

2015 UNU-FLORES
ANNUAL REPORT

CULTIVATING A NEXUS APPROACH



UNITED NATIONS
UNIVERSITY

UNU-FLORES

Institute for Integrated Management
of Material Fluxes and of Resources

CULTIVATING A NEXUS APPROACH

UNU-FLORES ANNUAL REPORT 2015

**United Nations University Institute for Integrated
Management of Material Fluxes and of Resources (UNU-FLORES)**

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CULTIVATING

A MESSAGE FROM THE DIRECTOR



Having successfully fostered healthy roots in its first two years of business, the United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES) started off the year with a sprouting bed of diverse endeavours. In this annual report, we will show how these seedlings have been carefully cultivated in 2015 to produce a healthy field of nexus-oriented activities that are already carrying their first fruits.

2015 witnessed the growth of an array of projects and programmes at UNU-FLORES that support the advancement of nexus-oriented research around the world. Together with prominent international organizations and research institutes, the scientific units worked on several projects resulting in policy-relevant publications and cutting-edge products and succeeded in securing funding for new innovative activities. The first two cohorts of students began their studies in the first-ever PhD Programme in Integrated Management of Water, Soil and Waste and mid-career decision makers benefitted from various capacity development activities, such as our Nexus Observatory online learning courses and regional workshops.

UNU-FLORES knows, however, that to truly advance an innovative, holistic and integrated approach to managing environmental resources, it is also essential to cultivate the growth of a nexus mind-set both amongst researchers and decision makers. The greatest attest to the growing network of nexus thinkers was the success of the inaugural Dresden Nexus Conference launched by UNU-FLORES and its partners. In the spring of 2015, hundreds of scientists, implementers, decision makers and donors from UN entities, first-class research institutions, governmental institutions and nongovernmental organizations assembled in Dresden to discuss the most state-of-the-art research and initiatives on the integrated management of environmental resources. The rigorous exchange has already led to numerous collaborative activities and outcomes.

In the following pages, we will introduce you to our young seedlings and show how they have grown in 2015. After providing a brief summary of the year's most memorable moments, the projects and programmes the Institute has developed are introduced. The following section demonstrates UNU-FLORES's commitment to "Fostering a Nexus Mind-Set" through informative and provoking events and publications, as well as strategic bi- and multilateral collaborations. The success of these activities is strongly connected to the Institute's commitment to an efficient and productive institutional environment. Thus, a brief description of the structure of this environment and the major endeavours to continually improve it round off this report.

The Institute's strategic and focused cultivation of an collection of diverse activities in 2015 have furthered valuable policy-relevant research and supported the growth of a committed network. In the final section we layout our vision for both sustaining and expanding these endeavours together with our community.



Reza Ardakanian

MEMORABLE MOMENTS

IN 2015

New Students at UNU-FLORES: The first two cohorts in the PhD Programme in Integrated Management of Water, Soil and Waste joined the Institute.



Networking: At the end of 2015, the Institute had signed five legal agreements with eight partners from all over the world.



DNC2015: On 23–25 March 2015 the inaugural Dresden Nexus Conference was attended by over 350 participants from 65 countries.

Publications: UNU-FLORES published 4 peer-reviewed articles, 3 working papers, 3 reports, 2 policy briefs, 2 popular press articles and 1 lecture series.



Generous Support of UNU-FLORES: The Institute received third-party funding from the German Research Foundation and in-kind contributions from several sources such as the Governments of Tanzania and the Republic of Korea, as well as continued support from its core donors at the German Federal Ministry for Research and Education and the Saxon State Ministry for Higher Education, Research and the Arts.



Launch of Nexus Tools Platform: Identifying and finding the appropriate modelling tools for solving resource management problems got a lot easier with the launch of the of the Nexus Tools Platform.



Seminar Series: UNU-FLORES and TU Dresden present nexus-oriented research in the first two semesters of their joint Nexus Seminar Series.

ADVANCING

NEXUS-ORIENTED RESEARCH



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UNU-FLORES Research Partners



**TECHNISCHE
UNIVERSITÄT
DRESDEN**



Leibniz Institute of
Ecological Urban and
Regional Development



**UNITED NATIONS
UNIVERSITY**

UNU-INWEH

International Network on Water,
Environment and Health



Universität für Bodenkultur Wien
University of Natural Resources
and Life Sciences, Vienna



**UNIVERSIDADE
EDUARDO
MONDLANE**



iha

international hydropower association

RESEARCH

The research activities at UNU-FLORES strive to break down the silo mentality ingrained both in the management of environmental resources as well as the procedures of the academic disciplines that research them. In an attempt to overcome this, UNU-FLORES focuses on improving the understanding of the nexus between water, soil and waste resources and its underlying interconnections, impacts on planning and management, and subsequent trade-offs. Moving beyond the already substantially researched nexus of the water, energy and food sectors, the Institute chose to take a resources perspective, while also considering forces of global change. The policy-relevant research resulting from this approach will provide stakeholders, especially decision makers and practitioners, with the necessary information and evidence-base to make choices that promote sustainable development.

WATER YIELD RESPONSE TO CHANGES IN LAND USE AND CLIMATE IN A SEMI-HUMID/-ARID TRANSITION REGION (JINGHE BASIN, NORTHWEST CHINA)

Managing Unit:
Soil and Land-Use Management

Staff:
Kai Schwärzel
(Academic Officer),
Lulu Zhang
(Research Assistant)

Funding:
German Research Foundation (DFG)

Collaborators:
Chinese Academy of Forestry (CAF),
Chinese Academy of Sciences (CAS)

In recent decades, efforts to restore vegetation in the Jinghe Basin have effectively addressed soil erosion. These developments have, however, also been accompanied by a drastic reduction of water yield in the main tributaries of the Yellow River. The origin of these developments is yet unclear. It is possible, that increased temperature and decreased precipitation may have contributed to water yield reduction. For developing an integrated land-use and water management approach, an understanding and separation of the hydrological response to changes in land use and climate are essential. This project looks at water balance components, vegetation structure dynamics and soil hydraulic properties on multiple scales, ranging from single tree to watershed. Our research is carried out in the semi-humid/-arid transition region of Jinghe, which is an important tributary of the Yellow River. We follow a nested approach on scales of plots and watersheds along an upstream/downstream situation in a representative subbasin. On the basis of these measurements, the process-oriented model BROOK90 is used to predict the water yield response to changes in climate and vegetation, depending on relief and soil conditions. The results obtained from plot studies will be used to parameterize the distributed model SWIM. In a next step, SWIM will be fitted to the catchment discharge and to assess the effect of different land-use and vegetation management on water yield. This assessment will provide a solid foundation for how much of the catchment area can be changed by vegetation restoration through forest management to maintain a certain level of water supply security that will ensure a more sustainable regional development. The findings will build the basis for a book on the promotion of multifunctional land-use systems.

Outputs:

- › Zhang, Lulu, Christian Podlasly, Karl-Heinz Feger, Yanhui Wang, and Kai Schwärzel (2015). "Different land management measures and climate change impacts on the runoff – A simple empirical method derived in a mesoscale catchment on the Loess Plateau" in *Journal of Arid Environments* 120: 42–50.
- › Yu, Miaozi, Lulu Zhang, Xuexuan Xu, Karl-Heinz Feger, Yanhui Wang, Wenzhao Liu and Kai Schwärzel (2015). "Impact of land-use changes on soil hydraulic properties of Calcaric Regosols on the Loess Plateau, NW China" in *Journal of Plant Nutrition and Soil Science* 178 (3): 486–98
- › Zhang, Lulu (2015). "North-west China Water Supply Impacted by Vegetation Restoration" *Our World*, 26 May 2015. Ourworld.unu.edu

Events:

- › *Nexus Seminar No. 3* "Impact of Soil Conservation Measures on the Water Supply in the Dryland of China" by Kai Schwärzel (18 May 2015) Dresden, Germany
- › Workshop on "Multifunctional land-use in Dryland Areas of China" (05–06 August) Beijing, China (see page 31)



NEXUS TOOLS PLATFORM: A WEB-ACCESSIBLE DATABASE OF MODELLING TOOLS FOR INTEGRATED RESOURCES MANAGEMENT

The realization of the Water-Soil-Waste-Nexus Approach requires a holistic understanding of the interlinkages of all related environmental processes, while also taking into consideration global change and socioeconomic aspects. Exploring these interlinkages and advancing an integrated management approach requires integrated modelling tools. However, no single modelling tool is available or conceivable that would cover all processes, interactions and drivers related to water, soil and waste resources. Instead, a vast number of models are available and in use dealing with specific environmental processes related to water, soil and waste resources, at varying degree of detail, covering certain spatial and temporal scales and applying different mathematical process-describing relationships. To address a specific research question or management issue, in particular when applying a Nexus Approach, instead of developing a tool from scratch, it should more efficient and effective to make use of available tools and modify or couple them as required. For this to be possible, we first need a database that allows the interactive comparison of such tools.

This project aims at developing an interactive Nexus Tools Platform for inter-model comparison of existing modelling tools. The project shall provide detailed information on a subset of a larger compilation of available modelling tools. An Alpha version of the Platform was launched in 2015 and is continually being improved. The platform offers interactive charts and advanced search and filter functions that allow selecting the most appropriate (set of) model(s) for the specific needs and to do a gap analysis of current model capabilities.

Access: <https://data.flores.unu.edu/projects/ntp>

Outputs:

- › Mannschatz, Theresa, Tobias Wolf and Stephan Hülsmann (2015). "Nexus Tools Platform: Web-based comparison of modelling tools for analysis of water-soil-waste nexus" *Environmental Modelling & Software* DOI: 10.1016/j.envsoft.2015.10.031.
- › Mannschatz, Theresa and Kristin Meyer. "Modelling Tools for Dealing with Environmental Complexity" *Our World*, 4 September 2015. Ourworld.unu.edu

Events:

- › *Nexus Seminar No. 5* "The Importance of Nexus Tools for Integrated Management of Water, Soil and Waste" by Theresa Mannschatz (20 July 2015) Dresden, Germany
- › *Nexus Seminar No.6* "Sustainable Resources Management Requires Integrated Monitoring" by Stephan Hülsmann (19 October 2015) Dresden, Germany

Managing Unit:
System and Flux
Analysis Considering
Global Change

Staff:
Stephan Hülsmann
(Academic Officer),
Theresa Mannschatz
(Research Assistant),
Ana Andreu Mendez
(Research Assistant)

Collaborators:
Input from Several
Model Developers



THE NEXUS OBSERVATORY – DATA, MONITORING AND GOVERNANCE

Managing Unit:

Capacity Development
and Governance

Staff:

Mathew Kurian
(Academic Officer),
Kristin Meyer
(Research Assistant),
Sekela Twisa
(PhD Researcher)

Funding:

UNU-FLORES,
WDMI, Ministry of
Water, Tanzania

Collaborators:

TU Dresden, IOER,
Ministry of Water of
Tanzania, Government
of the National State
of Tigray of Water
Resources Bureau of
Ethiopia, Ministry of
Agriculture Irrigation
and Water Develop-
ment of Malawi, IGES,
Arghyam

Advancing a Nexus Approach to the sustainable management of natural resources requires better alignment of data collection, access to complete data, comparable standards, better analysis of data as well as a unified monitoring framework. The Nexus Observatory is an initiative of UNU-FLORES, which aims to advance data classification, strengthen monitoring frameworks and facilitate governance processes for evidence-based decision-making and knowledge transfer. It will facilitate and support synergies, as well as enhance coordination, communication and collaboration between sectors and stakeholders. The main focus of the Nexus Observatory is the engagement with science-policy challenges and the identification of capacity development opportunities, along with responding to regional/ national priorities. In addition, current trends and debates within the UN system, such as discussions about the Sustainable Development Goals and the post-2015 development agenda, inform activities of this initiative. Thus, it will serve as an online platform for consolidating and translating science into relevant information and evidence, which will empower decision makers to develop strategies, policies as well as natural resource management planning and implementation frameworks. UNU-FLORES developed and launched three high quality e-learning courses under the umbrella of the Nexus Observatory. Participants came from all parts of the world and sectors (see page 16).

Outputs:

- › Mannschatz, Theresa and Kristin Meyer. "Modelling Tools for Dealing with Environmental Complexity" *Our World*, 4 September 2015. Ourworld.unu.edu
- › Science Brief in the *Global Sustainable Development Report 2015* (UNDESA). Kurian, Mathew and Kristin Meyer. "The UNU-FLORES Nexus Observatory and the Post-2015 Monitoring Agenda"

Events:

- › Seminar on "Governing the Water-Soil-Waste Nexus" at the *Sustainable Development Goals; A Water Perspective - Indicators, Interlinkages and Implementation Conference* (17–18 August 2015) Bonn, Germany (see page 32)
 - › Nexus Observatory Training Workshop on "Drought Risk Monitoring - Capacity Development Priorities for Sub-Saharan Africa (Tanzania, Malawi, Ethiopia)" (17–18 December) Dar es Salaam, Tanzania
 - › *Nexus Seminar No. 1* "Governing the Nexus: Trade-offs, Synergies and Methods for Management of Environmental Resources" by Mathew Kurian (17 Feb 2015) Dresden, Germany
- › Co-Convened Session 10 with UN-Habitat and Session 11 with Arghyam at Dresden Nexus Conference 2015 (25-27 March 2015) Dresden, Germany



SAFE USE OF WASTEWATER IN AGRICULTURE INITIATIVE (SUWA)

The increasing scarcity of water, combined with other challenges such as those related to energy and fertilizers, is driving millions of farmers and other entrepreneurs to make use of wastewater. In developing countries and countries in transition, the safe reuse of water requires addressing various technical, institutional and policy challenges. There is a need for defined institutional arrangements and more skilled human resources, as well as a more comprehensive understanding of the opportunities and potential risks of wastewater use. The SUWA initiative is a direct response to the aforementioned needs.

Currently, the initiative is working to identify good practice examples from a few selected regions. The key players involved in these examples will share their views in a workshop in 2016, and engage in a discussion to identify knowledge gaps for the future research agenda. The good practice examples presented at the workshop will be later disseminated by UNU-FLORES as an edited volume, and the knowledge gaps identified will be addressed through doctoral level research. This workshop is one of the contributions by UNU-FLORES towards the SUWA initiative led by UNU-FLORES.

Events:

- › SUWA Workshop on “Good Practice Examples and Future Research Needs” (24–25 February 2016) Lima, Peru (Upcoming)

Managing Unit:
Waste Management

Staff:
Hiroshan Hettiarachchi
(Academic Officer)

Funding:
German Ministry for
Economic Cooperation
and Development
(BMZ) via UNU-ViE

Collaborators:
UNEP, UNU-INWEH,
IWMI, IPES



DEVELOPMENT OF MODELS TO PREDICT LAND-USE-INDUCED SOIL PORE-SPACE CHANGES AND THEIR HYDROLOGICAL IMPACTS

Managing Unit:
Soil and Land-Use
Management

Staff:
Kai Schwärzel
(Academic Officer),
Janis Kreiselmeier
(PhD Researcher),
Parvathy
Chandrasekhar
(PhD Researcher)

Funding:
German Research
Foundation (DFG)

Collaborators:
University of Natural
Resources and Life
Sciences in Vienna
(BOKU), TU Dresden

Adaptive land uses are gaining importance as preventative measures for soil and water conservation. The development of adaptation strategies is often based on hydrological models. Previous studies have shown that soil structure changes significantly as a result of land-use and soil management. Therefore, if the dynamics of soil structure are neglected in planning adaptation strategies, the uncertainty of model results increases. This could lead to incorrect planning and greater or misdirected resource consumption in land-use systems. This project aims to measure changes in soil structure and hydraulic properties as a result of different land-use practices (soil tillage, crop rotation, afforestation). These measurements will be used to introduce newly developed functions into hydrological models, increasing their applicability as the foundation of land-use adaptation strategies.

Events:

- › Kick-Off Workshop for the “DACH Project” (24 November) Vienna, Austria (see page 34)



INTEGRATED MANAGEMENT OF WATER, SOIL AND WASTE IN MOZAMBIQUE

The project follows up and builds upon earlier contacts and initiatives of UNU-FLORES in Mozambique. In a coordinated approach with partners in Mozambique as well as with international partners, a comprehensive research programme on integrated management of water, soil and waste will be prepared and established. The major outputs of this “umbrella project” will be publications and research proposals for donor support. To ensure its quick development as a regional hub, these projects are designed to be taken up or initiated by the Operating Unit in Africa, planned to be established in Mozambique pending negotiations.

Outputs:

- › Bullock, Andrew and Stephan Hülsmann (2015). “Strategic Opportunities for Hydropower within the Water-Energy-Food Nexus in Mozambique” *UNU-FLORES Working Paper No. 4*. Dresden.

Events:

- › *Seminar at World Water Week 2015 “Water Storage and Hydropower as Drivers for Sustainable Development”* (23 August 2015) Stockholm, Sweden. (See page 33)

Managing Unit:

System and Flux
Analysis Considering
Global Change

Staff:

Stephan Hülsmann
(Academic Officer)

Funding:

UNU-FLORES

Collaborators:

Eduardo Mondlane
University, International
Hydropower
Association, UNDP



EDUCATION

PHD IN INTEGRATED MANAGEMENT OF WATER, SOIL AND WASTE

UNU-FLORES and the Faculty of Environmental Sciences at the Technische Universität Dresden offer the first PhD worldwide to focus on the integrated management of water, soil and waste. This focus was chosen with the aim of creating a new generation of environmental scientists, engineers and managers to conduct, promote and provide guidance on a Nexus Approach to the sustainable management of environmental resources. To this end, students receive a comprehensive introduction to the basic concepts of the Water-Soil-Waste Nexus while contributing directly to the innovative research of the hosting institutes through rigorous dissertation projects.

The main objective of the joint degree programme is to provide graduates with detailed knowledge, critical understanding, strategies and tools to take an interdisciplinary approach towards management of these resources in their national ministries, resource management utilities or private businesses. Ending in a degree jointly awarded by UNU-FLORES and TU Dresden, students enjoy the benefits of both universities. On the one hand, they have access to the facilities and services of both TU Dresden, one of eleven Universities of Excellence in Germany, as well as the network of UNU Institutes. On the other hand, their research and activities include close cooperation not only with leading academic institutions but also with UN agencies and programmes as well as other international organizations.

In 2015, the first two cohorts of students joined the programme in February and November respectively. Under the supervision of leading experts, these students are conducting research focused on solving current challenges related to the Water-Soil-Waste Nexus. The programme is tuition-free and applicants are responsible for all other expenses accrued during the duration of their participation in the programme. Currently, two students are funded by the DFG and one is sponsored directly by their national government.

Current PhD Students



Parvathy Chandrasekhar (India)



Topic: *“Characterization and mathematical description of temporal and management-induced soil hydraulic property changes and implementation of new model concepts into existing hydrological models”*



Solomon Gebrechorkos (Ethiopia)



Topic: *“Assessing and Synthesizing Climate-Related Data for Integrated Water-Soil Management in East Africa”*



Mahesh Jampani (India)



Topic: *"Modelling of antibiotic-resistant bacteria and genes transport in the subsurface"*



Janis Kreiselmeier (Germany)



Topic: *"Quantification of temporal variations of soil hydraulic properties by periodic field and laboratory measurements"*



Thuy Nguyen (Vietnam)



Topic: *"Continuous longitudinal boat-based data analysis for efficient water quality monitoring in small rivers"*



Anika Reetsch (Germany)



Topic: *"Integration of waste into the biomass production of land-use systems in Sub-Saharan Africa"*



Sekela Twisa (Tanzania)



Topic: *"Source Sustainability of Rural Water Supply in East Africa: Applications of Geo-Information Technologies"*

ONLINE COURSES – E-LEARNING OPPORTUNITIES ON THE NEXUS APPROACH

As part of UNU-FLORES' overall mission to engage in postgraduate education and build the capacity of individuals as well as institutions, In 2015 UNU-FLORES launched its first online courses on the Blended Learning Platform of the Nexus Observatory. Based on priorities identified at regional consultations organized by UNU-FLORES, the institute developed courses to provide decision makers, practitioners and students with an interest in the planning and management of environmental resources with access to relevant knowledge and skills. Participants anywhere in the world are able to address capacity development needs, learn at their own convenience and develop new skills on how to apply the acquired knowledge in practice.

The result was three demand-driven, policy-relevant online courses that take the collective knowledge and expertise of three institutes – UNU-FLORES, Leibniz Institute of Ecological Urban and Regional Development (IOER) and Technische Universität Dresden (TU Dresden) – and made it available to a global audience of nexus practitioners. These courses are directly based on and feed into the rigorous research being done at these institutes and will be further developed and offered again in 2016.

About the Courses

The development and the execution of the courses was a collective project. Curriculum for three online courses was developed in partnership with Imperial College London, UK, University of Minho, Portugal and Livelihoods and Natural Resources Management Institute, Hyderabad, India. Three peer-reviewed books were published to act as text books for the courses: *Life-Cycle Cost Approach for Management of Environmental Resources – A Primer* (Reddy, Kurian and Ardakanian; 2015), *Rethinking Infrastructure Design for Multi-Use Water Services* (Maksimović, Kurian and Ardakanian; 2015) and *Intergovernmental Fiscal Relations – Questions of Accountability and Autonomy* (Veiga, Kurian and Ardakanian; 2015). The lectures and course instruction were delivered in collaboration with IOER and the Faculty of Environmental Sciences of the TU Dresden.

Green Economy and the Life-Cycle Cost Approach

The aim of this course was to provide participants with an understanding of why the life-cycle cost approach (LCCA) is essential to achieving the goals of sustainable development, in particular, in the management of environmental resources. The course explored how LCCA can be mainstreamed into governance processes at all institutional levels from local to national, in order to increase the ability and willingness of decision makers to make informed and relevant choices between different types and levels of services. During the course, participants were exposed to key theoretical concepts that are then applied to case studies in the later part of the course.

Rethinking Infrastructure Design for Multi-Use Water Services

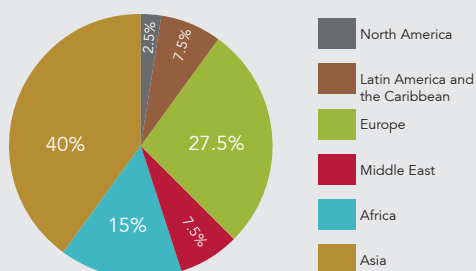
The aim of this course was to provide participants with an understanding of the goals and elements of urban water infrastructure systems, technical options for wastewater treatment and stormwater management. The course drew on international case studies that emphasise the importance of adopting multiple-use perspectives in planning and implementing water and wastewater projects. The role of pricing and costing of infrastructure projects was discussed to highlight Nexus Approaches to the management of water, soil and waste.

Financing Public Services and Environmental Sustainability

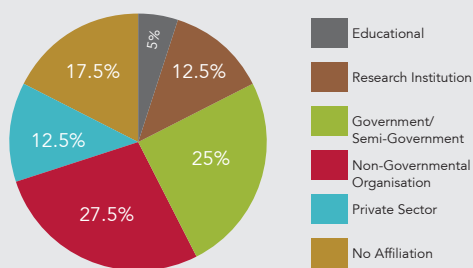
The aim of this course was to provide participants with an understanding of the role played by intergovernmental fiscal arrangements in shaping public service outcomes in countries around the world, especially developing and emerging economies. Issues of accountability and autonomy were examined to highlight important trade-offs and synergies that are at the centre of the NEXUS approach to the management of water, soil and waste. Specific topics include: trend in political decentralisation and the role of public budgets and local governments in supporting the delivery of public services.

Participants

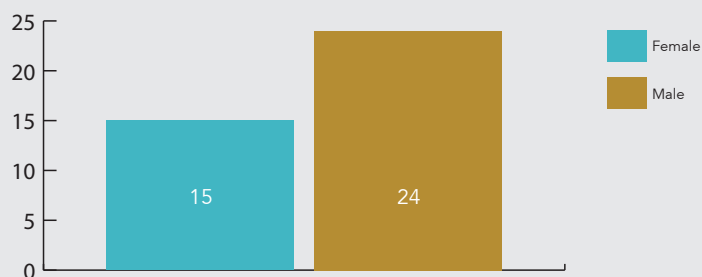
Participants came from all parts of the world and sectors. Forty-one applicants were selected to participate in the initial round of online courses. Approximately 50% of course participants received sponsorship by international agencies and private foundations, including the International Commission on Irrigation & Drainage (ICID) and Arghyam. The remaining participants were self-financed.



Geographical Background of Participants



Type of Organisation where Participants are Employed



Participants by Gender

FOSTERING

A NEXUS MIND-SET



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DRESDEN NEXUS CONFERENCE

As a hub for initiatives on the Nexus Approach, UNU-FLORES understood early on the importance of providing an international platform to foster cooperation and collaboration amongst all actors and sectors involved in a Nexus Approach to managing environmental resources. That platform is the Dresden Nexus Conference (DNC). A biennial conference, the DNC showcases innovative and policy-relevant research at the interface between the Sustainable Development Goals (SDGs) and the Water-Soil-Waste Nexus.

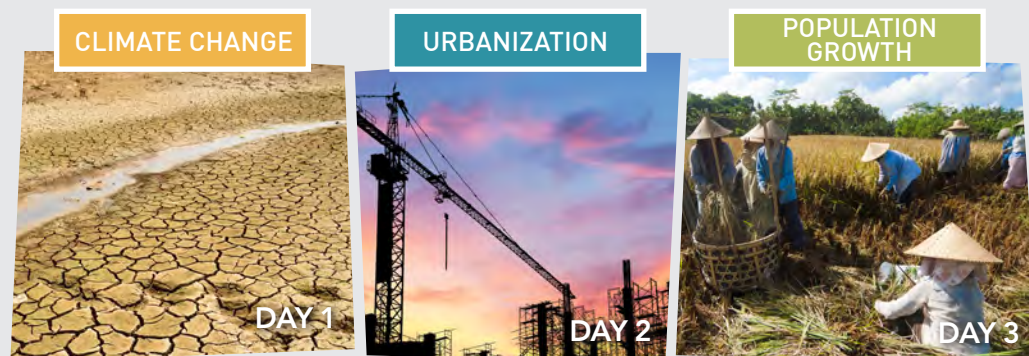
However, the role and impact of DNC goes much beyond that of a typical academic conference. In a community lacking an organized network, DNC is a cross-sectoral platform for nexus-oriented initiatives, and thus a key pillar for advancing a Nexus Approach to the integrated management of resources. Bringing together scientists, implementers, decision makers and donors, DNC has and will continue to connect UN entities, first-class research institutions, governmental institutions, and nongovernmental organizations both to each other and to UNU-FLORES as a hub for nexus-oriented research.



DNC2015: "GLOBAL CHANGE, SDGS AND THE NEXUS APPROACH"

From 25–27 March 2015, UNU-FLORES, the Technische Universität Dresden and the Leibniz Institute of Ecological Urban and Regional Development (IOER) organized the inaugural Dresden Nexus Conference 2015 (DNC2015) on "Global Change, SDGs and the Nexus Approach". Building on the outcomes of the 2013 "International Kick-Off Workshop on Advancing a Nexus Approach to the Sustainable Management of Water, Soil and Waste", the main focus of the conference was how the integrated management of environmental resources guided by a Nexus Approach may help to achieve the potential targets of the post-2015 agenda.

Each day of the conference dealt with one aspect of global change: climate, urbanization and population growth. The daily general structure was similar across the three days and comprised the following scientific elements 6 keynote speeches, 18 parallel sessions, 3 panel discussions, 3 concluding talks, the conference wrap up talk, a poster session and an exhibition hall.



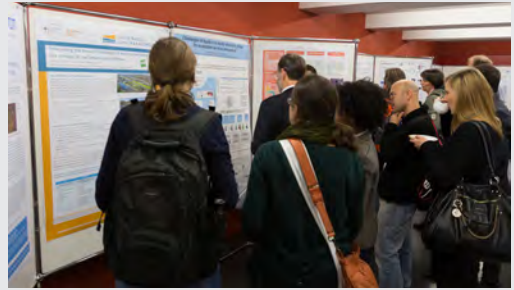


While the topics of the sessions and presentations touched on many different facets of a Nexus Approach, one message resonated loudly across the board: applying a Nexus Approach is a crucial step in identifying effective and appropriate mechanisms for achieving the SDGs. Actively supporting the continuation of the constructive discussions and momentum that emerged during the conference, UNU-FLORES has provided access to the content of the conference through multiple channels and mediums.

- › **State of the Nexus Approach Report**, summarizing the content presented at DNC2015, offers the nexus community a cross-section of the most recent and innovative nexus-oriented initiatives in the field of sustainable management of environmental resources from the academic and public sectors. It is envisioned as a biennial publication that will provide updates on the developments in the research and political sectors in this regard.
- › **Environmental Resource Management and the Nexus Approach: Managing Water, Soil, and Waste in the Context of Global Change** by Hiroshan Hettiarachchi and Reza Ardakanian (Eds): An edited volume building on the thematic discussions of DNC2015, this book presents the perspectives of a number of thought leaders on how the Nexus Approach could contribute to sustainable environmental resource management.
- › **"Systems Thinking for Advancing a Nexus Approach to Water, Soil and Waste"**: This second issue in the UNU-FLORES Lecture Series recaptures Prof. Joseph Alcamo's thought provoking keynote speech on how concepts and techniques from the systems thinking school of thought can be beneficial for solving nexus problems.
- › **Dresden Nexus Conference Playlist**: Launched on YouTube and open to the public, this playlist comprises full-length videos of the plenary sessions. All keynote speeches, panel discussions, concluding talks and opening and closing remarks are available for viewing and educational purposes. In addition, all **DNC2015 Presentations** have been compiled and put online under past conference at dresden-nexus-conference.org.
- › **DNC Working Paper Series**: By developing and disseminating quality research from the content presented at DNC2015, the series strives to stimulate discussion, debate and critical feedback and, therefore, further advance the quantity and quality of nexus-oriented research available.
- › **DNC Policy Brief Series**: This series consolidates innovative and practical policy-relevant results and strategies presented at DNC2015 in an accessible manner for civil society and the policy sector.



With over 350 participants from 65 countries and 5 continents, high-level representatives from several UN Member States, numerous UN and UNU entities, international organizations, universities and research institutions, and various foundations and technical assistance agencies, the inaugural DNC2015 was a distinct success. By bringing these stakeholders together, the foundation for a dynamic and effective network of researchers and practitioners applying the Nexus Approach to resource management has been laid.



In this vein, DNC2015 has played an important role in aligning research and implementation of nexus-oriented, policy-relevant solutions to addressing global change and in strengthening Dresden's role as a hub for research on sustainable development. The costs of the conference were covered by the participants, funds provided by the German Research Foundation (DFG), the City of Dresden and the three organizers.

DNC2017: "SDGS AND THE NEXUS APPROACH – MONITORING AND IMPLEMENTATION STRATEGIES"

Building on the conclusions of DNC2015 and the focus of nexus-related initiatives, the organizers have decided that the SDGs will continue to provide a general framework and guideline for future DNCs. As the Water-Soil-Waste Nexus is at the core of the DNC concept, how the Nexus Approach is fundamental to successfully reaching these goals will be illustrated by showcasing initiatives and research that revolve in particular around on the SDGs addressing food security and sustainable agriculture (SDG 2), sustainable management of water (SDG 6), energy security (SDG 7) and resilient and sustainable settlements and cities (SDG 11).

The development of the scientific programme is underway and will involve both returning and new key stakeholders from the relevant sectors and disciplines. DNC2017 will strive to put more emphasis on the process and procedures of implementing a Nexus Approach. At the next conference, the organizers aim to provide innovative and educational case studies that show the nexus in practise and provide working examples of how a Nexus Approach can facilitate sustainable development.

DNC2015 Stakeholders



**UNITED NATIONS
UNIVERSITY**



United Nations Convention
to Combat Desertification



UN HABITAT
FOR A BETTER URBAN FUTURE



UNESCO-IHE
Institute for Water Education



**UNITED NATIONS
UNIVERSITY**

UNU-EHS

Institute for Environment
and Human Security



**UNITED NATIONS
UNIVERSITY**

UNU-INWEH

Institute for Water,
Environment and Health



**UNIVERSITÄT
SALZBURG**

UNIVERSITY OF TWENTE.

**UNIVERSITY OF
WESTMINSTER**



Center for Development Research
Zentrum für Entwicklungsforschung
University of Bonn



**Leibniz
Universität
Hannover**



Federal Ministry
of Education
and Research

STAATSMINISTERIUM
FÜR WISSENSCHAFT
UND KUNST



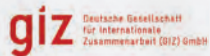
Freistaat
SACHSEN



Federal Ministry for the
Environment, Nature Conservation,
Building and Nuclear Safety



Federal Ministry
for Economic Cooperation
and Development



Supported by
the City of Dresden



Dresden.

Besides knowledge creation, knowledge translation and knowledge sharing are a fundamental part of UNU-FLORES's role as a think-tank for the UN System and Member States and as a hub for the Nexus Approach research community. Thus, scientific advisory, capacity development and community building activities are an important dimension of UNU-FLORES's mandate. The various endeavours of the Institute in 2015 to engage its community, and translate and transfer knowledge are outlined in this chapter.



EVENTS



An active member of its community, the Institute interacts with a vibrant and diverse network both locally and internationally. In these activities, UNU-FLORES continually endeavours to effectively engage not only the academic community, but also policy- and decision makers as well as the general public. In the following section, a few key examples of how UNU-FLORES engaged its community during 2015 are highlighted. To see a full list of the events that UNU-FLORES organized or participated in, please see the index on page 38.



SEMINARS & LECTURES

The Nexus Seminar Series

UNU-FLORES, in collaboration with the Faculty of Environmental Sciences of TU Dresden, launched the Nexus Seminar Series in 2015. The series features lectures by senior scholars that highlight all dimensions of research on the Nexus Approach, ranging from hands-on implementation strategies to theoretical debates. The Nexus Seminars serve not only as a platform for scientific exchange and cooperation between UNU-FLORES and TU Dresden, but also as a medium for the partner institutions to discuss their research with a broader audience.

Taking place once a month during the German academic semesters, each seminar is open to the public and is held alternately at UNU-FLORES and TU Dresden. The lectures in 2015 covered the following exciting topics:



- › No.1 'Governing the Nexus: Trade-offs, Synergies and Methods for Management of Environmental Resources' by Dr. Mathew Kurian (17 Feb 2015)
- › No.2 'How to improve crop water productivity and food security under limited water resources' by Prof. Dr. Niels Schütze (20 Apr 2015)
- › No.3 'Impact of Soil Conservation Measures on the Water Supply in the Dryland of China' by Dr. Kai Schwaerzel (18 May 2015)
- › No.4 'Improved Environmental Management Needs Postgraduate Training – CIPSEM and Partners' by Dr. Anna Görner (22 June 2015)
- › No.5 'The Importance of Nexus Tools for Integrated Management of Water, Soil and Waste' by Dr. Theresa Mannschatz (20 July 2015)
- › No. 6 'Sustainable Resources Management Requires Integrated Monitoring' by Dr. Stephan Huelsmann (19 October 2015)
- › No. 7 'From Sanitation to Urban Water Resource Management' by Prof. Peter Krebs (16 November 2015)
- › No. 8 'REDD+: A Controversial Mechanism to Conserve Tropical Forests and the Climate' by Prof. Gerald Kapp (7 December 2015)



Water Resources Management Policy for the Nile Basin

The importance of managing environmental resources in the Nile Basin was the main topic of the Special Lecture given by His Excellency Egyptian Ambassador Badr Abdelatty in front of a crowd of over 80 students and staff from both universities. The existence and prosperity of the Republic of Egypt is uncompromisingly dependent on the Nile River. In a country that is three times the size of Germany, 90 percent of the population inhabits 4 percent of that area – the Nile Delta. One is hard pressed to find a country, where a Nexus Approach to managing water, soil and waste is more relevant. How UNU-FLORES and TU Dresden can support Egypt in fostering regional and international cooperation for managing resources was the central topic of the Ambassador's visit to Dresden. Before his special lecture, the Ambassador visited UNU-FLORES and accompanied the Director to meet with TU Dresden Vice-Rector Prof. Gerhard Rödel and members of the Faculty of Environmental Sciences.

29 October 2015
Dresden, Germany

Speaker:
Egyptian Ambassador
Badr Abdelatty

Type: Special Lecture

Partners:
The Faculty of Environmental Sciences and the UNESCO Chair in International Relations of TU Dresden





13 November 2015
Dresden, Germany

Type: Introductory
Seminar

The Work of UNU-FLORES: A Presentation at the Saxon State Ministry for Higher Education, Research and the Arts

UNU-FLORES was invited by the Saxon State Minister for Higher Education, Research and the Arts Eva-Maria Stange to present its work to a group of guests. 'UNU-FLORES is a perfect example of Dresden's truly cosmopolitan nature. The achievements of this institute, which is only a few years old, are very impressive.' Her Excellency Eva-Maria Stange said in her welcoming remarks. 'There is, however, still a need to raise awareness of the UNU's presence in the region.' To this end, the Ministry invited representatives from local and regional political entities as well as the leading science and education institutions in Saxony to the Ministry for a special introductory seminar. From 10 a.m. to 12 p.m., UNU-FLORES Director Reza Ardakanian and Academic Officers Stephan Hülsmann and Kai Schwärzel introduced the audience to the development and activities of the Institute and answered questions. The material covered ranged from the initial founding of UNU-FLORES, its institutional structure and the official mandate, to concrete examples of current research projects and initiatives.



Among the approximately 40 guests were the Saxon State Secretary Uwe Gaul for Higher Education and the Arts; representatives from Sachsen State Ministry of the Environment and Agriculture; the Saxon State Ministry for Economic Affairs, Labour and Transport; the Saxon State Parliament and Chancellery and from various academic and research institutions around Saxon, such as the Helmholtz-Zentrum Dresden-Rossendorf and the University of Applied Sciences Zittau/Görlitz.





2015
TIME FOR
GLOBAL ACTION
FOR PEOPLE AND PLANET

WORKSHOPS & CONFERENCES

A systematic approach to Science and Technology Issues for the Attention of Policy Makers

UNU-FLORES was invited to participate in an Expert Group Meeting that was organized by UNDESA in Geneva on May 28–29, 2015. The meeting discussed a draft format for the GSDR 2015 report besides taking stock of existing approaches for identifying science and technology issues for decision makers on sustainable development. UNU-FLORES was invited to contribute inputs to a session that compared systematic options for monitoring and evaluation. Some of the options that were discussed for their comparative strengths included standing ad hoc groups, stakeholder consultations, intergovernmental science assessment models (such as the IPCC), formal surveys and metadata analysis. Representing UNU-FLORES, Mathew Kurian advocated for the use of the Nexus Observatory (see page 10) as a mechanism for post-2015 monitoring of the Sustainable Development Goals (SDGs).

28-29 May 2015
Geneva, Switzerland

Type: Expert Group Meeting for the Global Sustainable Development Report



18 June 2015
Berlin, Germany

Type: Seminar at the
*6th Water Research
Horizon Conference*

Partners:
United Nations Educational, Scientific and Cultural Organization International Hydrological Programme (UNESCO-IHP); the World Meteorological Organization Hydrology and Water Resources Programme (HWRP, German Section); Leibniz-Institute of Freshwater and Inland Fisheries (IGB)

Addressing Water-Related Data Scarcity in Sub-Saharan Africa

Successful integrated water management requires an understanding of the quality and quantity of water in a given area. Such information can only be collected by efficient and systematic monitoring. However, the availability of reliable data from field and monitoring stations differs strongly among regions. Sub-Saharan Africa, in particular, suffers from data scarcity, while at the same time faces immense challenges in the water sector. In order to address this lack of data, 'classical monitoring programmes based on the use of field stations and sampling must be strengthened through methods involving remote sensing technologies, Citizen Science and crowdsourced data. Defining a feasible strategy to improve the situation and defining scientific and geographic priority areas was the focus of a workshop convened by UNU-FLORES at the **6th Water Research Horizon Conference (WRHC)**.

An agreement was made as a direct result from this workshop to initiate the development of a meta-database on ongoing monitoring programmes and database infrastructures. Such a database would facilitate the identification of data gaps and the harmonization and alignment of existing data sets as well as data sharing. The Linked Databases Window of the **Nexus Observatory** (see page 10) could provide a platform to host and publish such a meta-database. Besides developing the meta-database, the conveners of the workshop agreed to develop a concept paper on how to address the scientific challenges identified during the workshop.



Multifunctional Land-Use in Dryland Areas of China

The workshop discussed and evaluated the current land-use practices in the Loess Plateau Region. An important outcome of the workshop was the identification of knowledge gaps and research needs for the establishment of multifunctional land-use systems in dry areas such as the Loess Plateau. The advancing in development of multifunctional land use will help to foster a framework that stresses and strengthens integration of environmental issues in supporting decision-making and policy formulation at all levels. The workshop evolved from the project **Water yield response to changes in land-use and climate in a semi-humid/-arid transition region (Jinghe basin, Northwest China)** (see page 8).

5–6 August 2015
Beijing, China

Type: Workshop

Partners:
Chinese Academy of Forestry (CAF) and
Chinese Academy of Science (CAS)





**18 August 2015
Bonn, Germany**

Type: Nexus Observatory Panel Discussion at the GSWP Conference on ‘Sustainable Development Goals (SDGs): A water perspective – Indicators, Interlinkages and Implementation’

Partners: UN-Habitat and University of Minho

Governing the Nexus of Water, Soil and Waste

UNU-FLORES organized panel discussion on the subject of governing the Water-Soil-Waste Nexus at ‘Sustainable Development Goals (SDGs): A water perspective’, a conference organized by the Global Water System Project in Bonn on 17–18 August. The panel focused on elaborating on the concept of the Nexus Observatory. Using case studies covering water and wastewater, the session discussed the role of public financing, remote sensing, groundwater management and data analytics in supporting evidence based decision-making.

The panel brought together experts from a range of disciplines. Reza Ardakanian, UNU-FLORES Director, introduced the session by providing an overview of the Nexus Approach and the mandate of UNU-FLORES. Mathew Kurian, of the Capacity Development and Governance Unit at UNU-FLORES, made a presentation on issues of data monitoring and governance. Linda Veiga, Associate Professor of Economics at the University of Minho, spoke about the role of indexes in supporting evidence-based decision-making. Her presentation used case studies to emphasize the importance of indexing for the management of flood and drought risk. Finally Stephen Foster, Senior Advisor at Global Water Partnership, made a presentation on the role of groundwater management in advancing the Nexus Approach.

GOVERNING THE NEXUS OF WATER, SOIL AND WASTE
 18. AUGUST 2015 11:00 - 12:30
 PARALLEL PANEL DISCUSSION

CONVENOR
 Reza Ardakanian
 UNU-FLORES, Director

PANELISTS
 Linda Veiga
 University of Minho, Associate Professor of Economics
 Rishi Hazareh
 World Health Organization, Technical Officer
 Mathew Kurian
 UNU-FLORES, Capacity Development and Governance Unit
 Stephen Foster
 Global Water Partnership, Senior Advisor



World Water Week 2015

Adopting a Nexus Approach that considers other water uses and users is essential to maximize the benefits of water storage infrastructure and hydropower, particularly with regard to their environmental, social and economic implications. In the panel discussion organized by UNU-FLORES, IHA and UNDP at World Water Week 2015, it was discussed whether and how using such an approach may facilitate sustainable development. In introductory statements Joakim Harlin (UNDP) talked about the importance of water infrastructure for the Sustainable Development Goals, Tracy Lane (IHA) outlined the role of hydropower for sustainable development, and UNU-FLORES Director Reza Ardakanian demonstrated how multipurpose reservoirs can serve as a showcase for the Water-Energy-Food Nexus. The presenters were joined by William Rex (Global Lead for Hydropower and Dams, The World Bank), Lin Chuxue (China Three Gorges Corporation) and Li Lifeng, (Freshwater Director, WWF) for an in-depth discussion.

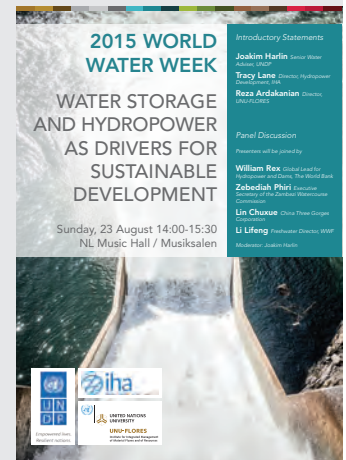
Besides convening the aforementioned session, UNU-FLORES represented the United Nations University in the **World Water Week Exhibition**. Water for Development is a common theme across many Institutes in the UN University. Under the slogan #UNU4Water, Institutes and programmes joined forces to develop a campaign that showcased the various projects and publications focusing on this theme. One of the main institutes working on water, UNU-FLORES presented these projects and publications to the participants at World Water Week 2015.

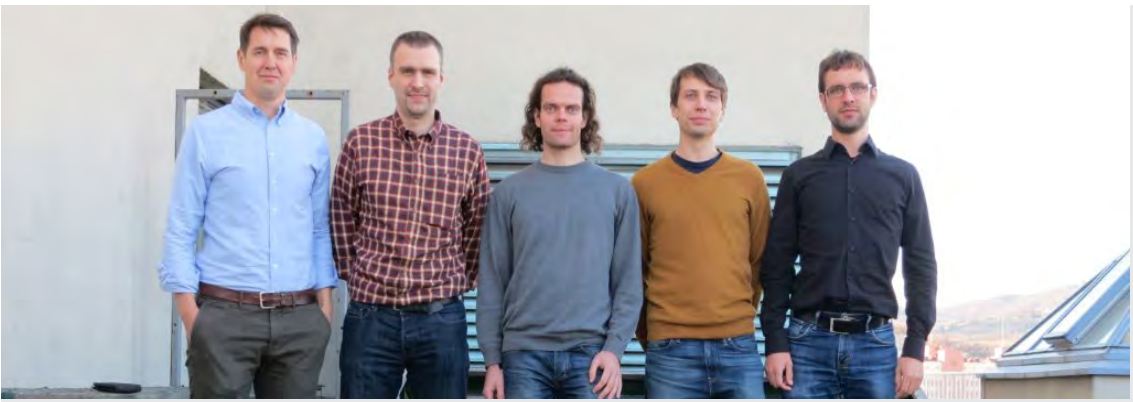
23 August 2015
Stockholm, Sweden

Title: Water Storage and Hydropower as Drivers of Sustainable Development

Type: Panel Discussion at World Water Week 2015

Partners: International Hydropower Association and the United Nations Development Programme





24 November 2015
Vienna, Austria

Type: Workshop

Partners: University of Natural Resources and Life Sciences, Vienna (BOKU) and the Technische Universität Dresden

Soil Pore Dynamics Kick-Off Workshop

The **Soil Pore Dynamics Research Project** (see page 12), was launched in a workshop with project partners. The research project, funded by the German Research Foundation (DFG) and the Austrian Science Foundation (FWF), aim to enhance knowledge on soil pore space changes under different land-use practices. Based on a better understanding of the involved processes, researchers from the abovementioned institutions intended to develop methods and models that are able to quantify the impact of an adaptive land-use on the soil hydraulic properties, on components of the water cycle (soil water capacity, groundwater recharge and water quality), and on the production of biomass. It is expected that the project will provide the basis for the development and assessment of sustainable land-use systems.



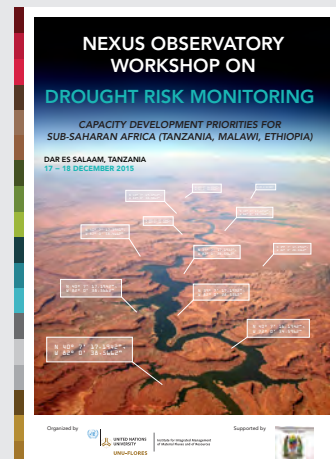
Drought Risk Monitoring: Capacity Development Priorities for Sub-Saharan Africa (Tanzania, Malawi, Ethiopia)

One of the most important steps in addressing drought is to understand the level of risk a region faces and the capacity it has to deal with it, in advance. Drought risk monitoring plays a crucial role in this process. This training workshop aimed to address the capacity requirements in the region for drought risk forecasting, monitoring and rapid response. The goal of the training workshop was to activate the African Consortium on the Nexus Approach through exchange of knowledge and expertise. Training topics included Remote Sensing, Scenario Analysis and the role of Indices in supporting evidence-based decision-making. The consortium is made up of officials from the Governments of Tanzania, Malawi and Ethiopia, who met with experts from UNU-FLORES, WDMI, the Technische Universität Dresden and the Leibniz Institute for Ecological Urban and Regional Development. The consortium emerged in February 2014 at a regional consultation in Dar es Salam organized by UNU-FLORES to introduce the Nexus Approach to the management of environmental resources. This consultation was attended by Member State representatives and researchers from seven African countries.

17–18 December 2015
Dar es Salam, Tanzania

Type: Nexus Observatory Training Workshop

Partners: Water Development Management Institute (WDMI) and Tanzanian Ministry of Water, Makele University and Government of the National State of Tigray of Water Resources Bureau of Ethiopia, Malawi Polytechnic and Ministry of Agriculture Irrigation and Water Development of Malawi





COMMUNITY OUTREACH

In alignment with the goals of UNU to interact more effectively with policy- and decision makers, as well as with the general public, UNU-FLORES engaged its local community in various activities in 2015. A few key examples are outlined below.

23 October 2015
Dresden, Germany

Type: Presentation at the 7th Umundu Festival in Dresden

'There is no free Lunch' - 'Boden arm, Wasser knapp, alles Müll?' 'Poor Soil, Scarce Water, All Rubbish?'

Inspired by the International Year of Soils, Dresden's diverse and active civil society network has decided to look deeper below the surface. The 7th Umundu Festival Dresden, has engaged with the topic 'Unter uns der Boden' (The Ground Beneath Our Feet) from 15 to 24 October 2015. As one of the leading research institutes on soil resources in Germany, UNU-FLORES was invited to participate in the opening symposium. Lulu Zhang and Anika Reetsch gave a presentation on the interrelationship between soil, water and waste and drew the connection between to food production, nutrient cycles, health, urbanization and climate change. Both scientists emphasized the importance of managing the three resources in an integrated manner.





UN Day Dresden

In honour of the 70th Anniversary of the United Nations (UN), Dresden celebrated UN Day for the second time on 23 October 2015 under the umbrella 'Time for Global Action – For People and for Planet.'

From 10 a.m. to 4 p.m. hundreds of visitors enjoyed a live stage programme and an interactive Sustainability Fair at 'UN Hands-On'. At the festival in the Atrium of the World Trade Center – Dresden, young and old alike learnt about the work and goals of the United Nations and its relevance in our daily lives. At the Sustainability Fair, UN entities joined forces with international, regional and local organizations and initiatives to raise awareness and educate visitors about their contribution to a sustainable society with games and workshops. The Info-Fair was complimented by a stage programme including a children's book reading, a Science Slam, a roundtable discussion with 75-year-old former UN employee Prof. Albrecht Horn and a Model UN Simulation. These highlights were accompanied by musical performances from Germany, India, Viet Nam, Africa and many other regions of the world. As an additional highlight for visitors young and old, the UNICEF Children's Tram 'Lottchen' offered free rides around Dresden, starting and ending at the WTC.

The festivities were rounded off with a 'UN Spotlight Talk' for 160 invited guests at the Kulturrathaus in Dresden. Visitors were welcomed to the event by Deputy Mayor for Environment and Urban Development Eva Jähnigen, Saxon State Minister for Gender Equality and Integration Petra Köpping and UNU-FLORES Director Reza Ardakanian. The welcoming remarks were followed by keynote speech entitled '**The Largest Solvable Problem in the World: Why Zero Hunger is the Basis for Sustainable Development**' by Ralf Südhoff, Head of the UN World Food Programme Office Berlin. He was joined on stage by Thilo Rensmann, Chair for International, European and Public Law at the TU Dresden, and Antonia Mertsching, representing the Entwicklungspolitisches Netzwerk Sachsen (Saxon Network for Development Policy), for a panel discussion on the Sustainable Development Goals and in particular the fight to end hunger. The evening event concluded with an award ceremony for the 16th Agenda 21 Prize Competition, organized by the Local Agenda 21 for Dresden Association and the Lions Club Dresden Agenda.

23 October 2015
Dresden, Germany

Type: Community Outreach Event

Partners: The City of Dresden, the German United Nations Association, the Technische Universität Dresden (TU Dresden), Unicef Local Working Group Dresden, the Local Agenda für Dresden 21 Association, the Lions Club Dresden Agenda 21 and the World Trade Center

Sponsors: DREWAG Stadtwerke Dresden GmbH, GELSENWASSER Dresden GmbH, Steuerkanzlei D. Müller-Greven and Interoffice



INDEX OF EVENTS

Title	Place	Date	Role of UNU-FLORES
Springer Writers Workshop	Dresden, Germany	06-Feb	Organizer
Joint Nexus Seminar with TUD	Dresden, Germany	17-Feb	Organizer
Training Workshop for Proposal Writing	Dresden, Germany	23-27 Feb	Contributor
Dresden Nexus Conference 2015	Dresden, Germany	25-27 Mar	Organizer
Nexus Seminar No. 2 - "How to improve crop water productivity and food security under limited water resources"	Dresden, Germany	20-Apr	Organizer
Joint Nexus Seminar Series	Dresden, Germany	18-May	Organizer
Contribution to the World Hydropower Congress	Beijing, China	20-May	Contributor
Expert Group Meeting of UN-DESA for the Global Sustainable Development Report: A systematic approach to science and technology issues for the attention of policy makers	Geneva, Switzerland	28-29 May	Participant
Director Attends High-Level International Conference on international Decade "Water for Life"	Dushanbe, Tajikistan	09-11 Jun	Participant
Nexus Seminar-Improved Environmental Management Needs	Dresden, Germany	22-Jun	Organizer
Workshop at the 6th Water Research Horizon Conference (WRHC)	Berlin, Germany	18-Jun	Session Convener
Nexus Seminar-The Importance of Nexus Tools for Integrated Management of Water, Soil and Waste	Dresden, Germany	20-Jul	Organizer
Workshop on Literature Management	Dresden, Germany	05-Aug	Organizer
Workshop on "Multifunctional land-use in dryland areas of China"	Beijing, China	05-06 Aug	Organizer
GWSP Sustainable Development Goals; A Water Perspective - Indicators, Interlinkages and Implementation	Bonn, Germany	17-18 Aug	Session Convener
Session Convener and UNU Booth at World Water Week	Stockholm, Sweden	23-Aug	Session Convener
UNU-FLORES Advisory Committee Meeting	Dresden, Germany	24-25 Sep	Organizer
Kick-off workshop of IDB Knowledge Visit - "Innovators and visionaries for sustainable infrastructure planning and operation"	Schönerlinde, Germany	29-Sep	Contributor
Presentation at World Water Tech North America	Toronto, Canada	08-Oct	Contributor
"There is no free Lunch", Presentation at the Umundu Festival	Dresden, Germany	17-Oct	Contributor


Title	Place	Date	Role of UNU-FLORES
Nexus Seminar No. 6 - Sustainable Resources Management Requires Integrated Monitoring	Dresden, Germany	19-Oct	Organizer
UN Day 2015 in Dresden	Dresden, Germany	23-Oct	Organizer
DNC2017 Conceptual Development Workshop	Dresden, Germany	03-Nov	Organizer
Presentation at SMWK	Dresden, Germany	13-Nov	Contributor
Nexus Seminar No. 7	Dresden, Germany	16-Nov	Organizer
Soil Pore Dynamics Workshop	Vienna, Austria	24-Nov	Participant
Participation in the DFG Priority Program Preparations	Stuttgart, Germany	01-Dec	Participant
Nexus Seminar No. 8	Dresden, Germany	07-Dec	Organizer
PhD Student's Participation in the Training on Statistical Downscaling of Global Climate Models	Virginia, USA	07-11 Dec	Participant
Participation in the AGU Fall Meeting, San Francisco	California, USA	14-18 Dec	Participant
School Visit at UNU-FLORES	Dresden, Germany	15-Dec	Organizer
Nexus Observatory Workshop on Drought Risk Monitoring - Capacity Development Priorities for Sub-Saharan Africa (Tanzania, Malawi, Ethiopia)	Dar es Salaam, Tanzania	17-18 Dec	Organizer

PUBLICATIONS




* Available for free download at flores.unu.edu/publications

PEER-REVIEWED ARTICLES




Cover	Title	Author(s)
	Different land management measures and climate change impacts on the runoff – A simple empirical method derived in a mesoscale catchment on the Loess Plateau <i>Journal of Arid Environments</i>	Lulu Zhang, Christian Podlasly, Karl-Heinz Feger, Yanhui Wang, Kai Schwärzel
	Impact of land-use changes on soil hydraulic properties of Calcaric Regosols on the Loess Plateau, NW China <i>Journal of Plant Nutrition and Soil Science</i>	Miaozi Yu, Lulu Zhang, Xuexuan Xu, Karl-Heinz Feger, Yanhui Wang, Wenzhao Liu, Kai Schwärzel
	Nexus Tools Platform: Web-based Comparison of Modelling Tools for Analysis of Water-Soil-Waste Nexus <i>Environmental Modelling & Software</i>	Theresa Mannschatz, Tobias Wolf, Stephan Hülsmann

Cover	Title	Author(s)
	<p>Effects of degradation on geotechnical properties of municipal solid waste from orchard hills landfill, USA <i>International Journal of Geosynthetics and Ground Engineering</i></p> <p>In bioreactor landfills, geotechnical properties of municipal solid waste (MSW) are believed to be affected by increased moisture content and accelerated biodegradation due to leachate recirculation; however, studies to quantify the changes in the MSW properties are scarce. This study quantifies the change in geotechnical properties of field MSW as a function of level of degradation. Overall this study showed that the engineering properties of field MSW are affected by degradation and these changes should be properly accounted in the analysis and design of bioreactor landfills involving leachate recirculation.</p>	<p>Krishna R. Reddy, Hiroshan Hettiarachchi, Rajiv K. Giri, Janardhanan Gangathulasi</p>



POLICY BRIEF & LECTURE SERIES*

Cover	Title	Author(s)
	<p>Policy Brief 2015/1: The Need for Water as Energy Storage for Better Integration of Renewables*</p> <p>This brief focuses on the need for storage of both water and energy, the potential for better operation of existing reservoirs to meet the varied needs and the possibilities of retrofitting existing reservoirs to optimize the water use for all sectors. Exploring how to make use of synergies and minimize trade-offs between competing water uses is a scientific task, but even more a question of governance. This policy brief aims to highlight some of the issues which need to be considered when developing water as energy storage for better integration of renewables.</p>	<p>Stephan Hülsmann, Atle Harby, Richard Taylor</p>
	<p>Science Brief for UNDESA Global Sustainable Development Report 2015: The UNU-FLORES Nexus Observatory and the Post-2015 Monitoring Agenda</p> <p>This brief highlights the services provided by the Nexus Observatory to facilitate the post-2015 debates on the monitoring of development, discussions about data, including the collection of novel data, and considerations of accountability related to governance processes and frameworks. The brief was selected for a public review process from several hundred publications that were submitted to United Nations Department for Economic and Social Affairs (UNDESA) and received the fourth highest number of votes from a pool of 187 submissions. It was included in the UN Global Sustainable Development Report (GSDR) 2015 which is presented at the High Level Political Forum (HLPF) on Sustainable Development.</p>	<p>Mathew Kurian, Kristin Meyer</p>
	<p>Lecture Series No. 2: Systems Thinking for Advancing a Nexus Approach to Water, Soil and Waste*</p> <p>In his Keynote Speech at the Dresden Nexus Conference 2015, Prof. Joseph Alcamo discussed how systems thinking can help manage the complexity of Nexus problems by giving a structured way of perceiving at the whole system. Demonstrating this complimentary relationship between the two approaches, he outlined concrete examples of systems techniques and systems concepts that can be beneficial for solving nexus problems.</p> <p>It can also be watched in full length on the Dresden Nexus Conference YouTube Playlist.</p>	<p>Prof. Joseph Alcamo</p>

WORKING PAPERS*

Cover	Title	Author(s)
	<p>Working Paper No. 5 – Bridging the Water and Food Gap: The Role of the Water-Energy-Food Nexus*</p> <p>The Water-Soil-Waste Nexus provides a framework for the main factors in food production. This framework, which facilitates the assessment of how policies and activities influence agricultural productivity, is important for all levels of the agricultural industry. This paper explores the linkages between water, soil, and waste in the context of climate and climate change in order to clarify needs for scientific information and observational data. Climate affects water availability, soil integrity and the production and movement of waste material. As the climate changes, its influences on the Nexus will also change and new strategies for coping with climate change will therefore be necessary.</p>	Richard Lawford
	<p>Working Paper No. 4 - Strategic Opportunities for Hydropower within the Water-Energy-Food Nexus in Mozambique*</p> <p>Mozambique is a country characterized by considerable development challenges, a high dependence on and large unexploited capacities for hydropower for energy production. As such, it is a useful case study to explore strategic opportunities for hydropower development within the Water-Energy-Food Nexus. This paper demonstrates that future hydropower development must be nexus-oriented, thus considering the strong interrelations without water uses, its strategic positioning among other renewable energy sources as well as environmental and socioeconomic dimensions and governance.</p>	Andrew Bullock, Stephan Hülsmann
	<p>Working Paper No. 3 - Adapting to Climate Change: The Role of Science and Data in Responding to Opportunities and Challenges in the Water-Soil-Waste Nexus*</p> <p>The paper introduces global resources challenges and their risks and shifts in what society defines as global securities. Looking at the Water-Energy-Food Nexus as a resource integration platform, it highlights the manner in which green water should be viewed as a resource base for food security. Nexus hotspot applications are introduced to highlight the use of the nexus as a holistic platform to address water, energy, and food resources. The paper closes with the presentation of recommendations for next steps.</p>	Rabi H. Mohtar, Amjad T. Assi, Bassel T. Daher

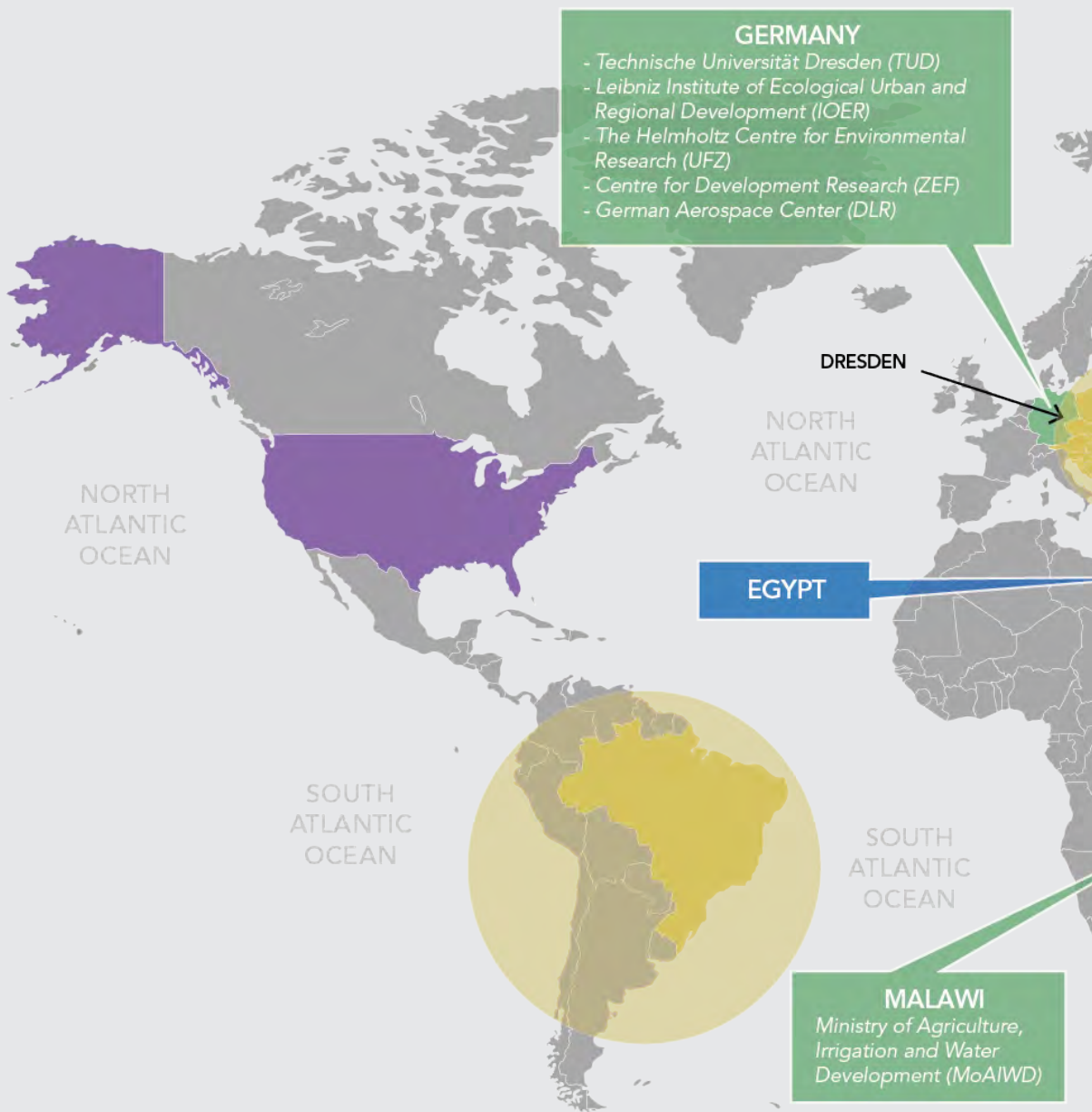
REPORTS*

Cover	Title	Author(s)
	<p>State of the Nexus Approach 2015: Management of Environmental Resources (DNC2015 Report)*</p> <p>The first in a series, this report offers the nexus community a cross-section of the most recent and innovative nexus-oriented initiatives in the field of sustainable management of environmental resources from the academic and public sectors. By summarizing the content presented at the Dresden Nexus Conference, it is envisioned as a biennial publication that will provide updates on the developments in the research and political sectors in this regard.</p>	
	<p>UNU-FLORES Annual Report 2014 'Rooting the Nexus'*</p>	

IN THE PRESS

These articles can be viewed online at Ourworld.unu.edu

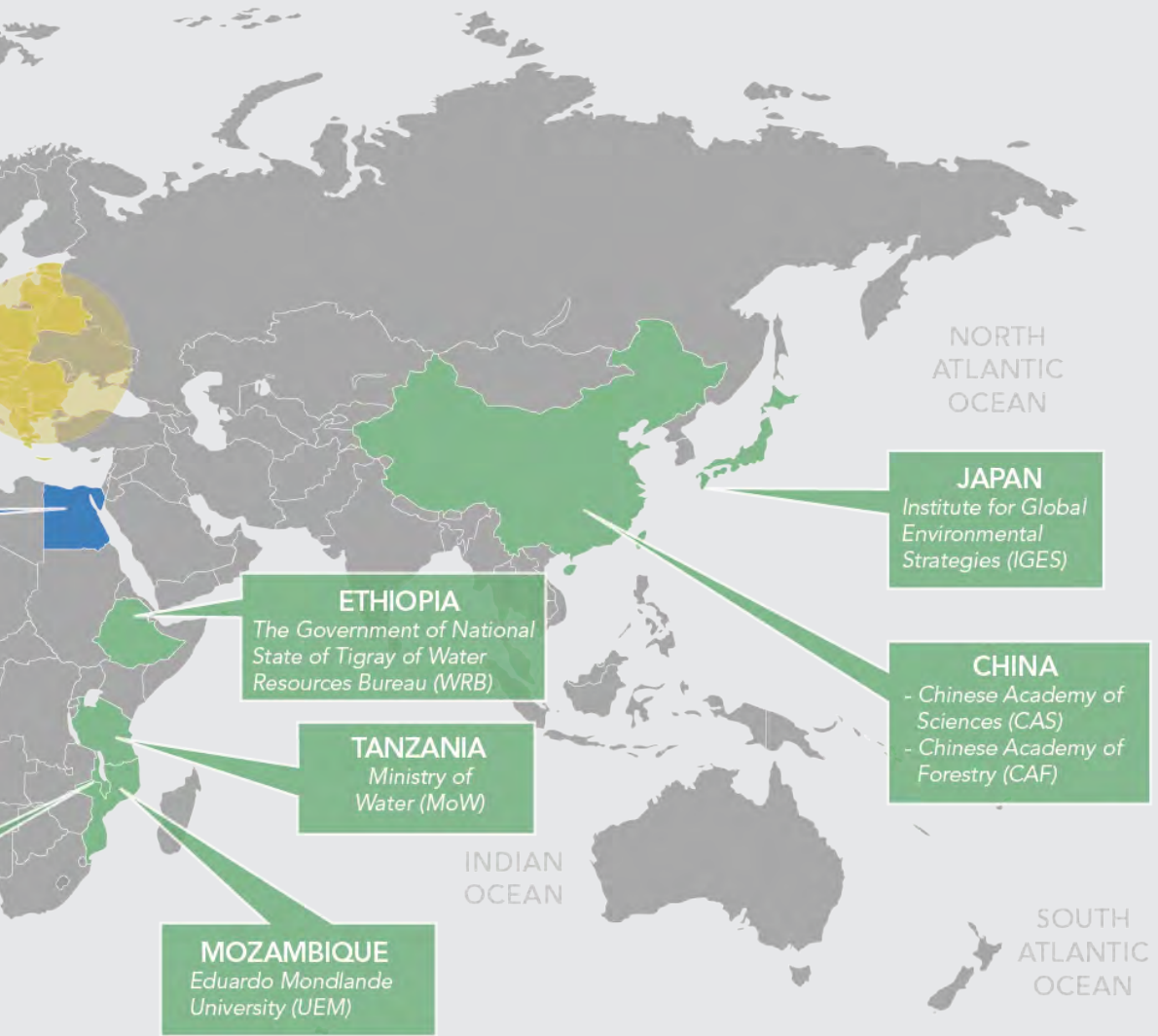
Cover	Title	Author(s)
	<p>North-west China Water Supply Impacted by Vegetation Restoration <i>In Our World on 26 May 2015</i></p> <p>This article summarized the research findings of the article published by UNU-FLORES scholars Lulu Zhang and Kai Schwärzel. It draws attention to the potential consequences of large vegetation restoration projects on water supply in NW China.</p>	Lulu Zhang
	<p>Modelling Tools for Dealing with Environmental Complexity <i>In Our World on 4 September 2015</i></p> <p>Following the launch of the beta version of the Nexus Tools Platform (see page 9) this article was published to explain the motivation behind and the approach taken to building the tool. It discusses the necessity but also the complexity of applying of Nexus Approach to resource management and the importance of modelling tools for dealing with this complexity.</p>	Theresa Mannschatz, Kristin Meyer



NETWORKING

Building and sustaining strategic partnerships is fundamental for UNU-FLORES in its role both as a think-tank for the UN System and Member State. The Institute has developed a vibrant and diverse network both locally and internationally that together covers numerous aspects of the Nexus Approach to managing water, soil and waste. The Institute takes a client-perspective, asking what a Member State would hope to receive when aiming at managing its environmental resources in a sustainable way.

- Established partnerships
- To be finalized / under discussion
- Scientific research proposal collaboration
- Developing partnerships
- Developing regional partnerships



In 2015 UNU-FLORES entered into or began negotiations for several cooperation agreements with international organizations and research institutions. The Institute signed agreements with eight partners from five countries. This map illustrates UNU-FLORES collaborative partnerships with Governments and local institutions in UN Member States. In addition, UNU-FLORES collaborates with various international partners.

COOPERATION AGREEMENTS REACHED IN 2015

The following table outlines the cooperation agreements that UNU-FLORES entered into or began negotiating in 2015.

On the Development of a Book on Multifunctional Land-Use Systems in China

Partners: Institute of Forest Ecology, Environment and Protection (IFEEP) of the Chinese Academy of Forestry (CAF), the Institute of Geographic Sciences and Natural Resources Research (IGSNRR) of the Chinese Academy of Sciences (CAS) and the Institute of Soil and Water Conservation (ISWC) of the Chinese Academy of Sciences (CAS) and Ministry of Water Resources (MWR)

The parties agree to cooperate in research, the promotion of multifunctional land use, as well as the transfer of knowledge and identification of the knowledge gap with a focus on transdisciplinary understanding, cross-sectoral coordination and technical and political support at different scales under environment change in policy making through development of appropriate frameworks and methods.

On the Establishment of an African Research Consortium on Drought Risk Monitoring

Partners: Government of the National State of Tigray of Water Resources Bureau, Republic of Ethiopia; the Ministry of Agriculture Irrigation and Water Development of the Republic of Malawi and Ministry of Water of the United Republic of Tanzania

Three cooperation agreements on the Africa Research Consortium on Drought Risk Monitoring were signed. The agreements will serve as legal basis for the cooperation with the expected outcomes of: (a) Strengthen capacity for drought risk forecasting, monitoring and rapid response in Africa based on partnerships for information and knowledge sharing involving public and private sectors and community groups; (b) Mainstream use of remote sensing and data visualization techniques with government ministries and departments in Africa; and (c) Develop partnerships for periodic skills upgrade through knowledge sharing and refresher courses involving research and training institutes/think tanks in Africa. The mutual activities resulting from these agreements are outlined on page 10 and 35.

With the Institute of Geographic Sciences and Natural Resources of the Chinese Academy of Sciences

Partner: Institute of Geographic Sciences and Natural Resources of the Chinese Academy of Sciences

The main aim of the agreement is to increase the direct scientific exchange between the two Institutes. To promote young scientists and the exchange of scientific and technical information, the two institutes have agreed to develop a staff exchange programme aligned with the international activities of the partners. They also strive to increase cooperation in knowledge transfer and activities. Finally, UNU-FLORES and CAS-IGSNRR have agreed to develop case-based research in a global context, jointly publish books and papers, and organizing academic meetings and conferences.

Memorandum of Understanding on Developing Monitoring Methodologies for SDG Target 6.3

Partner: UN-Habitat

With this Memorandum of Understanding UNU-FLORES and UN-Habitat agreed to collaborate on developing, testing and evaluating the Sustainable Development Goals (SDGs) "monitoring methodologies" with reference to SDG Goal 6, "ensure availability and sustainable management to water and sanitation for all", in particular, Target 6.3.

On Collaboration between UNU-FLORES and the Center for Environmental Systems Research

Partner: Center for Environmental Systems Research (CESR)

Executive Director Prof. Joseph Alcamo from the Center for Environmental Systems Research (CESR) and Professor of Environmental Systems Science and Engineering at University of Kassel, Germany, visited UNU-FLORES on 15 October 2015 to lay the groundwork for a cooperation agreement. The agreement will cover various opportunities for joint research and capacity building activities and potential mutual outputs. These will address the specific niche emerging from the supplementary expertise of all involved partners and focus on the interfaces of resources and sectors, partly in the frame on ongoing initiatives of UNU-FLORES, such as the Nexus Tools Platform and the Nexus Observatory. The Cooperation Agreement will be officially signed in 2016.

ABOUT

THE INSTITUTE



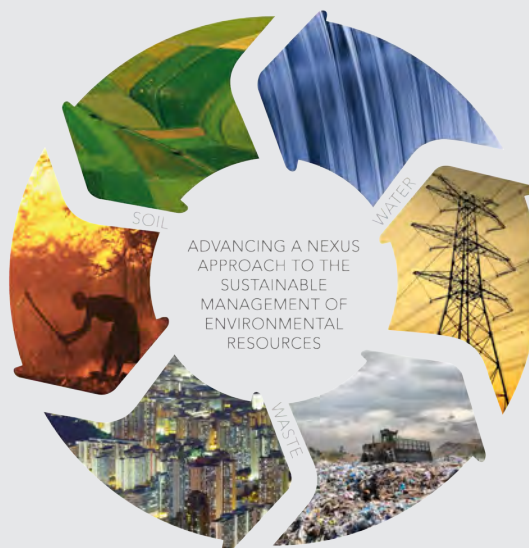
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ADMINISTRATIVE DEVELOPMENTS IN 2015

This year saw many important administrative developments at UNU-FLORES. The main administrative goals in 2015 were to continually improve the effective and efficient business model, as well as ensure and promote a safe and empowering work environment for its employees.

The year began with the conclusion of an **internal audit conducted by the UN Office of Internal Oversight** (OIOS). Over the course of four months, the auditors reviewed and appraised UNU-FLORES activities. The auditors ultimately made three recommendations. One of these recommendations was addressed UNU-FLORES by introducing the **Enterprise Risk Management (ERM)** Policy. ERM is a UNU-wide process of structured, integrated and systematic identification, analysis, evaluation, treatment and monitoring of risks towards the achievement of the University's mandate. The exercise was concluded and the Risk Register and Universe were endorsed by the AC and subsequently submitted to the auditors. By the end of 2015, UNU-FLORES has closed two out of three of the recommendations from the auditors.

Convinced that effective and efficient business models must be complemented by secure and empowering work environment, UNU-FLORES launched a **Learning Management System (LMS)** in cooperation with UNFCCC to offer over 2000 online courses, tutorials and videos for the purpose of staff development. The LMS includes also the UN mandatory training courses.





Vision

UNU-FLORES acts at the forefront of initiatives promoting a Nexus Approach to the sustainable management of water, soil and waste. The Institute supports the overall mission of UNU as a think tank for the United Nations and its member states, in particular addressing the needs of developing countries and emerging economies. In this role, UNU-FLORES aspires to become an internationally recognized hub and intellectual focal point promoting integrated management strategies.

Additionally, UNU-FLORES engages in policy-relevant research, postgraduate education and capacity development in a broad sense. The Institute attracts high-calibre students for postgraduate study and research programmes in cooperation with other research institutions. Furthermore, UNU-FLORES builds the capacity of future leaders in the area of environmental resources management and develops innovative concepts for target- and region-specific knowledge transfer.

Mission

“Advancing the Nexus Approach to the sustainable management of environmental resources”

In line with the general mission of UNU to foster sustainable development, UNU-FLORES aims to contribute to the resolution of pressing challenges to the sustainable use and integrated management of environmental resources, such as water, soil and waste. UNU-FLORES strives to advance the development of integrated management strategies that take into consideration the impact of global change on the sustainable use of the environmental resources. To this end, the Institute engages in research, teaching, advanced training, capacity development and dissemination of knowledge.

ADVISORY COMMITTEE

The international Advisory Committee of UNU-FLORES convenes once a year in Dresden to hear reports from the Director on activities of the Institute and provide guidance and advice. The Committee comprises a diverse group of six renowned scientists, who are introduced below.



Advisory Committee Meeting



State Secretary (SMWK) receives Advisory Committee and BMBF representative



Advisory Committee visits Nexus Lab established by TU Dresden and UNU-FLORES



Chair: Prof. Rattan Lal (USA)



Rattan Lal is a Distinguished University Professor of Soil Science and Director of the Carbon Management & Sequestration Center at the Ohio State University.



Prof. Karl-Heinz Feger (Germany)



Karl-Heinz Feger serves as Dean of the Faculty of Environmental Sciences at TU Dresden. He is director of the Institute of Soil Science and Site Ecology of TU Dresden.



Prof. Ana Mondjana (Mozambique)



Ana Maria da Graça Mondjana is Vice-Rector for Academic Affairs since May 2011 and is Assistant Professor at the Faculty of Agronomy and Forestry Engineering (FAEF) at Eduardo Mondlane University (UEM).



Prof. Adelaide Cassia Nardocci (Brazil)



Adelaide C. Nardocci is professor of environmental risk assessment and risk management in the Department of Environmental Health at the School of Public Health, University of São Paulo since 2001.



Prof. Wim van Vierssen (the Netherlands)

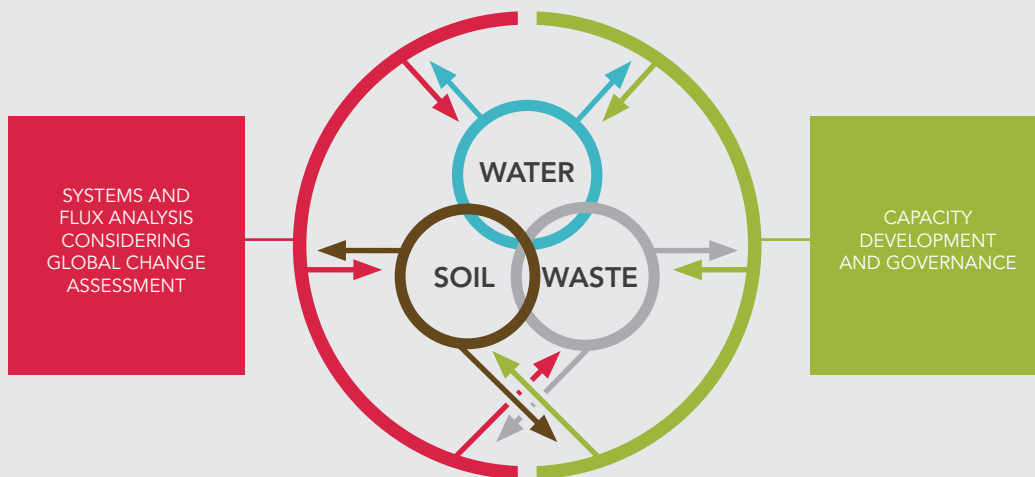


Wim van Vierssen is CEO of KWR Watercycle Research Institute, the research institute of the Dutch Drinking Water Utilities. He is Rathenau Professor at Delft University of Technology on Science System Assessment of Water-Related Research.

ORGANIZATIONAL STRUCTURE

In developing its functional structure, UNU-FLORES has positioned itself well to consolidate the scientific foundation of the Nexus Approach. The institutional arrangement is a direct response to critical knowledge gaps relating to integrated management of the environmental resources water, soil and waste. The organization of UNU-FLORES into five academic units – three core scientific units (Water Resources Management (WRM), Waste Management (WM) and Soil and Land Use Management (SLM)) supported by two cross-cutting units (System Flux Analysis Considering Global Change Assessment (SFA) and Capacity Development and Governance (CDG)) – supports the think tank function of the Institute. All scientific units are supported by the operational support units, which consist of the Office of the Director, Finance and Administration, Communications and Advocacy, and Computing and ICT.

Functional Structure of Scientific Units



Functional Structure of Operational Support Units

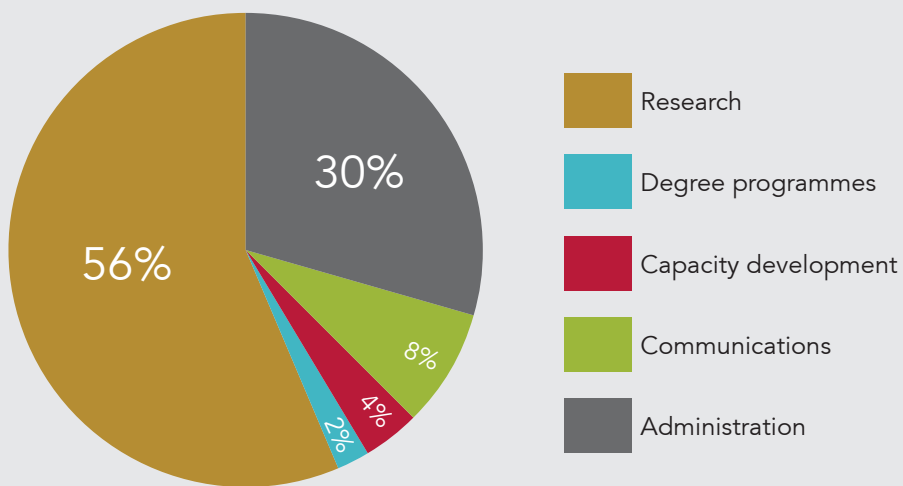


FINANCES

UNU-FLORES is financed by the Federal Republic of Germany, both on the Federal and State levels represented by the Federal Ministry of Education and Research (BMBF) and the State Ministry for Higher Education, Research and the Arts (SWMK) of the Free State of Saxony. The BMBF and SWMK committed EUR 1,051,000 per year each to the start-up phase of UNU-FLORES. The BMBF contributed the full amount per year in-cash, while EUR 743,000 of SWMK's contribution was in-cash and the rest in-kind through the Technische Universität Dresden.

UNU-FLORES implements the highest standard on transparency and integrity and follows strictly the financial and procurement rules and regulations of the United Nations. UNU-FLORES is also striving to attract and welcome more external donors to support the implementation of research activities of the Institute globally. In 2015 UNU-FLORES successfully secured several third-party funds for three research projects, as well as a two event organization.

Distribution of Expenditures



OUR TEAM

Director – Prof. Dr. Reza Ardakanian (Iran)

Academic Units

- › Soil and Land-use Management
 - › Dr. Kai Schwärzel (Germany)
Academic Officer
 - › Ms. Lulu Zhang (China)
Research Assistant
 - › Ms. Parvathy Chandrasekhar (India)
PhD Fellow
 - › Mr. Mahesh Jampani (India)
PhD Fellow
 - › Mr. Janis Kreiselmeier (Germany)
PhD Fellow
 - › Ms. Anika Reetsch (Germany)
PhD Fellow
- › Waste Management
 - › Dr. Hiroshan Hettiarachchi (USA)
Academic Officer
 - › Ms. Thuy Hoang (Viet Nam)
PhD Fellow
- › Systems and Flux Analysis
 - › Dr. Stephan Hülsmann (Germany)
Academic Officer
 - › Ms. Ana Andreu Mendez (Spain)
Research Assistant
 - › Mr. Solomon Gebrechorkos (Ethiopia)
PhD Fellow
- › Capacity Development and Governance
 - › Dr. Mathew Kurian (India)
Academic Officer
 - › Ms. Kristin Meyer (Germany)
Research Assistant
 - › Ms. Sekela Twisa (Tanzania)
PhD Fellow

Operational Support Units

- › Office of the Director
 - › Mr. Benjamin Zhu (China)
Associate Executive Officer
 - › Mr. Mohamad Haroun (Lebanon)
Security and Front Desk Attendant
 - › Ms. Luisa Arndt (Germany)
Programme Support Assistant
- › Finance and Administration
 - › Mr. Rafael Hernandez (Germany)
Finance and Administrative Officer
- › Communications and Advocacy
 - › Ms. Rachel Shindelar (USA)
Communications and Advocacy Associate
 - › Ms. Claudia Matthias (Germany)
Graphic & Web Design Assistant
- › Computing and ICT
 - › Mr. Tobias Wolf (Germany)
ICT Associate

During 2015 UNU-FLORES was supported by a team of motivated and competent interns.

- › Ms. Beatriz Bertani (Brazil)
- › Ms. Nicole Bustamante (USA)
- › Ms. Natasha Chan Szejer (Brazil)
- › Mr. Stoyan Dimitrov (Bulgaria)
- › Ms. Irina Garcia Caceres (Honduras)
- › Ms. Eunyoung Lee (Korea)
- › Ms. Hyo-Sun Lee (Korea)
- › Mr. Nurideen Osman Mohammed (Ghana)
- › Ms. Abtin Shahrokh (Iran)

BRANCHES

THE WAY FORWARD



Cultivating the growth of young seedlings requires both structured and disciplined habits, as well as responsive and flexible insight. Having developed a solid institutional framework and outlined its long-term goals in the previous years, in 2015 UNU-FLORES demonstrated the necessary mix of focus and flexibility to advance its academic research agenda and further build a strong network of valuable partners. These undertakings resulted in numerous important achievements that already are and will continue providing essential strategies for advancing the sustainable management of environmental resources. And thus, is contributing to efforts to resolve the pressing global problems of human survival, development and welfare that are the concern of United Nations, its People and Member States – as mandated by the overarching mission of the United Nations University

Having established a solid trunk, in 2016 UNU-FLORES will focus on nurturing new and strong branches. Specifically, the fourth year of business will be about mobilizing partners and funding for new policy-relevant research and innovative capacity development tools in response to the needs of decision makers and implementers. This will be achieved on the one hand through increasing the scope of third-party funded academic activities and, on the other hand, through activating and increasing strategic collaborative partnerships. A few key activities are outlined below.

The core of the Institute's efforts will be focused on advancing its scientifically rigorous research and increasing its impact. This will be achieved by securing funding for policy-relevant research and ground-breaking capacity development tools. Several innovative research proposals that will contribute significantly to scientific debates on the Nexus Approach and provide policy-relevant recommendations are already in development with several partners. To this end, UNU-FLORES will welcome several Visiting Scholars. While some Scholars are coming in the framework of academic exchange programmes outlined in various cooperation agreements, others have secured third-party funding specifically to conduct research at UNU-FLORES. All Visiting Scholars will be involved directly in the activities of the scientific units and contribute to the stimulating offer of academic seminars and publications at the Institute.

In addition, a number of activities are envisioned in 2016 in connection with the various cooperation agreements UNU-FLORES has with leading institutions around the world. The long-term goal of establishing more institutionalized activities in the regions specific to its research, will also receive considerable attention in 2016. All partners are committed to finalizing the negotiations on establishing an Operating Unit in Mozambique. Adding a new branch to its activities, UNU-FLORES will begin establishing closer relations with partners in Eastern Europe and explore possibilities for expanding its activities into that region. Many of the activities with these partners will be instrumental in the success of the Dresden Nexus Conference 2017. In 2016, the Institute will be busy performing the necessary conceptual and organizational work that will set the foundation for a successful and fruitful event.

These are only a few of the many activities planned in 2016 to serve the overarching goal of extending and upscaling a Nexus Approach to resource management and providing decision makers pragmatic tools for implementing region-specific strategies. The focus and devotion of UNU-FLORES to cultivating its seedlings in 2015 has resulted in the development of budding young trees. Now it is time for their branches to grow.

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page 22: R.Vigh/IOER (1st & 2nd row, right)

page 28: Saxon State Ministry for Higher Education (2nd from below)

page 29: UN/www.un.org/sustainabledevelopment

page 53: Karl-Heinz Feger, Rattan Lal, Prof. Ana Mondjana, Adelaide Cassia Nardocci, Wim van Vierssen



**UNITED NATIONS
UNIVERSITY**

UNU-FLORES

The United Nations University Institute for Integrated Management of Material Fluxes and of Resources (UNU-FLORES) was established in Dresden, Germany in 2012 with the support of the Federal Ministry of Education and Research (BMBF) and the Ministry for Higher Education, Research and the Arts (SMWK) of the Free State of Saxony, Germany. As part of the United Nations University (UNU), the Institute helps build a bridge between the academic world and the United Nations. UNU encompasses 13 research and training institutes and programmes located in 12 countries around the world. UNU as a whole aims to develop sustainable solutions for pressing global problems of human survival and development.

UNU-FLORES develops strategies to resolve pressing challenges in the area of sustainable use and integrated management of environmental resources such as soil, water and waste. Focusing on the needs of the UN and its member states, particularly developing countries and emerging economies, the Institute engages in research, capacity development, advanced teaching and training as well as dissemination of knowledge. In all activities, UNU-FLORES advances a Nexus Approach to the sustainable management of environmental resources.

Find more information under: flores.unu.edu

ADVANCING A NEXUS APPROACH TO THE SUSTAINABLE MANAGEMENT OF ENVIRONMENTAL RESOURCES

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