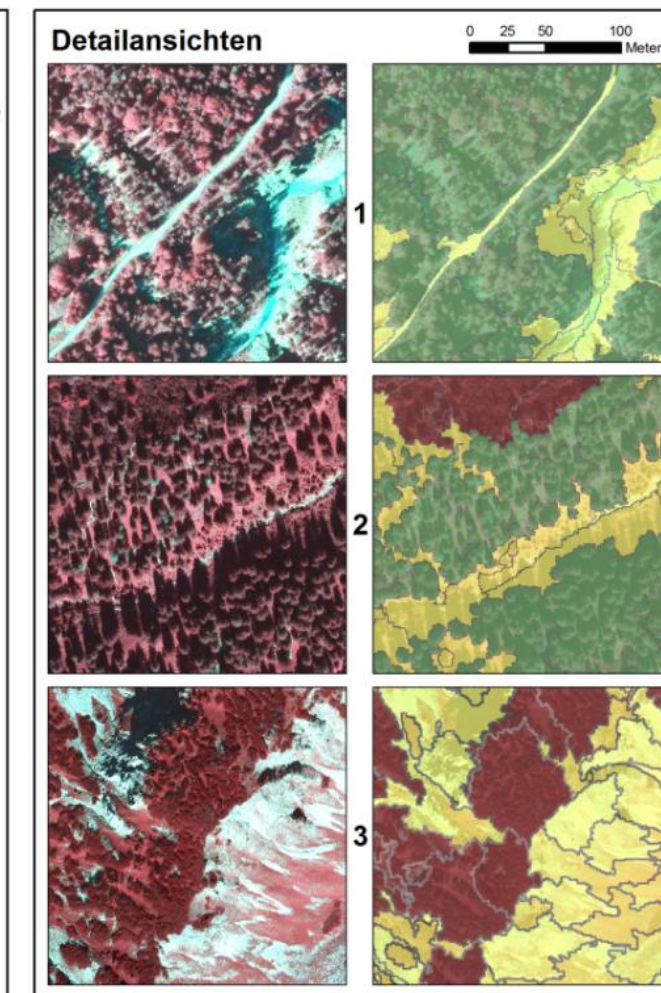
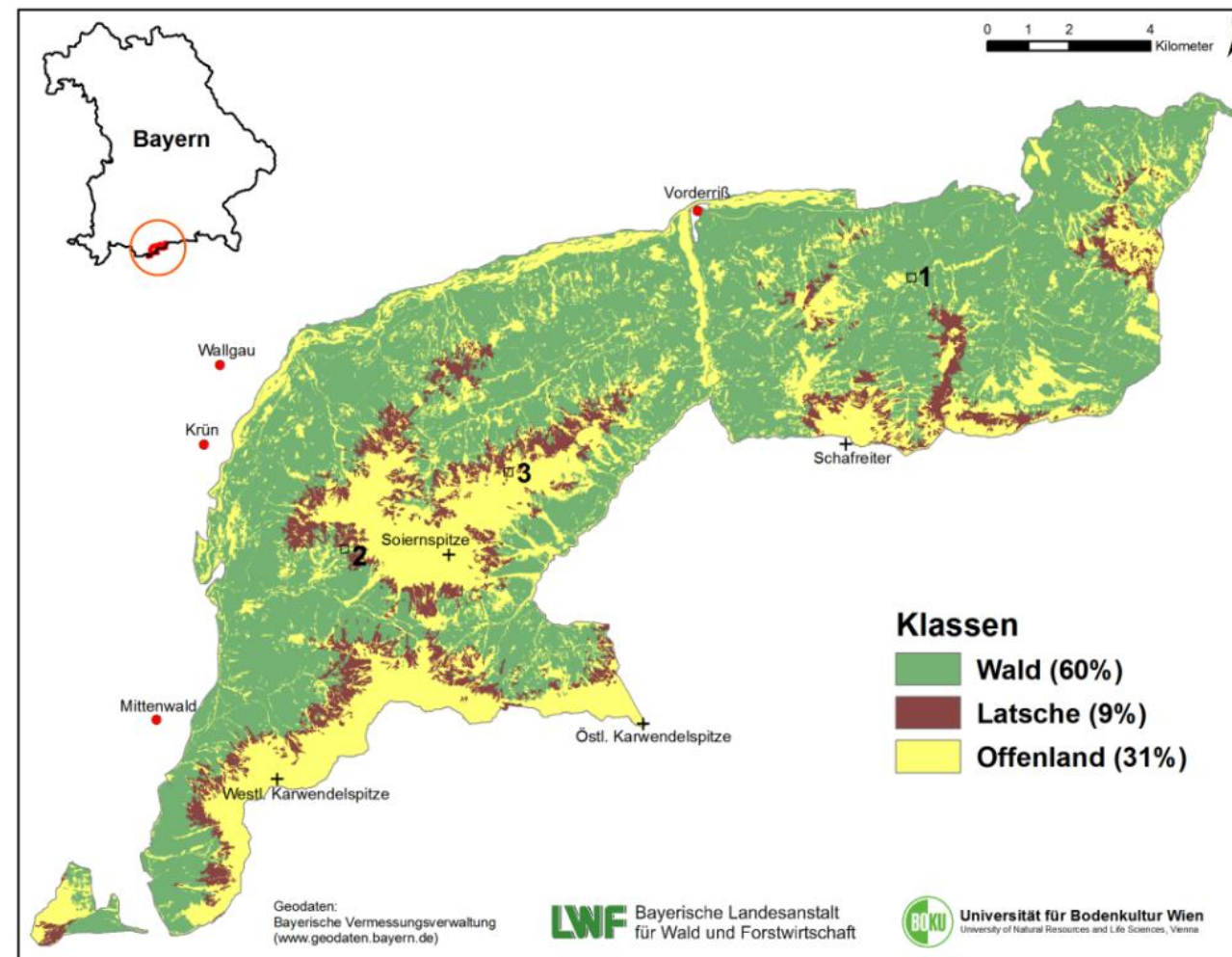
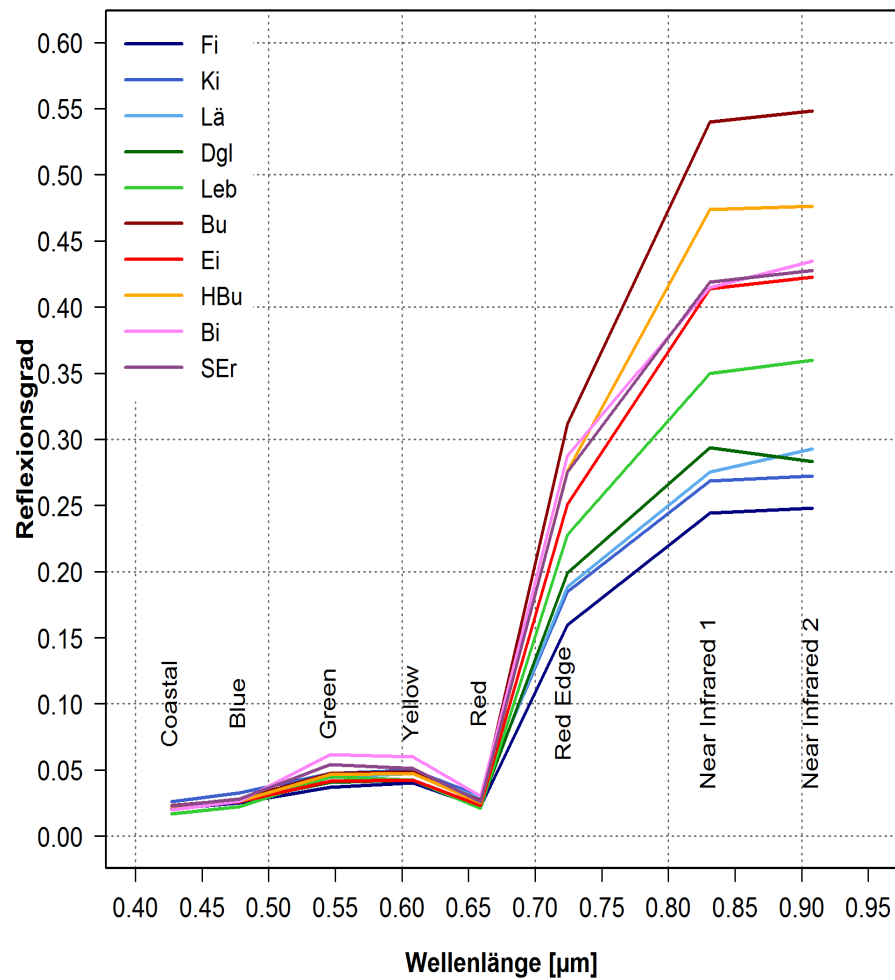
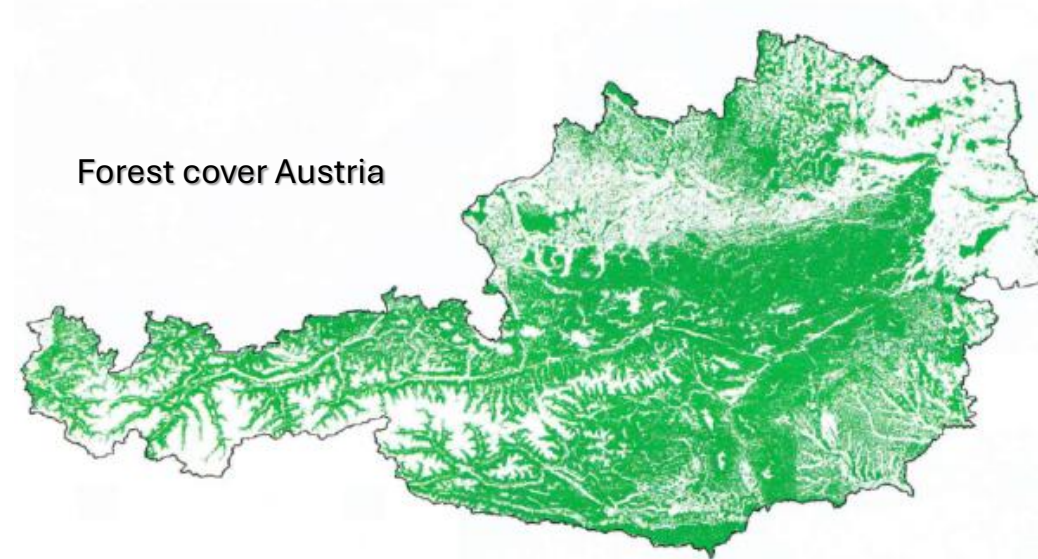
May - September



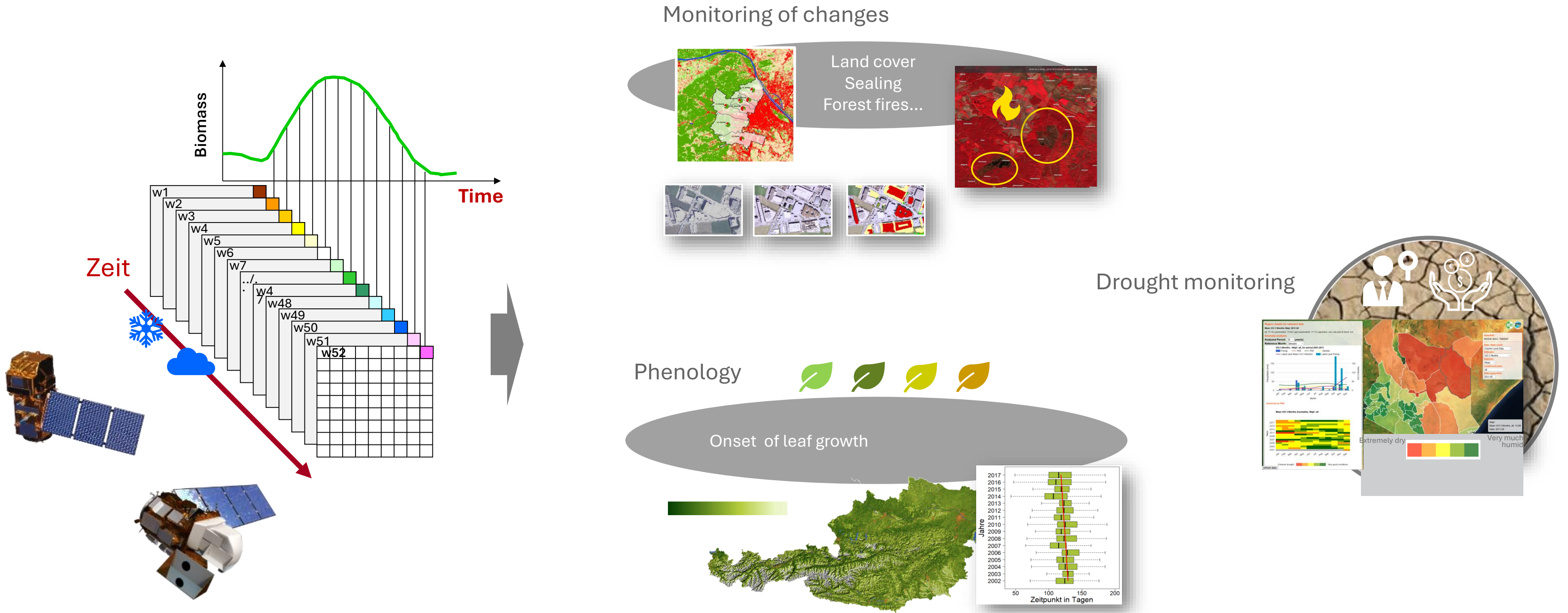
Information for farmers



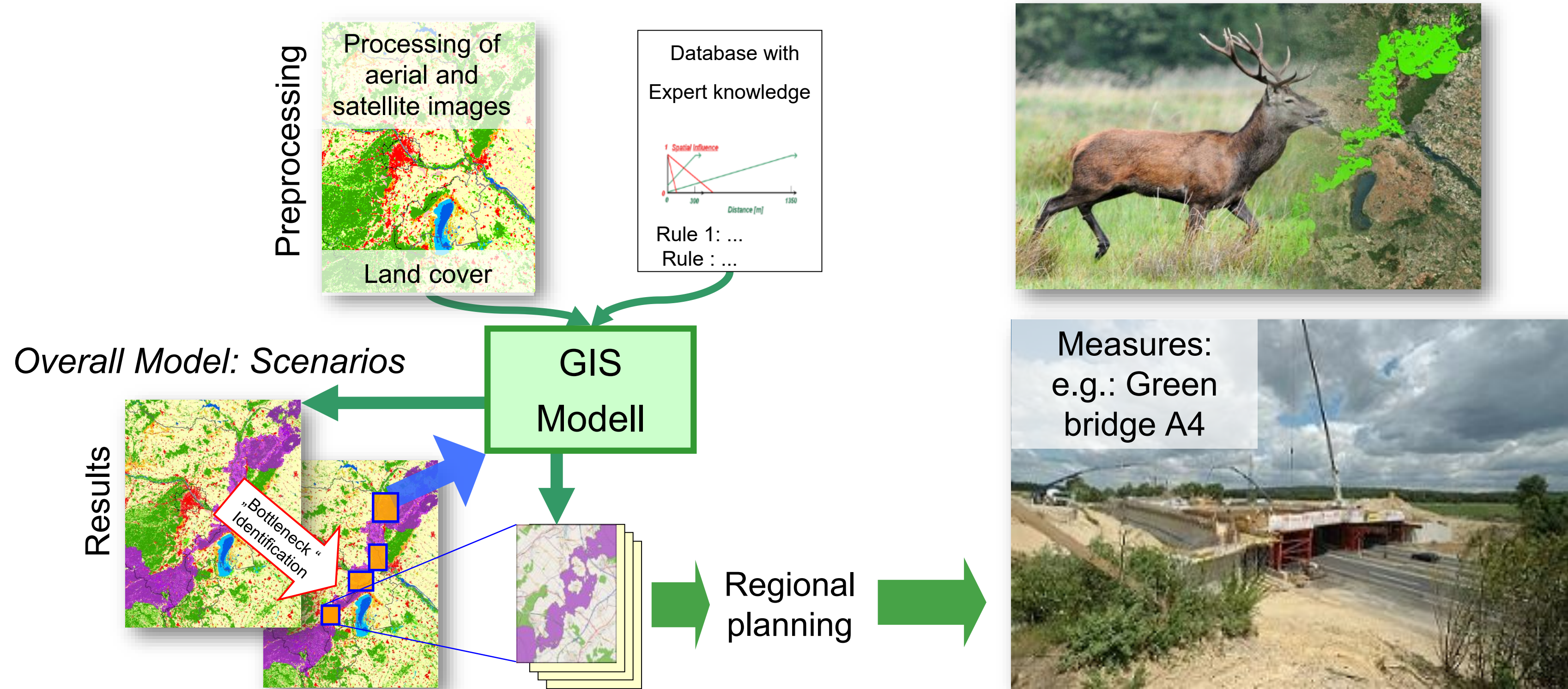
Selected topics: Forestry: Inventory and Monitoring



Selected topics: Remote sensing time series

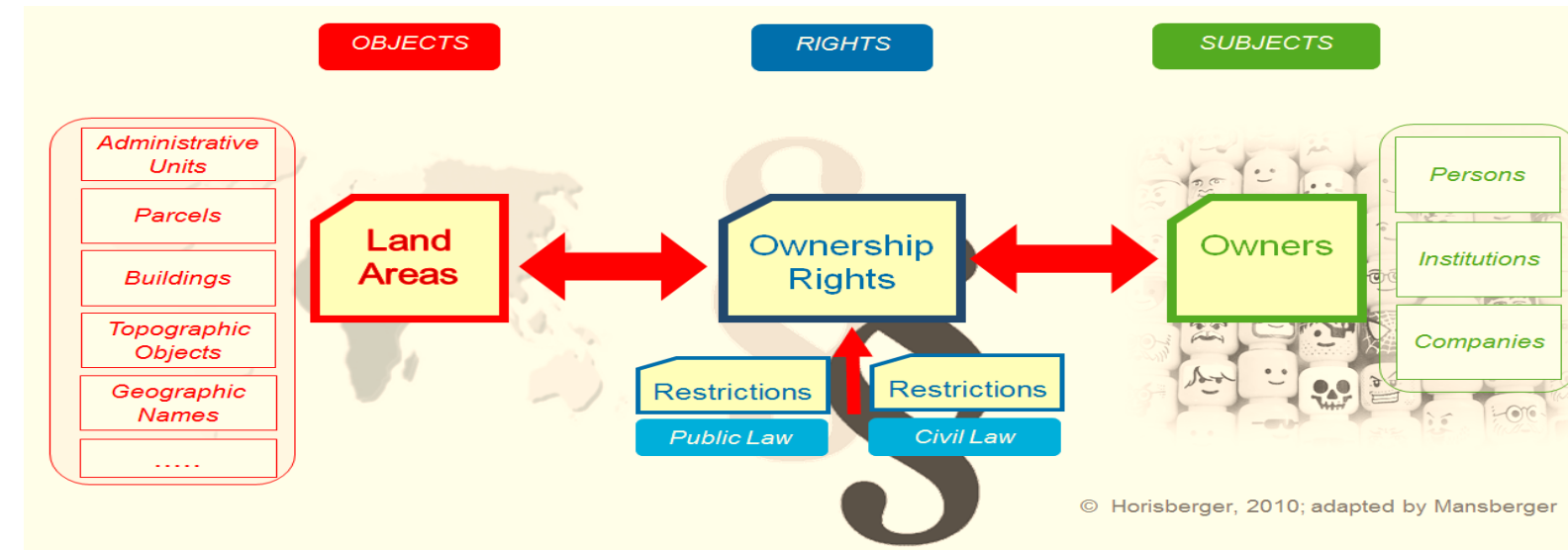


Selected topics: Modelling of wildlife corridors



Selected topics: Land administration in developing countries

- Training (Capacity Building)
- Structure of LA systems (cadastre)
- Land management
- Sustainability
- Gender justice



Topics Teaching



- Surveying
- GNSS (Global Navigation Satellite Systems)
- Land administration (cadastre)
- Remote sensing (incl. photogrammetry)
- Image processing
- Geoinformatics

Lectures, exercises, fieldwork, seminars, supervision of theses and scientific papers



REMOTE SENSING FERNERKUNDUNG

BACHELOR // BASICS

EINFÜHRUNG IN DIE FERNERKUNDUNG // UIW
EINFÜHRUNG IN DIE FERNERKUNDUNG FÜR LANDSCHAFTSPLANUNG // LAP
EINFÜHRUNG IN DIE FORSTLICHE FERNERKUNDUNG // FW
FERNERKUNDUNG UND GEOINFORMATIONSSYSTEME // UBRM

MASTER // SPECIALISATION

GEODATENMANAGEMENT // IN ENG

ANGEWANDTE PHOTOGRAMMETRIE

REMOTE SENSING AND IMAGE PROCESSING // IN ENG

ADVANCED METHODS IN REMOTE SENSING:
MACHINE LEARNING AND CLOUD COMPUTING // IN ENG

REMOTE SENSING TIME SERIES ANALYSIS // IN ENG

VERTIEFUNG FERNERKUNDUNG UND GIS

REMOTE SENSING AND GIS
IN NATURAL RESOURCE MANAGEMENT // IN ENG

KONSTRUKTIVES PROJEKT

FIELDS OF WORK // REMOTE SENSING

- INTERNATIONAL & NATIONAL PRIVATE SECTOR FORESTRY, AGRICULTURE, HYDROLOGY
- TECHNICAL & CIVIL ENGINEERING OFFICES
- PUBLIC ADMINISTRATION STATE & REGIONAL AUTHORITIES
- INTERNATIONAL ACADEMIC CAREER

**COURSES IN ENGLISH
ARE FRAMED IN ORANGE**

SURVEYING VERMESSUNG // LANDADMINISTRATION

BACHELOR // BASICS

VERMESSUNG // UIW
VERMESSUNGSKUNDE // FW
VERMESSUNGSKUNDE FÜR LANDSCHAFTSPLANUNG // LAP

KULTURTECHNISCHES
FELDPRAKTIKUM // UIW

VERMESSUNGSPRAKTIKUM // FW

MASTER // SPECIALISATION

GEODATENMANAGEMENT // IN ENG

DIGITALE VERMESSUNGSSYSTEME UND IHRE ANWENDUNG

ORTUNG UND NAVIGATION MIT SATELLITENGESTÜTZTEN VERFAHREN

LANDADMINISTRATION

INTERNATIONAL LAND MANAGEMENT // IN ENG

KONSTRUKTIVES PROJEKT

FIELDS OF WORK // SURVEYING

- CONSTRUCTION INDUSTRY CONSTRUCTIONAL AND CIVIL ENGINEERING
- PUBLIC ADMINISTRATION STATE & REGIONAL AUTHORITIES
- TECHNICAL & CIVIL ENGINEERING OFFICES
- INTERNATIONAL ACADEMIC CAREER

BACHELOR // MASTER // DOCTOR THESES

YOU CAN COMPLETE YOUR BOKU STUDIES WITH A THESIS AT THE INSTITUTE OF GEOMATICS:

BACHELOR SEMINAR & THESIS // FÄCHERÜBERGREIFENDE ABSCHLUSSARBEIT
MASTER SEMINAR & MASTERTHESIS

PHD DISSERTANT:INNENSEMINAR VERMESSUNG, FERNERKUNDUNG UND LANDINFORMATION

YOU CAN FIND MORE INFORMATION ABOUT CURRENTLY SELECTABLE MASTER THESES HERE >>

GEO INFORMATION SYSTEMS GEOINFORMATIONSSYSTEME

BACHELOR // BASICS

GEOINFORMATIK // UIW
GEOINFORMATIONSSYSTEME // FW
FERNERKUNDUNG UND GEOINFORMATIONSSYSTEME // UBRM
GEODATENANALYSE // UBRM

MASTER // SPECIALISATION

GEODATENMANAGEMENT // IN ENG

AUSGEWÄHLTE KAPITEL AUS GEODATENMANAGEMENT

GEODATEN FÜR GIS-ANWENDUNGEN IN ÖSTERREICH

RAUMBEZOGENES MODELLIEREN UND SIMULIEREN

MATHEMATISCHE METHODEN IN DER GEOINFORMATIK

WEB-GIS-TECHNOLOGIEN

VERTIEFUNG FERNERKUNDUNG UND GIS

REMOTE SENSING AND GIS
IN NATURAL RESOURCE MANAGEMENT // IN ENG

KONSTRUKTIVES PROJEKT

FIELDS OF WORK // GIS

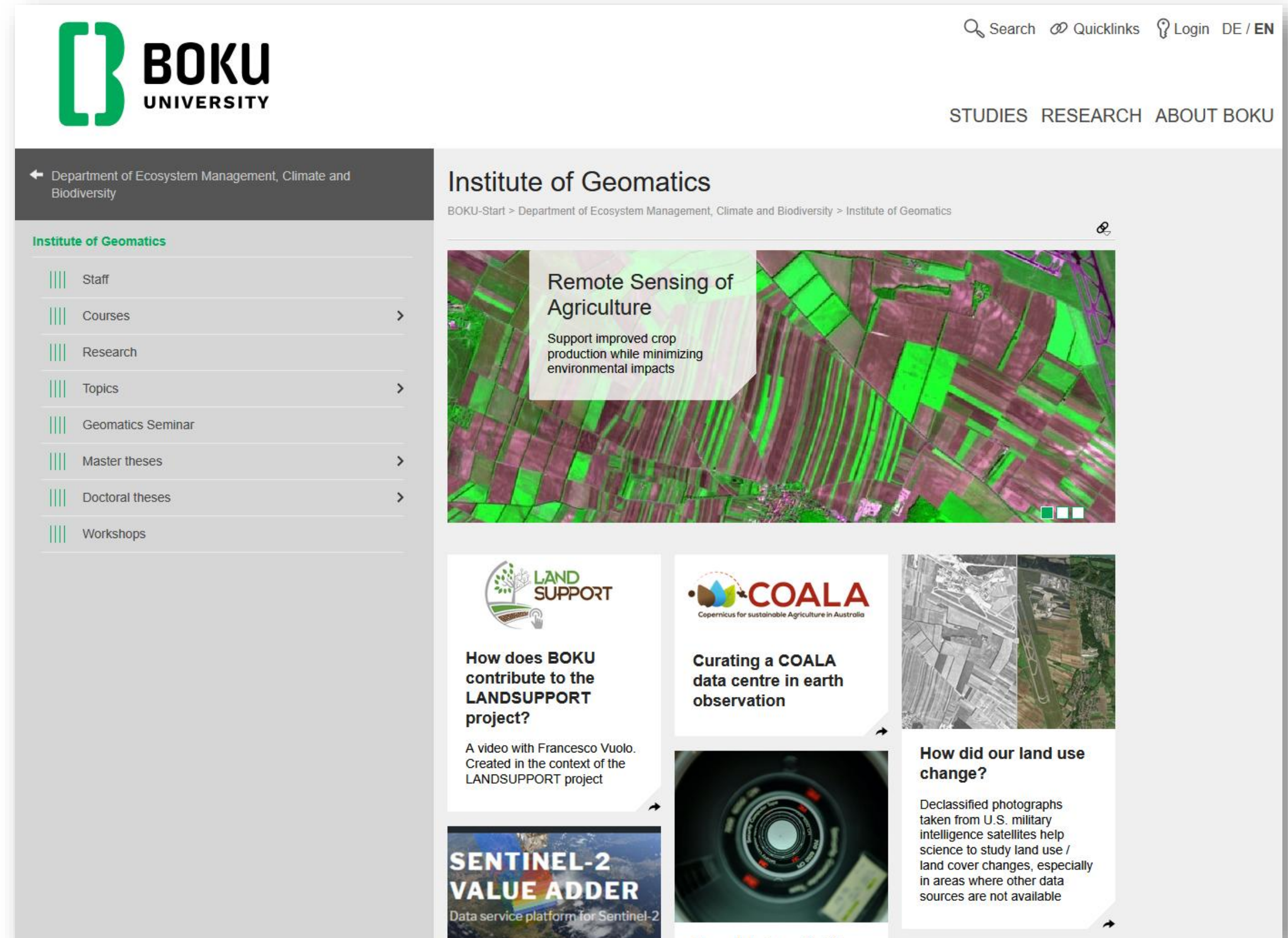
- INTERN. & NATIONAL PRIVATE SECTOR FORESTRY, AGRICULTURE, HYDROLOGY
- TECHNICAL & CIVIL ENGINEERING OFFICES
- PUBLIC ADMINISTRATION STATE & REGIONAL AUTHORITIES, MAGISTRATES, FEDERAL ENVIRONMENT AGENCIES
- ENERGY SUPPLIERS NATIONAL & INTERNATIONAL
- INTERNATIONAL ACADEMIC CAREER

DETAILS OF ALL GEOMATICS COURSES

ALL DETAILED INFORMATION ABOUT ECTS // SEMESTER // TYPE OF LESSON ON EACH COURSE OF THE INSTITUTE OF GEOMATICS CAN BE FOUND UNDER THIS LINK ON BOKU ONLINE >>

Institute of Geomatics

- <https://boku.ac.at/en/oekb/igeo>



BOKU UNIVERSITY

Department of Ecosystem Management, Climate and Biodiversity

Institute of Geomatics

- Staff
- Courses >
- Research
- Topics >
- Geomatics Seminar
- Master theses >
- Doctoral theses >
- Workshops

Remote Sensing of Agriculture
 Support improved crop production while minimizing environmental impacts

LAND SUPPORT
 How does BOKU contribute to the LANDSUPPORT project?
 A video with Francesco Vuolo. Created in the context of the LANDSUPPORT project

COALA
 Copernicus for sustainable Agriculture in Australia
 Curating a COALA data centre in earth observation

SENTINEL-2 VALUE ADDER
 Data service platform for Sentinel-2

How did our land use change?
 Declassified photographs taken from U.S. military intelligence satellites help science to study land use / land cover changes, especially in areas where other data sources are not available

Teaching projects

appear, ERASMUS+

Science for [life]

Capacity Building in Academic Education to Support Sustainable Land Management and to Promote Gender Equality in Ethiopia

4 projects with strong BOKU-involvement designed to facilitate SDGs

Science for [life]

Content

- Definitions
- Capacity Building – Grants
- The Projects: Facts and Objectives
- Projects and their Contribution to SDGs (*selected*)
 - SDG 4: Quality Education
 - SDG 5: Gender Equality
 - SDG 17: Partnerships for the Goals
 - Targets of SDGs addressed
- Challenges
- Conclusions & Lessons Learnt



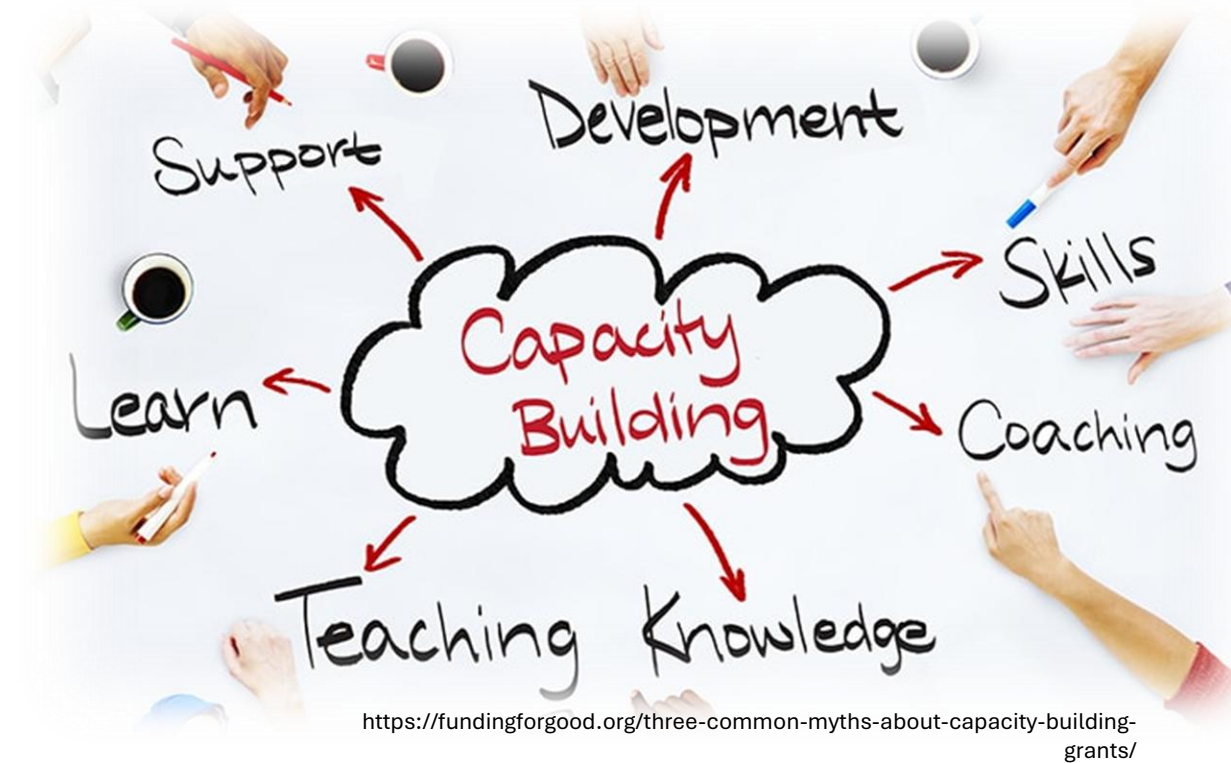
Definitions

Capacity Building

Capacity Building is defined as the process of developing and strengthening the skills, instincts, abilities, processes and resources that organizations and communities need to survive, adapt, and thrive in a fast-changing world.”

(United Nations – Academic Impact

<https://www.un.org/en/academic-impact/capacity-building>)



<https://www.un.org/sustainabledevelopment/blog/2015/12/sustainable-development-goals-kick-off-with-start-of-new-year>

The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future. At its heart are the **17 Sustainable Development Goals (SDGs)**, which are an urgent call for action by all countries - developed and developing - in a global partnership.

(United Nations – Department of Economic and Social Affairs

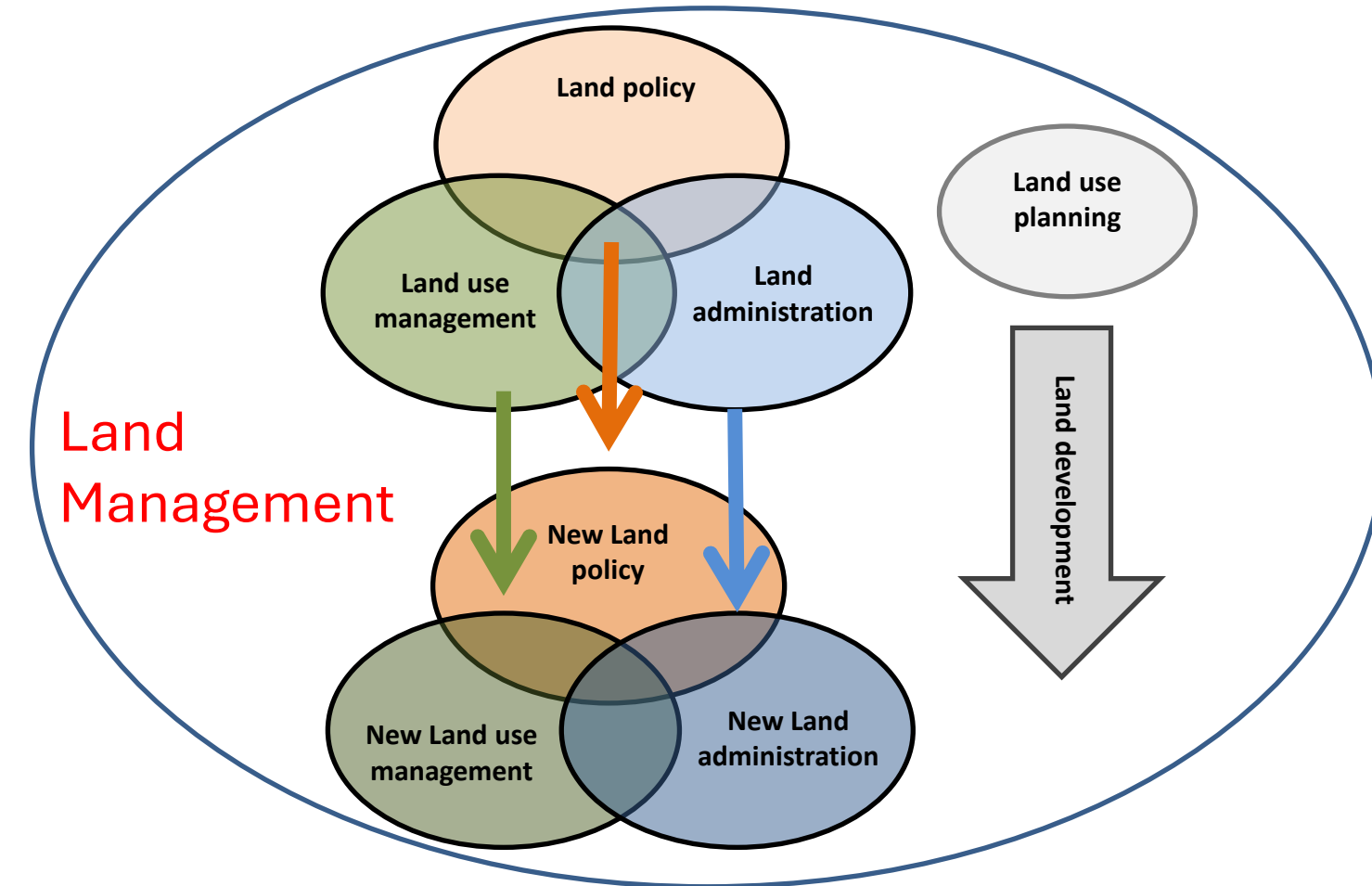
<https://sdgs.un.org/goals>)

Definitions

Land Management & Land Administration

- Land (use) management** is the work related to the use of land resources within current policy guidelines taking into consideration the legal framework for a specific land area.

(Mansberger & Mattsson, 2015)

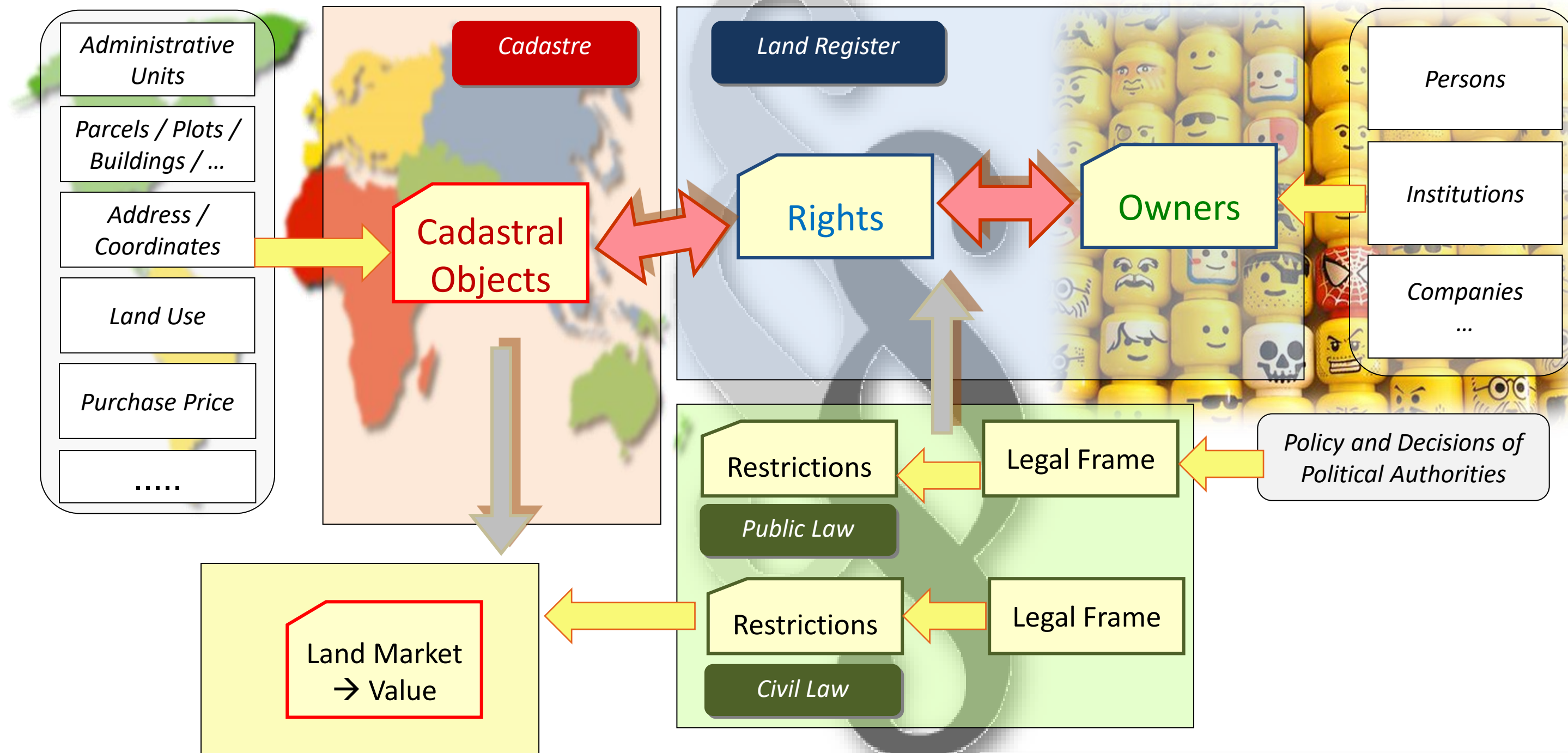


- Land administration** is the bundle of rules documenting land tenure / land ownership related to a certain area. It includes the tools for assessing, documenting and mapping this information.

(Mansberger & Mattsson, 2015)



Land Administration System Components & Content



© Horisberger, 2010; adapted by Mansberger, 2022

Land Administration

Range of Tasks

- Procedures by which land rights are allocated or recognized
- Definition, delimitation and surveying of boundaries between parcels
- Recording of information about land rights, right holders, and parcels
- Acquisition and monitoring of land related data (physical, economic and environmental data)
- Procedures governing transactions in land, including sales, mortgages, leases and dispositions
- Management of restrictions on land
- Resolution of uncertainty or adjudication of disputes concerning land rights and boundaries
-



Overall goals, needs and target region

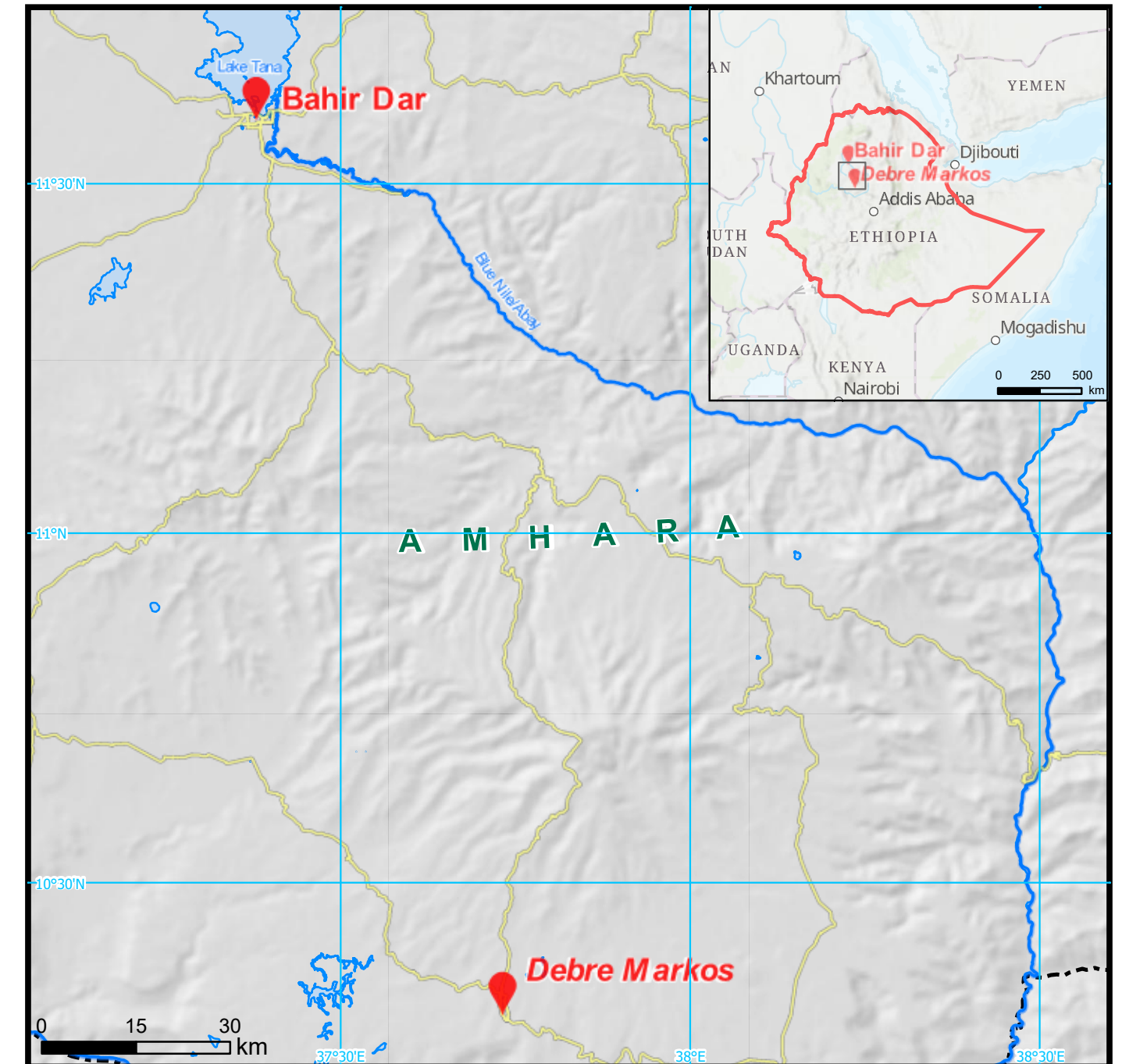
- The needs for the number of **land administration professionals in Ethiopia** from federal to local level has been studied by USAID (2014), and accordingly in total more than **130.000 professionals are required** to undertake land administration activities both in urban and rural areas.
- This includes mainly **experts in land administration, property valuation, GIS and remote sensing, surveying and land use planning.**
- Senior experts working at universities, federal ministries, bureaus, research centers, NGOs, private institutions are required to have a **specific competence level** (at least MSc) to execute the activities effectively and for building the capacity of experts working at lower levels.



Overall goals, needs and target region

Project goals

- Establish an Institute of Land Administration (ILA) at Debre Markos University (DMU) in Ethiopia
- Designing a research-driven bachelor on “Land Administration and Surveying” and a master curriculum on “Geomatics”
- Joint research activities
- Preparing demand driven community services



Capacity Building – Grants

OEAD/appear



APPEAR contributes to achieving the Sustainable Development Goals (SDGs). The overall objective is to strengthen the scientific foundation and institutional capacities in higher education, research and management in the partner countries through academic partnerships with Austrian higher education institutions and master’s and PhD scholarships. Furthermore, APPEAR aims at increasing the commitment to international cooperation and development at Austrian higher education institutions.

Calls: Preparatory Funding, (Advanced) Academic Partnership, Extended Impact Partnership, Scholarships

Instrument	Duration	Funding amount
Preparatory Funding	up to 6 months	up to 15,000 euros
Academic Partnership	up to 4 years depending on call	Partnerships of 2 institutions: 50,000 – 90,000 euros per year
Advanced Academic Partnership	up to 3 years depending on call	Partnerships of more than 2 institutions: 50,000 – 130,000 euros per year
Extended Impact Partnership	up to 3 years depending on call	

© APPEAR

Success rate					
	Preparatory Funding	Scholarships	Academic Partnerships (AP)	Advanced Academic Partnerships (AAP)	Total projects (AP and AAP)
5. call	26%	43%	23%	33%	28%
6. call	25 %	25%	20%	40%	24%
7. call	-	-	8%	50%	9%
8. call	62%	28%	18%	33%	22%
9. call	53%	60%	17%	50%	20%
Total 5th, 6th, 7th, 8th and 9th call	38%	35%	15%	38%	19%

Capacity Building – Grants

Erasmus+ EDU CBHE



EU programme for education, training, youth and sport

Call: Capacity building in the field of higher education (transnational cooperation projects, based on multilateral partnerships)

The aim of these projects is to support eligible third countries not associated to the Programme to

- modernise, internationalise and increase access to higher education
- address the challenges facing their higher education institutions and systems
- increase cooperation with the EU
- ...

The Projects

EduLAND – Preparatory Funding



Facts:

- Title: Implementation of Academic Land Administration - Education in Ethiopia for Supporting Sustainable Development (EduLAND2)
- Duration: February 21, 2014 until July 30, 2014
- Partners: University of Natural Resources and Life Sciences Vienna (BOKU), Debre Markos University (DMU), Technische Universität Wien (TUW)
- Budget: € 15.000



The Projects

EduLAND – Preparatory Funding



Objectives:

- Elaborating a realistic and effective project proposal for an APPEAR – project
- Getting to know each other
- Visiting each other's institutions
- Familiarizing with each other's culture
- Visiting historical areas



Activities:

- Workshops at BOKU Vienna and at DMU in Debre Markos
- Meetings with representatives of BOKU, DMU, public institutions and stakeholders
- Definition of project content and framework
- Elaboration of project proposal and of budget



The Projects

EduLAND2 – Partnership Program



Facts:

- Title: Implementation of Academic Land Administration Education in Ethiopia for Supporting Sustainable Development (EduLAND2)
- Duration: March 1, 2016 until February 29, 2020
- Partners: University of Natural Resources and Life Sciences Vienna (BOKU), Debre Markos University (DMU), Technische Universität Wien (TUW), Bahir Dar University (BDU)
- Budget: € 425.000



The Projects

EduLAND2 – Partnership Program



Objectives:

- To establish a Land Administration Competence Centre at Debre Markos University,
- To increase the number of land administration professionals in Ethiopia,
- To deliver demand-driven community services in the area of land administration,
- To launch long-term cooperation between all partner institutions and to strengthen the professional network on national, regional and international level, and
- To promote gender mainstreaming on land rights and to increase the number of female academics in land administration.



The Projects

EduLAND2 – Partnership Program



Work Packages:

- Project Management
- Capacity Building
- Curriculum Development and Implementation
- Procurement and Provision of Research Facilities and Learning Materials
- Joint Research Activities
- Provision of Community Services

WORK PACKAGES	Work Package Title	Activities	2016				2017				2018				2019				
			1st Quartal	2nd Quartal	3rd Quartal	4th Quartal	1st Quartal	2nd Quartal	3rd Quartal	4th Quartal	1st Quartal	2nd Quartal	3rd Quartal	4th Quartal	1st Quartal	2nd Quartal	3rd Quartal	4th Quartal	
WP 1	Project Management	Scientific and administrative execution of the project (incl. Monitoring and evaluation)																	
		Project Meetings	DM (5d)				VIE (2d)				BD (2d)				DM (2d)			DM (5d)	
		Reports																	
WP 2	Capacity Building	Short-term training by Ethiopian (E) and Austrian (A) experts for staff and students					A (2d)				A (3d)				A (2d)				
		Study tour to Austrian institution on land administration and land consolidation / rural land development					A (3d)												
		Upgrade of two female instructors and one male instructor to MSc level at BOKU and TUW ¹																	
		Upgrade of one female instructor and two male instructors to PhD level at TUW and BOKU ¹																	
WP 3	Curriculum Development and Implementation	Review of the existing national land administration curricula based on need assessment																	
		Curriculum design (based on ILA curriculum, results of demand assessment and discussion with stakeholders)																	
		Implementation and running the curriculum									A (7d)				A (7d)				
WP 4	Procurement and Provision of Teaching & Research Facilities and Learning Materials	Preparation of computer lab (hardware, Remote Sensing and GIS software)																	
		Acquisition of different surveying equipment																	
		Preparation of Learning Materials																	
WP 5	Joint Research activities	Design and detailed set-up of two research studies																	
		Conducting Research Study on semi-automatic parcel boundary delimitation and land cover classification																	
		Conducting Feasibility Study on the status quo and challenges of agricultural (land) structures																	
		Preparation of a proposal for a follow-up research project based on results of outlined studies																	
WP 6	Provision of community services	Assessment of training needs for Kebele Land Administration Work Staff																	
		Preparation of short-term training courses (content and learning materials)																	
		Conducting short term training for Kebele Land Administration Work Staff																	A (1d)
		Delivering short-term training on gender																	
		Delivering training for local community (farmers) on land administration proclamation and directive																	

The Projects

Edu4GEO2 – Advanced Partnership Program



Facts:

- Title: Implementation of Academic Geomatics Education in Ethiopia for Supporting Sustainable Development (Edu4GEO2)
- Duration of Project: March 1, 2023 until June 30, 2027
- Partners: University of Natural Resources and Life Sciences Vienna (BOKU), Debre Markos University (DMU), Technische Universität Wien (TUW), Bahir Dar University (BDU),
- Budget: € 390.000



The Projects

Edu4GEO2 – Advanced Partnership Program



Objectives:

- To upgrade the competence of undergraduate students through implementing a master curriculum on Geomatics.
- To make students fit for leading positions in the public and private sector of land administration and geodata-management, as well as for teaching and research activities at academic institutions,
- To give priority in the enrolment process to female student to increase the number of female land administrations specialists, and
- To provide customized trainings for land administration professionals, for land committees and for female farmers.

¹ Due to unrests in the Amhara region, DMU and BDU are closed since August. Internet is only working sporadic in the Amhara region.



The Projects

Edu4GEO2 – Advanced Partnership Program



Work Packages:

- Project Management
- Development and Running the MSc Curriculum
- Provision of Teaching and Research Facilities and Learning Material
- Capacity Building, Training and Education
- Joint Research Activities
- Provision of Community Services
- Dissemination

Time Line																																				
Work Package / Working Activity	YEAR 1 - Month #												YEAR 2 - Month #												YEAR 3 - Month #											
	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D
WP1 Project Management	[Gantt chart for WP1]																																			
1.1 Project administration and financial management	[Gantt chart for 1.1]																																			
1.2 Project meetings	[Gantt chart for 1.2]																																			
1.3 Quality assurance and monitoring of project	[Gantt chart for 1.3]																																			
1.4 Project reporting **	[Gantt chart for 1.4]																																			
WP2 Development and Running the MSc Curriculum	[Gantt chart for WP2]																																			
2.1 Review of the existing national MSc curricula on the topic of "Geomatics"	[Gantt chart for 2.1]																																			
2.2 Curriculum design for MSc program "Geomatics"	[Gantt chart for 2.2]																																			
2.3 Implementation and running the curriculum "Geomatics"	[Gantt chart for 2.3]																																			
WP3 Provision of Teaching & Research Facilities and Learning Materials	[Gantt chart for WP3]																																			
3.1 Acquisition of facilities for online- and hybrid-teaching	[Gantt chart for 3.1]																																			
3.2 Purchase of computers and software for lab	[Gantt chart for 3.2]																																			
3.3 Acquisition of photogrammetric & surveying equipment	[Gantt chart for 3.3]																																			
3.4 Elaboration of materials for hybrid teaching	[Gantt chart for 3.4]																																			
WP4 Capacity Building, Training and Education	[Gantt chart for WP4]																																			
4.1 Workshop "Development of digital teaching and learning material"	[Gantt chart for 4.1]																																			
4.2 Delivery of courses for MSc program	[Gantt chart for 4.2]																																			
4.3 Delivery of three short-term trainings for Ethiopian LA Work Staff	[Gantt chart for 4.3]																																			
WP5 Joint Research activities	[Gantt chart for WP5]																																			
5.1 Case Study on "Data acquisition using UAV to support land administration tasks"	[Gantt chart for 5.1]																																			
5.2 Research Study on "Impact of land certification on balancing gender land rights"	[Gantt chart for 5.2]																																			
5.3 Preparation of a proposal for a follow-up research project	[Gantt chart for 5.3]																																			
WP6 Provision of community services	[Gantt chart for WP6]																																			
6.1 Delivering training for local community (farmers)	[Gantt chart for 6.1]																																			
6.2 Delivering training for female farmers on gender & land rights	[Gantt chart for 6.2]																																			
WP7 Dissemination	[Gantt chart for WP7]																																			
7.1 Development and maintenance of project website	[Gantt chart for 7.1]																																			
7.2 Production of PR materials	[Gantt chart for 7.2]																																			
7.3 Elaboration of two conference papers & presentation	[Gantt chart for 7.3]																																			
7.4 Publication in social and professional media	[Gantt chart for 7.4]																																			

The Projects

Li4LaM – ERASMUS+ EDU CBHE



Facts:

- Title: Land Information for Land Management (Li4LaM)
- Duration of Project: January 1, 2023 until December 30, 2026
- Partners: University of Natural Resources and Life Sciences Vienna (BOKU), Debre Markos University (DMU), Technische Universität Wien (TUW), Bahir Dar University (BDU), Woldia University (WU), Addis Ababa University (AAU), University of Agriculture Krakow (AUK), University Ljubljana (UL)
- Budget: € 790.000



Ethiopian Partner Universities
- Debre Markos University (DMU)
- Bahir Dar University (BDU)
- Weldiya (Woldia) University (WU)
- Addis Ababa University (AAU)

The Projects

Li4LaM – ERASMUS+ EDU CBHE



Objectives:

- To provide innovative and state-of-the art academic education on the acquisition, analysis, modelling and visualization of land related data,
- To improve knowledge transfer applying modern learning and teaching approaches,
- To elaborate teaching and learning materials fit for hybrid teaching approaches, and
- To enhance capacity in academic education, exchange of good practice and improved institutional cooperation

Due to unrests in the Amhara region, DMU, BDU, WU are closed since August. Internet is only working sporadic in the Amhara region





The Projects

Li4LaM – ERASMUS+ EDU CBHE

Work Packages:

- Project Management
- Module and Course Planning
- Human Resource Development
- Elaboration of Teaching and Learning Material
- Implementation of Teaching and Learning Environment
- Pilots and Roll-Out of Courses
- Lifelong Learning for Upskilling and Open Educational Pathways
- Quality Assurance – Evaluation
- Dissemination and Public Relation Activities

Work Package / Working Activity	Leaders WP / Act.	Month																																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36				
WP01 – Project Management	TUW																																								
1.1 Project administration	TUW																																								
1.2 Project reporting	TUW																																								
1.3 Project meetings	DMU																																								
WP 002 – Module and Course Planning	WU																																								
2.2 Identification of the as-is situation	WU																																								
2.2 Elaboration of conceptual framework for modules	BDU																																								
WP 003 – Human Resource Development	UL																																								
3.1 Workshop and training on pedagogical and didactical topics - BOKU	BOKU																																								
3.2 Train-the-teachers on developing innovative learning and teaching material - UAK	UAK																																								
3.3 Training courses on selected professional topics RS/GIS - DMU	DMU																																								
WP 004 – Elaboration of Learning and Teaching Materials	DMU																																								
4.1 Specification of aims and learning outcomes	DMU																																								
4.2 Elaboration of detailed portfolio for modules	UL																																								
4.3 Content development for online modules	BOKU																																								
WP 005 – Implementation of Teaching and Learning Environment	AAU																																								
5.1 Conceptualising of teaching and learning environment	TUW																																								
5.2 Purchase of equipment	TUW																																								
5.3 Implementation of teaching and learning environment	AAU																																								
WP 006 – Pilots and Roll-out of Courses	DMU																																								
6.1 Pilot courses	AAU																																								
6.2 Delivery of courses to students	DMU																																								
6.3 Maintenance of teaching and learning environment	WU																																								
WP 007 – Lifelong Learning for Upskilling and Open Educational Pathways	BOKU																																								
7.1 Development of a holistic LLL approach for Ethiopian partner universities	BDU																																								
7.2 Development of the validation process of non and informal learning	BOKU																																								
7.3 Adaption of teaching and learning materials for LLL program	WU																																								
WP 008 – Quality Assurance - Evaluation	UAK																																								
8.1 Development of a Quality Management Plan	UAK																																								
8.2 Quality Assurance of project	UAK																																								
8.3 Quality assurance of learning material development and course delivery	AAU																																								
WP 009 – Dissemination and Public Relation Activities	BDU																																								
9.1 Development and maintenance of project website	TUW																																								
9.2 Production of PR materials	DMU																																								
9.3 Publication in social and professional media	BDU																																								
9.4 Dissemination seminars at all Ethiopian partner universities	WU																																								

The Projects and their Contributions to SDG/Goal 4 - Quality Education



- 6 PhD Scholarships granted (**EduLAND2** & **Edu4GEO2**)
- Institute of Land Administration established at DMU (**EduLAND2**)
- Bachelor Program “Land Administration and Surveying” running at DMU (**EduLAND2**)
- Master Program “Geomatics” designed and developed at DMU (**Edu4GEO2**)
- Computer Lab established and surveying instruments purchased at DMU (**EduLAND2**)
- Workshop on Pedagogic and Didactic held at BOKU Vienna (**Li4LaM**)
- By 2024: UAV (Drones) purchased for DMU (2), BDU (2), AAU (1) and WU (1) (**Edu4GEO2** & **Li4LaM**)
- By 2024: Infrastructure and teaching/learning materials for online teaching established resp. elaborated (**Li4LaM**)

The Projects and their Contributions to SDG/Goal 5 – Gender Equality



- One female Ethiopian student finished PhD study at BOKU ([EduLAND2](#))
- By 2025: Increased awareness of DMU teaching staff about gender and diversity issues in teaching and research ([EduLAND2](#) & [Edu4GEO2](#))
- 2 workshops on land rights delivered to female farmers ([EduLAND2](#));
- At least one third of students enrolled in Bachelor program “Surveying and Land Administration” are female (2016 up to now) ([EduLAND2](#))
- By 2025: 3 workshops on land rights delivered to female farmers ([Edu4GEO2](#))
- By 2024: One third of students enrolled in Master program “Geomatics” are female ([Edu4GEO2](#))
- By 2025: Research study “Impact of Ethiopian land certification on balancing gender land rights” published ([Edu4GEO2](#))
- After 2025: More females employed as academic teachers and as executive managers in public and private land administration institutions ([Edu4GEO2](#))

The Projects and their Contributions to SDG/Goal 17 - Partnerships for the Goals



- Better-educated students and better-trained land administration experts (**EduLAND2** & **Edu4GEO2**)
- Trainings for Ethiopian Land Administration Experts on the topics Land rights, GIS, Land Consolidation, Remote Sensing, Cartography and CAD delivered (**EduLAND2** & **Edu4GEO2**)
- Increased number of MSc graduates in general and of female MSc graduates in particular in the field of geomatics (**EduLAND2** & **Edu4GEO2**)
- Project related research activities are carried out in North-south cooperation between all partner institutions; in North-south cooperation between individual partners; between partner institutions in the respective country (**EduLAND2** & **Edu4GEO2** & **Li4LaM**)
- By 2024: Teachers applying modern teaching and learning methods (**Li4LaM**)
- By 2024: Continuous Operation Reference System (CORS) installed at DMU campus (**Edu4GEO2**)
- By 2025: Trainees apply new technologies of geodata management in their offices and share gained knowledge with colleagues (**Edu4GEO2**)

Sustainable Development Goals

Targets (Extract)



- Target 4.3:** By 2030, ensure equal access for all women and men to affordable and quality technical, vocational and tertiary education, including university.
- Target 4.c:** By 2030, substantially increase the supply of qualified teachers, including through international cooperation for teacher training in developing countries ...
- Target 5.5:** Ensure women's full and effective participation and equal opportunities for leadership at all levels of decision making in political, economic and public life.
- Target 5.a:** Undertake reforms to give women equal rights to economic resources, as well as access to ownership and control over land and other forms of property, financial services, inheritance and natural resources, ...
- Target 17.9:** Enhance international support for implementing effective and targeted capacity-building in developing countries to support national plans to implement all the Sustainable Development Goals ...
- Target 17.18:** Enhance capacity-building support to developing countries, ... to increase significantly the availability of high-quality, timely and reliable data...

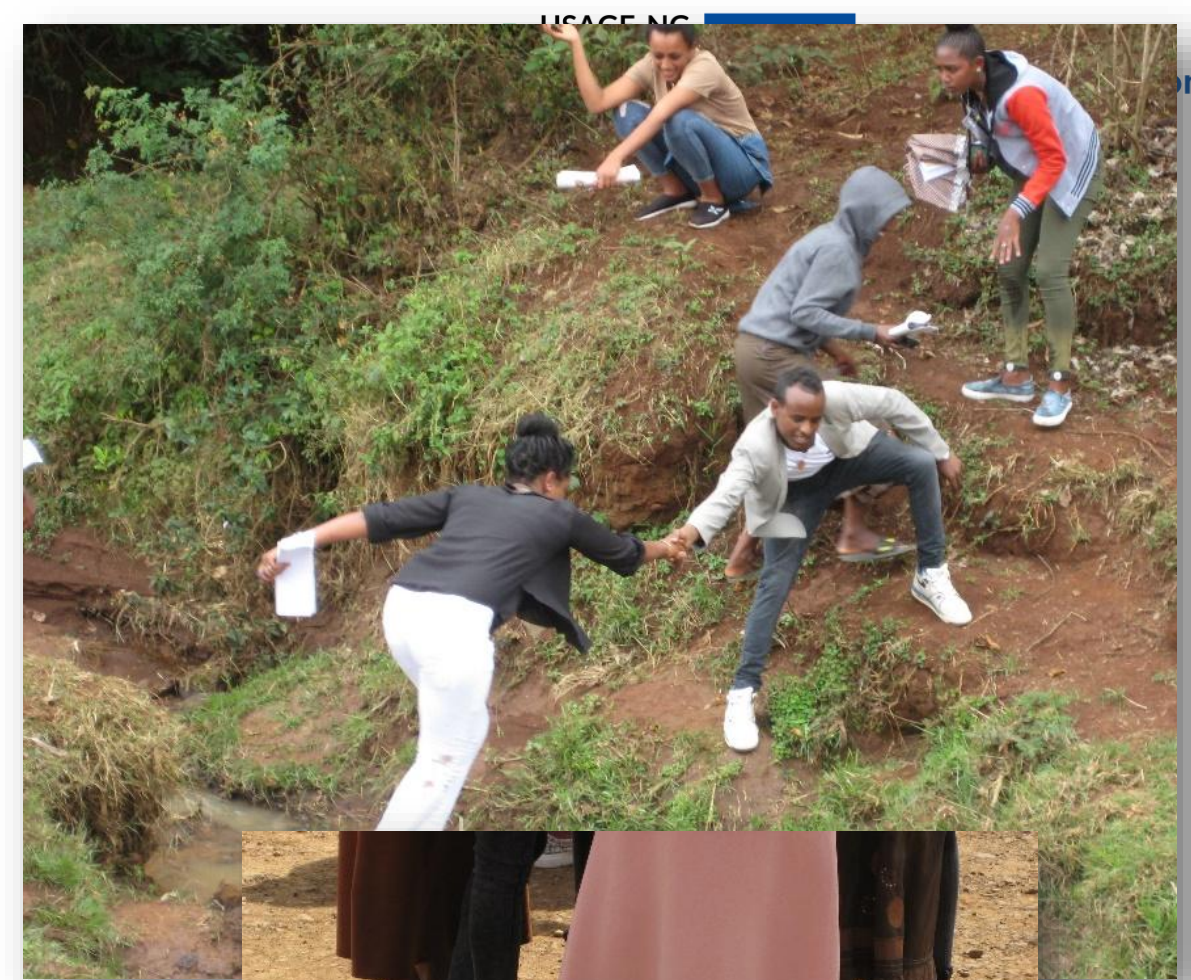
Challenges

- Admission Process for Ethiopian Students at Austrian Universities (Duration of process, Requirements for admission)
- Changes of Project Staff
- Purchase of instruments (procurement process, shipping)
- Inflation in Ethiopia
- Power Shortage in Ethiopia (limited communication, teaching)
- Armed conflicts in the Amhara Region (since August 1, 2023)



Challenges Teaching

- Cultural differences and language problems
- Power shortage in Ethiopia (limited communication, teaching!)
- Software: cracked versions on PCs
- Computer virus
- ...



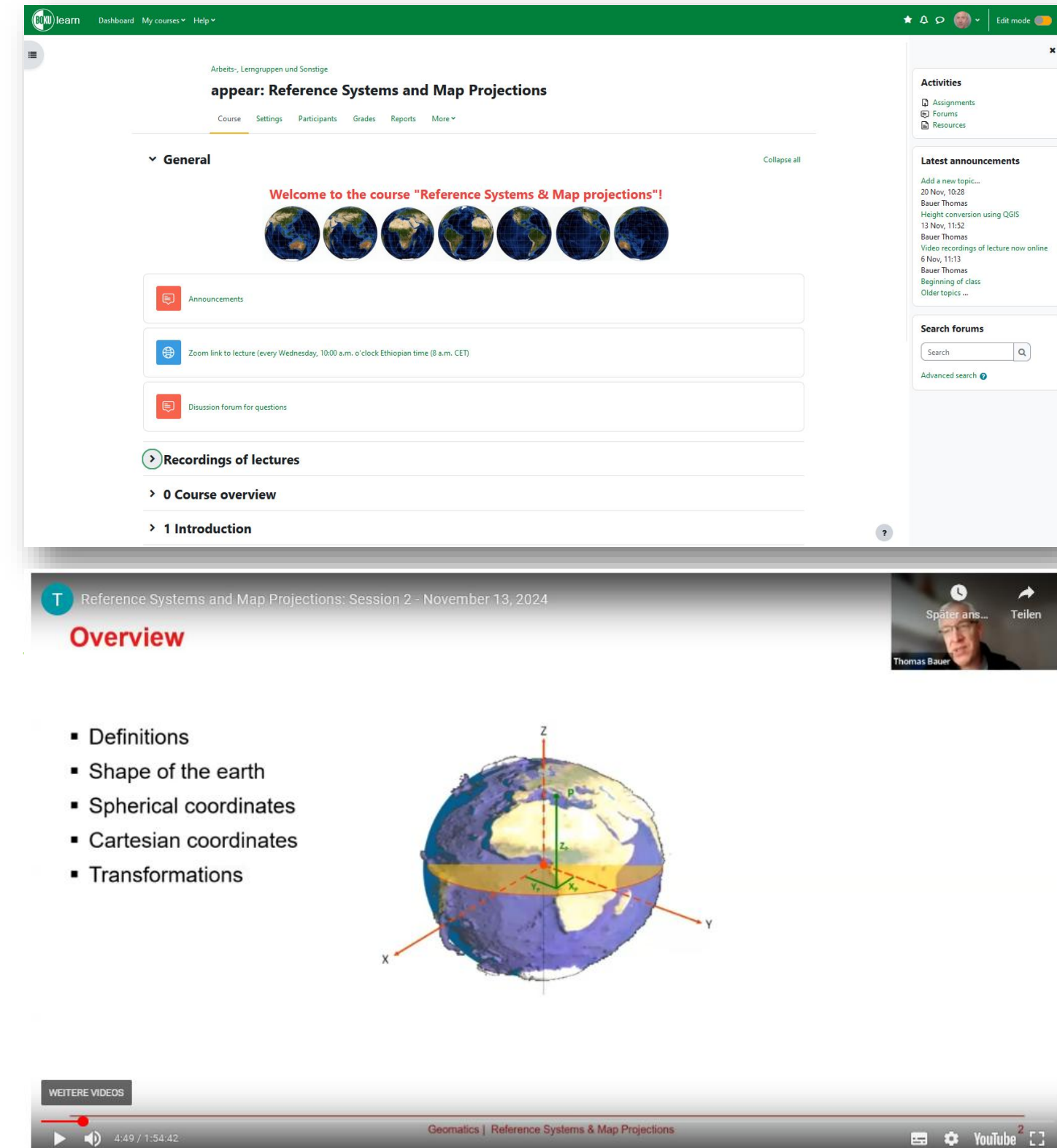
Challenges Teaching

- **Online teaching**
 - Zoom sessions
 - Using eLearning to provide information

- Technical difficulties: internet connectivity, software compatibility

- Reduced (nonverbal) communication

- Limited social interaction



The image shows two screenshots from a Moodle LMS interface. The top screenshot displays the course page for "Reference Systems and Map Projections". It features a welcome message with a row of globe icons, an "Announcements" section with a Zoom link for Wednesday lectures, and a "Recordings of lectures" section with "0 Course overview" and "1 Introduction". The right sidebar contains "Activities" (Assignments, Forums, Resources), "Latest announcements" with a list of recent posts, and a "Search forums" box.

The bottom screenshot shows a video player for "Reference Systems and Map Projections: Session 2 - November 13, 2024". The video title is "Overview". A list of topics is shown on the left: "Definitions", "Shape of the earth", "Spherical coordinates", "Cartesian coordinates", and "Transformations". The video content shows a 3D globe with a Cartesian coordinate system (X, Y, Z) overlaid. The video player includes a progress bar at the bottom showing 4:49 / 1:54:42, a "WEITERE VIDEOS" button, and a YouTube logo.

Conclusions / Lessons Learnt

- Continuous communication and friendship are key success factors for the implementation of projects
- Austrian partners recognized the paradigm shift from knowledge transfer ($A \rightarrow ETH$) to knowledge exchange ($A \leftrightarrow ETH$)
- Proposed solutions for Ethiopia are not always implemented in Austria
- Some gender-related land-right challenges discussed in Ethiopia also appear in Austria (e.g. female-owned land statistics)
- Incorporating of university management, landholders (e.g. farmers), authorities and representatives of civil associations (women, youth) is essential for implementing projects
- Knowledge about historical areas and culture of partner countries contributes to mutual understanding
- Experiences gained in international projects are assets for life



Further information

- Implementation of Academic Land Administration Education in Ethiopia for Supporting Sustainable Development | EduLAND2**

<https://oead.at/de/kooperationen/internationale-hochschulkooperationen/austrian-partnership-programme-in-higher-education-research-for-development-appear/project113-eduland>

- Implementation of Academic Geomatics Education in Ethiopia for Supporting Sustainable Development | Edu4GEO2**

<https://oead.at/de/kooperationen/internationale-hochschulkooperationen/austrian-partnership-programme-in-higher-education-research-for-development-appear/projects/current-projects/project310-edu4geo2>

- Land Information for Land Management (Li4LaM)**

<https://boku.ac.at/en/oekb/igeo/themenfelder/bildungsprojekte/erasmus-project-li4lam>



appear = financed by
Austrian
Development Cooperation



Implementation of Academic Land Administration Education in Ethiopia
for Supporting Sustainable Development (Eduland2) – Project 113

Kick-Off-Meeting 25-27 April 2016

DEBERE MARKOS UNIVERSITY

















Thank you!

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