



UNITED NATIONS
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UNU-INWEH

Institute for Water,
Environment and Health

ANNUAL REPORT 2013



The global water crisis has many facets, each of which grows more serious each year, and meeting the MDG targets remains a challenge. The coastal oceans in particular suffer via climate change and local degradation. Freshwater ecosystems are challenged by an altered hydrographic cycle and the growing extractions for agriculture, industry, and human use, while drylands agriculture faces growing water challenges. In many regions, the provisioning of potable water and adequate sanitation are undiminished challenges. The perilous state of the oceans, which still provide some 16% of animal protein food for people, is now recognized by IPCC, the World Bank, and the World Economic Forum. A holistic ecosystem approach, encompassing physical, economic, socio-political, and cultural factors is required if we are to address the water crisis effectively.

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To learn more about these initiatives, visit us at:
www.inweh.unu.edu

About UNU-INWEH

The UN Think Tank on Water

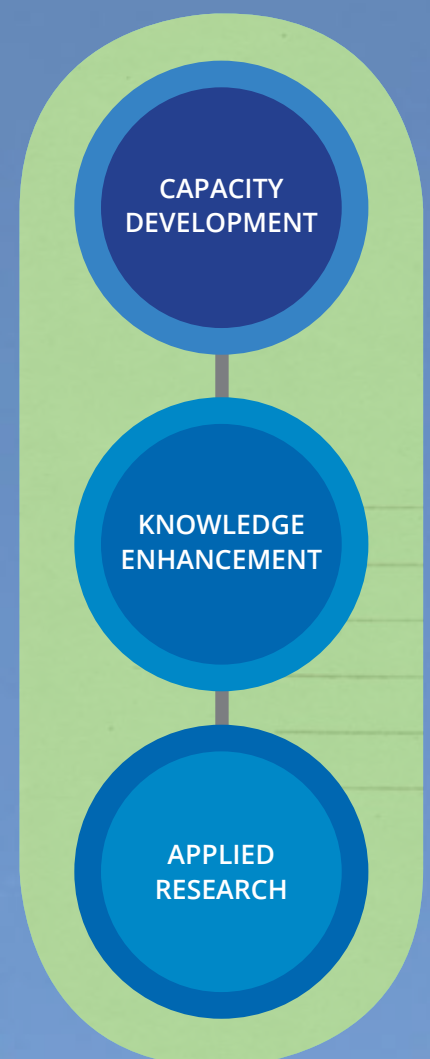
Our vision: UNU-INWEH strives to ensure a world free of water problems where human and environmental health and environmental security is assured for all.

Mission: UNU-INWEH's mission is to contribute to efforts aimed at resolving pressing regional and global water challenges that are of concern to the United Nations, its Member States, and their people, through targeted research, capacity development, knowledge enhancement and transfer, and public outreach.

Under statutes approved by the United Nations University (UNU) Council, UNU-INWEH was established as a public service agency and as an institute of the UNU in 1996. Its operations are secured through long-term host-country and core-funding agreements with the Government of Canada. Located in the McMaster Innovation Park in Hamilton, Ontario, its facilities are provided in partnership with McMaster University.

The UNU-INWEH operating network is comprised of:

1. The office of UNU-INWEH, staffed with experienced water scientists, social scientist, economists, and experienced managers who provide leadership and scientific, administrative, logistical, and managerial coordination.
2. An informal, collaborative network of world-class experts from different disciplines and countries, and drawn from academia, governments, the UN system, research institutes, NGOs, and the private sector.
3. A partner network of cooperating institutions worldwide that contributes to UNU-INWEH's programme of work through the provision of expertise, co-sponsoring of initiatives, and/or sharing of experience and local networks. Formal agreements with over 40 organizations are currently in place.



Our Comparative Advantage

Covering the Whole Spectrum of Water Issues



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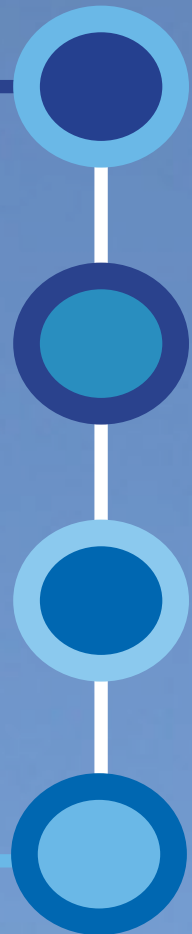
As a think tank on water that covers the whole spectrum of water issues, UNU-INWEH offers services on a worldwide scale, occupies a unique niche in the UN system, and has a number of comparative advantages over similar institutes operating at regional and international scales.

As part of a UN organization, UNU-INWEH is connected to various processes within the UN system, which allows it to provide policy guidance on matters of international importance. A key example is the UNU-INWEH Director elected to serve as the Chair from 2010-2012 for UN-Water - a group of 31 UN organizations working on water and sanitation issues globally.

UN status affords UNU-INWEH unparalleled access to national governments and related policymaking processes. At the same time it receives preferential and often exclusive access to financial and human resources available within the UN system.

UNU-INWEH's activities also cut across a broad range of geographical scales. UNU-INWEH is one of the very few institutions that can run pilot studies with small communities, and then synthesise findings to impact policy formulation at national and international scales.

It is important to point out that UNU-INWEH operates within UNU's responsive administrative management - one which provides efficient and timely services - while maintaining the full range of rules and regulations promulgated by the UN system. With an administrative support group that works closely with the project implementation teams, it offers flexible and efficient implementation of projects and initiatives.



Director's Summary of 2013

The Year of Water Cooperation



Dr. Zafar Adeel, Director



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UNU-INWEH

The year 2013 was a watershed year for UNU-INWEH in terms of our engagement in and contribution to dialogues of global importance. The international community, particularly the one within the United Nations system, has been undertaking an intense debate on the future of economic, social, and human development. The trigger for this discourse is the fact that the Millennium Development Goals (MDGs) will be maturing in 2015, and a new paradigm is needed for post-2015 development and a set of Sustainable Development Goals (SDGs). There are four specific areas to which UNU-INWEH has contributed in 2013, in accordance with our function as the UN Think Tank on Water.

First, we have been contributing directly to the post-2015 dialogue; specifically, providing evidence for how SDGs related to water can be formulated, what resources will be needed for implementing actions to meet such SDGs, and how might we monitor progress over time. The work we have undertaken with the UN Office of Sustainable Development (UNOSD) and the Stockholm Environment Institute (SEI) really stands out, as it is one of the first analyses that attempts to put a 'sticker price' on accomplishing water-related SDGs.

Second, we are part of global consortium that is evaluating the Economics of Land Degradation (ELD) and the rewards of investing in sustainable land management. Funded through the European Union (EU), the Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), and the Korea Forest Service, with UNU-INWEH as the scientific lead in the process, we are analyzing the global economics associated with sustainable land management, which is a major weapon in neutralizing land degradation and desertification. Through the provision of a complete economic valuation toolbox, we believe that this analysis, which will be conducted at the national and regional level for selected countries, is crucial to informing the post-2015 development agenda as well as UN member states, in understanding how diminished land productivity could affect their food and livelihood security.

Third, we are directly engaged in the UN system's efforts to meet the sanitation-related MDG target, which have so far eluded national governments as well as the international community. Led by Secretary General Ban Ki Moon and Deputy Secretary General Jan Eliasson, the UN Community made a commitment to

create a maximum push to close the gap between the MDG, Goal 7 Targets for Sanitation, and the reality of sanitation provisioning on the ground. As the coordinator of a UN-Water task force and together with UN Habitat, we have been engaged in an advocacy campaign to meet sanitation related MDG target, including the eventual eradication of open defecation.

Fourth, we are leading the UN-wide dialogue on 'water security'; we lead a UN-Water Task Force on water security together with the UN Economic and Social Commission for Asia and the Pacific (UNESCAP). A key accomplishment in 2013 was to bring together 15 organizations to develop an analytical brief on the topic. This work has triggered a UN-wide dialogue on this important topic that is linked to the SDG-formulation debate. This September, UN-Water asked the Task Force to undertake a series of regional expert consultations to better capture regional water security perspectives and concerns.

In addition to these four areas of achievement, UNU-INWEH has also led some groundbreaking work on safe use of wastewater and on management of coastal resources in the Caribbean region. In partnership with the Food and Agricultural Organization (FAO), UN Environment Programme (UNEP), World Health Organization (WHO), UN Habitat, and UN-Water Decade Programme on Capacity Development (UNW-DPC), UNU-INWEH concluded a project in which regional consultations covered about 70 countries concerned with safe use of wastewater. We are now in the process of formulating a global initiative to respond to the needs identified in that study. In the latter case, we are part of a team of organizations put together by UNEP and the Global Environment Facility (GEF).

Our work in 2013 has also set us up for further engagement in 2014, and beyond. The work on ELD, water security, and advocacy for sanitation MDGs will continue unabated. We anticipate that our work on the evidence base for water-related SDGs will trigger requests for further elaboration of concepts at both the regional and national levels.

In response to these emerging areas of policy and research, UNU-INWEH underwent an intensive dialogue about its programmatic structure. We agreed to frame our work through two integrated, cross-linked programmes: *Water and Human Development* and *Water and Ecosystems*. These new programmes will encompass the existing activities and projects, while looking for opportunities for greater convergence and coherence.



Dr. Zafar Adeel, Director
United Nations University
Institute of Water, Environment and Health



Active Partnerships

With UNU-INWEH Projects

1. Food and Agriculture Organization of the United Nations (FAO)

Collaborated on a joint UN-Water project on safe use of wastewater.

2. Global Environment Facility (GEF)

Engaged in ongoing initiatives with GEF International Waters: Learning Exchange and Research Network (GEF IW: Learn), which is a portfolio-wide approach for creating and sharing knowledge. Recent activities have included publication of two special journal issues that highlight scientific work undertaken with GEF funding.

3. United Nations Convention to Combat Desertification (UNCCD)

Providing policy support and guidance to the UNCCD Secretariat; how to provide scientific advice, the place of land in the SDGs.

4. United Nations Department of Economic and Social Affairs (UN-DESA)

Developing a study on water-related SDGs.

5. United Nations Economic and Social Commission for Asia and the Pacific (UNESCAP)

Jointly lead UN-Water Task Force on Water Security.

6. United Nations Educational, Scientific, and Cultural Organization (UNESCO)

Collaborating on the international project: Sustainable Management of Marginal Drylands (SUMAMAD).

7. United Nations Environmental Programme (UNEP)

Collaborating on the joint UN-Water project on safe use of wastewater.

8. United Nations Industrial Development Organization (UNIDO)

Co-organizing of 2014 World Water Day (to be

celebrated at UNU Headquarters, Tokyo, on 21 March 2014).

9. World Health Organization (WHO)

Collaborating on the joint UN-Water project on safe use of wastewater.

10. [IWMI] Consultative Group on International Agricultural Research (CGIAR)

Collaborating on the joint UN-Water project on safe use of wastewater.

11. International Center for Agricultural Research in the Dry Areas (ICARDA)

Collaborating on the joint UN-Water project on safe use of wastewater.

12. The Organization for Security and Co-operation in Europe (OSCE)

Special Focus Event “Addressing Water Security as Part of the Global Development Agenda” as part of the High-Level International Conference on Water Cooperation, organised by the Government of Tajikistan.

13. African Centre for Climate and Earth Systems Science (ACCESS), Kenya

Regional centre for the Water Learning Centre (WLC).

14. Annamalai University, India

Coordinating a training Course on Mangroves Biodiversity.

15. Arabian Gulf University, Bahrain

Regional centre for the WLC.

16. Arid Land Research Centre, Tottori University (TU), Japan

Coordinating the Integrated Drylands Management Masters Programme.

17. Asian Institute of Technology, Thailand

Regional centre for the WLC.

18. Canadian Water Network

Collaborating on the Hydrosanitas project

19. Cold and Arid Regions Environmental & Engineering Research Institute (CAREERI) of the Chinese Academy of Sciences (CAS), China

Coordinating the Integrated Drylands Management Masters Programme.

20. Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ)

Collaborating with the Economics for Land Degradation Initiative (ELD).

21. Flemming College

Collaborating on the Hydrosanitas project.

22. Institut des Régions Arides (IRA), Tunisia

Coordinating the Integrated Drylands Management Masters Programme.

23. Institut National Agronomique de Tunisie (INAT), Tunisia

Coordinating the Integrated Drylands Management Masters Programme.

24. International Center for Advanced Mediterranean Agronomic Studies – Mediterranean Agronomic Institute, (CIHEAM-Bari), Italy

Coordinating the Integrated Drylands Management Masters Programme.

25. Kenya Medical Research Institute

Collaborating on the Capacity for Change project.

26. McMaster University

Collaborating on the Capacity for Change, HydroSanitas, and WADI projects.

27. National Environment and Planning Agency (NEPA), Jamaica

Building Coastal Management in the Caribbean.

28. Ontario Clean Water Agency (OCWA)

Collaborating on the Hydrosanitas project.

29. The Center for Development Research (ZEF), University of Bonn

Collaborating with the Economics for Land Degradation Initiative.

30. The Global Mechanism of the UNCCD (GM)

Collaborating with the Economics for Land Degradation Initiative.

31. The InterAction Council (IAC)

Producing research on water security.

32. The Nature Conservancy

Coordinating and collaborating on the e-Learning programme on mangroves biodiversity.

33. Uganda Christian University, Uganda

Collaborating on the Waste to Wealth and Capacity for Change projects.

34. Uganda Water and Sanitation Network (UWASNET)

Collaborating on the Waste to Wealth project.

35. University of Waterloo

Collaborating on the Capacity for Change project.

36. Walter & Duncan Gordon Foundation, Canada

Capacity for change research on Mackenzie River basin in Canada.

37. Water Center for the Humid Tropics of Latin America and the Caribbean (CATHALAC)

Regional centre for the WLC.



Programmes of UNU-INWEH

Coastal Zone Ecosystems

Coastal Zone Ecosystems

Continuing human migration and population growth mean that 40% of humans now live within 50 km of a coastline, and the average population density in coastal areas is over twice the world average. Coastal environments are of growing importance, yet anthropogenic impacts on coastal ecosystems are also growing. The aim of this programme is to improve the management of these complex systems by addressing the gaps in our understanding of ecosystem functions and the impacts of human activities on them.

The Coastal Programme undertakes research on threatened coastal ecosystems, particularly in tropical waters (i.e., coral reefs and mangroves), monitors and assesses pollution impacts, and studies integration of coastal management with development. We believe that applied research and improved understanding of how these critical ecosystems function are central to sound decision-making. This programme also fosters regional monitoring programmes to better understand the sources and impacts of pollutants this is a first step towards mitigation and amelioration. Such activities are also an effective capacity-building tool.

UNU-INWEH continues to build and synthesise scientific knowledge about these systems in order to impact policy formulation and application. We are also expanding our efforts to build capacity in developing countries to monitor and actively manage their coastal ecosystems. The research and policy bridging function is also selectively directed to tropical coastlines. It aims to deliver major policy guidance on integrated coastal management, including the management of land-based sources of toxic pollutants and nutrient overloads, which are a major threat to all types of coastal ecosystems.

This programme is led by Professor Peter Sale, who is a world-renowned coastal ecologist. Professor Sale also engages UNU-INWEH with his extensive networks of colleagues in leading coastal research institutions around the world.



Beach coastline

Programmes of UNU-INWEH

Dryland Ecosystems

Dryland Ecosystems

Drylands - comprising deserts, grasslands, and woodlands - cover about 41% of Earth's land surface, and are inhabited by more than 2 billion people. Many of these dryland areas face severe land degradation, in which marginal areas are turned into wastelands and natural ecosystems are altered through destruction of surface vegetation, poor management of water resources, inappropriate land use practices, overuse of fertilisers and biocides, and disposal of domestic and industrial wastes. This has serious implications for food security and the livelihoods of at least 1 billion people across the world.

This programme aims to assist developing countries in dryland areas to better manage their land resources and to achieve sustainable use of their water and biodiversity resources. There is a particular focus on development of alternative livelihoods for dryland communities in order to reduce stress on natural systems and improve human well-being. This also ties in closely with poverty reduction in these communities. Success of these livelihoods depends on building capacity of these communities, ensuring support from governments through enabling policies, and providing solutions that fit the social and cultural constraints in those communities.

The Drylands Programme focuses on developing urgently needed sustainable management strategies for the protection, preservation, reclamation, or rehabilitation of drylands. Enabling wise management of water resources and protection of water quality are central to this goal. It also undertakes research on alternative livelihoods and enabling policies to facilitate broader adoption of these livelihood approaches. It is the scientific coordinator for a global initiative on the Economics of Land Degradation. Poverty reduction through capacity development is another focal area, ranging from community-based efforts to advanced degree programmes.

This programme is led by Dr. Richard Thomas, who has extensive experience of working in dryland ecosystems in developing countries and international forums. This experience also enables him to tap into a broad network of individuals, government agencies, multilateral bodies (such as the UNCCD), and research institutions in developed and developing countries.



Programmes of UNU-INWEH

Freshwater Ecosystems

Freshwater Ecosystems

A major factor contributing to the global water crisis is the widespread failure to effectively manage freshwater resources through integrated management approaches at a basin or watershed scale. The Freshwater Programme aims to improve the management of freshwater ecosystems - including rivers and lakes, their watersheds, and freshwater deltas and wetlands - by overcoming two core challenges facing developing countries. The first is limited or absent scientific knowledge on water quality and quantity, as well as ecology and ecosystem services. The second is failure at the policy level to manage freshwater ecosystems in an integrated and holistic manner.

This programme incorporates advanced distance-education methodologies (i.e., e-Learning) and capacity development, as well as knowledge and information management to contribute towards the improvement of water resource management in developing countries. Sustainable capacity development is achieved through an e-Learning platform (StudySpace™) that delivers a course on Integrated Water Resource Management (IWRM) principles for water professionals in developing countries. Other courses (e.g. Water-Health, Mangrove Ecosystems, and Climate Change Adaptation) are undergoing active development. The programme has also initiated an institute-wide effort to bring together knowledge management and enhancement principles, though, for example, the K* (K-Star) initiative and a knowledge integration and management platform (KIM-UNU).

UNU-INWEH's work in this thematic area directly addresses these challenges through: capacity building by disseminating knowledge and education on IWRM approaches; synthesis of existing scientific knowledge; and, comparative analysis of governance mechanisms, leading to improvements.

This programme is led by Professor Colin Mayfield, who has extensive experience in capacity building and knowledge management in the water sector. Prof. Mayfield's experience working with universities, government/non-government agencies and ministries, and environmental organizations allows him to bolster the programme's access to a wide network of researchers, scientists, and policy makers around the world.



Programmes of UNU-INWEH

Water-Health Nexus

Water-Health Nexus

The Water-Health Nexus Programme examines human health and wellbeing in relation to the biophysical environment, as well as within the context of the social, cultural, and political systems that determine the flow of water through society. It also focuses on the provisioning of safe drinking water and adequate sanitation facilities, while considering community-level approaches and technologies for engagement, ownership, and empowerment. A long-term goal is to build, in a staged manner, a global 'Learning Network' for provisioning of safe water services.

Over 2.4 million people, mostly children, die each year from water-related health problems, while billions are made ill. It is now widely accepted that no other single intervention is likely to reduce global poverty more than the provision of safe water and sanitation. At the core of this programme is the focus on meeting the safe water crisis through capacity development that addresses human, technological, infrastructural, and institutional capacity for timely action. The overall aim is for people to be able to rely on water that is adequate in quality and quantity for environmental services, day-to-day living, and health. A special focus is on rural, remote communities that are often ignored in the international development community.

Solutions at the water-health nexus require transdisciplinary and trans-sectoral approaches and this programme aligns with these needs, given the broad slate of internal expertise that is augmented by extremely strong inter-institutional and individual partnerships. Globally, individual and community health and wellbeing are intrinsically linked to environmental integrity, water quality, water quantity, and water management. Dynamic factors associated with global environmental change continue to affect outcomes. A holistic approach, encompassing physical, economic, socio-political, and cultural factors is required to address these issues. The vision of the programme is to enhance ongoing dialogues, change mindsets, and eventually, change lives for the better, particularly in rural, remote, and otherwise marginalized communities.

The programme is led by Prof. Chris Metcalfe. He has extensive experience in a range of water quality-related areas, including community-based wastewater treatment and integrated watershed management. As a world-class research leader working at the interface of water and the environment, he has access to a broad network of experts working in this trans-disciplinary field.



A woman travels with jerry cans filled with water from the nearest water point

UN Photo, Albert Gonzalez Ferran



Project/Activity

Managing Coasts in a Changing World

Seminar Series

Managing Coasts in a Changing World Seminar Series

Project Manager: VanLavieren, Hanneke

Coastal ecosystems are severely stressed in many parts of the world as a result of overpopulation, intensive coastal development, urbanization, spiraling resource use, pollution, and spread of invasive species. Climate change is expected to exacerbate these stresses and is considered by many to be one of the most important challenges facing the world in the 21st century. Considering that the majority of people reside in coastal areas, the need for proactive action to adapt to climate change is ever more pressing. There is an urgent need to gain a better understanding of climate change impacts on coastal areas, how to realign current management practices, and how to develop effective adaptation strategies. This series of public seminars is given by experts whose research focus on topics relating to coastal environmental science and management in the face of climate change.



Implementation Status

The following seminars were held in 2013:

Preparing Coastal Communities of Atlantic Canada: Challenges of Preserving Natural & Sociocultural Elements (28 February, 2013)

Speaker: Dr. Liette Vasseur, Professor, Biological Sciences, Brock University

Marine Toxins, Seafood Safety & Ecosystem Health: Sato Umi in Action (28 March, 2013)

Speaker: Charles Trick, Beryl Ivey Chair for Ecosystem Health at Western University, Canada



Project/Activity

Another Drop Seminar Series



The Another Drop Seminar Series

Project Manager: Cave, Kate

Started in 2006, the Another Drop public lecture series provides an opportunity to present research, policy and case studies that aid in our understanding of linkages between water, environment and health. The purpose is to provide the local academic and broader community with an insight into the many and varied challenges faced around the world.



Implementation Status

The following seminars were held in 2013:

Addressing Water Quantity And Quality Concerns In The Peace-Athabasca Delta, Northern Alberta, From Perspectives Of The Past (09 January 2013)

Speaker: Dr. Brent Wolfe, Associate Professor, Geography and Environmental Studies Dept., Wilfrid Laurier University

Water is Life: Issues Facing Canada and China in the 21st Century (05 February 2013)

Speaker: Dr. Harvey Shear, Professor, Geography Dept., University of Toronto, Canada

Where Policy And Practice Collide: Tales From The Mucky Middle (12 March 2013)

Speakers: Corinne Schuster-Wallace, Programme Officer, UNU-INWEH; Paul General, Manager, Six Nations Eco-Centre; Tim Muttoo, Co-Founder and Executive Director, H2O 4 All; Dr. Susan Watt, Professor, School of Social Work, McMaster University

'Wallace's Dream Ponds': The Malili Lakes Of Sulawesi Island (10 September 2013)

Speaker: Douglas Haffner, Research Chair, Great Lakes Institute for Environmental Research (GLIER), University of Windsor

The Aftermath Of Natural Disasters: Realities And Myths (08 October 2013)

Speaker: Dr. Lynda Redwood-Campbell, Professor in the Department of Family Medicine, McMaster University

The Right to WaSH; the Right to Health (25 November 2013)

Speaker: Dr. Nancy Doubleday, McMaster University; Dr. Ross Pink, Global Water Rights; Mr. Paul General, Six Nations of the Grand River; Catarina de Albuquerque, UN Special Rapporteur on the right to safe drinking water and sanitation

Project/Activity

Managing Coral Reefs and Tropical Coastal Seas for the 21st Century

Managing Coral Reefs and Tropical Coastal Seas for the 21st Century

Project Manager: VanLavieren, Hanneke

The 21st Century is already bringing a number of critical changes to the ecosystems of tropical coastal seas, including growth of human populations, urbanization, overfishing, nutrification, dead zones, and pollution, especially when paired with climate change effects of rising sea surface temperatures, ocean acidification, and the growing intensity and perhaps frequency of tropical storms. Management of these coastal seas should aim to provide effective adaptation to changes that cannot be prevented, while avoiding or mitigating deleterious changes wherever possible. This project seeks to look forward, assess risks, and propose solutions. An expert group is assembled on topics that include the management of coastal fisheries, development of marine protected areas, and management of the environmental impacts of coastal development. They are drawn from academic and regional development/coastal management agencies around the world, with 27 participants from 6 countries and 17 institutions. Most have extensive experience in implementing sustainable coastal management in developing countries. The ultimate goal of this project is to provide a significant statement on how to manage coastal seas for the betterment of millions of people in rural, coastal communities in developing countries, despite the effects of climate change over the next few decades.

Implementation Status

In collaboration with the University of Queensland, an initial workshop was held in Brisbane, Australia in July 2012, where ideas were explored and the basis for subsequent work established. As the first product, a manuscript is now in review with Global Environmental Change, and should appear by late 2013 or early 2014. Other potential products include a themed issue of the journal Coastal Management, with papers that will amplify the arguments in the Global Environmental Change paper. A policy-focused article is planned, and a final workshop bringing these experts together with selected policy leaders from tropical countries is under consideration for late 2014.



UNU-INWEH, Andrew Dansie

Coral reef, Gili Islands



Project/Activity

Mangrove Biodiversity Training Course

Mangrove Biodiversity Training Course

Project Manager: VanLavieren, Hanneke

This training course focuses primarily on mangrove ecosystems, while maintaining an integrated approach towards management of coastal ecosystems. The main objective is to build the capacity of professionals and institutions in developing countries to undertake monitoring, research, and conservation of critical coastal ecosystems in mangrove forests through training of young professionals in the scientific methodologies and descriptions of latest research work on related subjects. A secondary objective is to promote and encourage development of a network of professionals from developing countries working in this field.

Implementation Status

Southeast Asia Region

This training course is held annually in India. The 13th course took place from September 23 – October 7 2013. There were 15 participants, all from developing countries, 4 of whom were women.

Eastern Africa Region

This training course was piloted for the first time in East Africa from December 2-10, 2013, at the University of Nairobi, Kenya. There were 24 participants, all from developing countries, 13 of whom were women. Participants came from the Western Indian Ocean (WIO) region, including Comoros, Kenya, Madagascar, Mauritius, Mozambique, Seychelles, Somalia, the Republic of South Africa, and Tanzania. Partners include: Western Indian Ocean Marine Science Association (WIOMSA), WIO Mangrove Network (WMN), Kenya Marine and Fisheries Research Institute (KMFRI), Coastal Oceans Research and Development – Indian Ocean (CORDIO), University of Nairobi, Nairobi Convention, and World Wide Fund for Nature (WWF) – Coastal East Africa Initiative (CEA-NI).

Other Mangrove Rich Regions

Efforts to expand the training course to West Africa (Senegal) and the Caribbean (Belize) are at advanced stages.

Post-Graduate Course

UNU-INWEH is in the process of converting the 'International Course: Biodiversity of Mangrove Ecosystems' into a post-graduate level online courseware with key partners. The online course will eventually be complemented by a short hands-on field+laboratory component. In partnership with the Latin America School for Protected Areas of the University of International Cooperation in Costa Rica and their campus in Puerto Morelos, Mexico, the course will be piloted in 2014. This mangrove course is one of 14 courses taught via an online Master's Program in Coastal and Ocean Management. In partnership with The Nature Conservancy (TNC), the courseware will also be launched in early 2014 as distance education courses via the TNC online free access conservation training platform, www.conservationtraining.org. The courseware will also be offered through Annamalai University, India, and potentially other regional partners.



Mangrove Biodiversity Course, Kenya

Project/Activity

Strengthening Management of Marine Protected Areas in Jamaica

Strengthening Management of Marine Protected Areas in Jamaica

Project Manager: VanLavieren, Hanneke

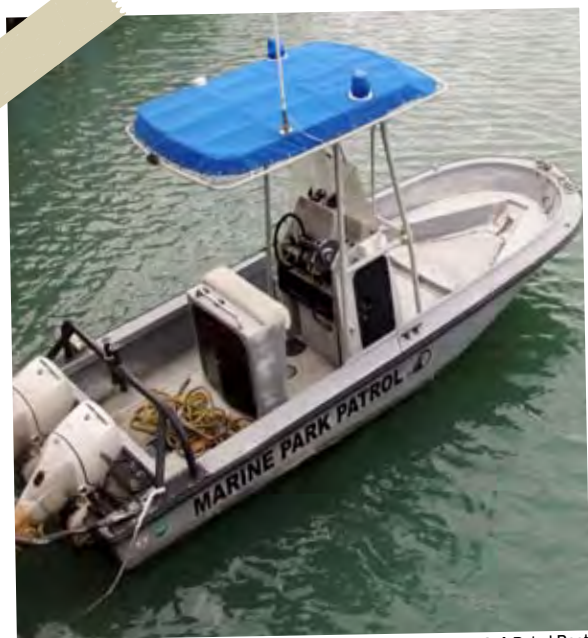


The EU/UNEP/Government of Jamaica (GOJ) Climate Change Adaptation and Disaster Risk Reduction Project is intended to assist with ongoing efforts to build socio-economic and environmental resilience, and reduce the potential risks associated with climate change. One component of the project specifically aims to increase resilience of coastal ecosystems to climate change impacts through the restoration and protection of selected ecosystems. The island of Jamaica is highly vulnerable to and faces direct threats from climate change impacts because of its geographic location.

The UNU-INWEH Coastal Programme has been contracted to review and enhance existing management plans and other relevant spatial planning data and documentation for 3 marine protected areas (MPAs) in Jamaica. This will be accomplished by developing a long-term comprehensive management review for each protected area. These will serve as roadmaps for management actions in the near term, and include adaptation to climate change issues as a part of the plans.

Implementation Status

In November 2012, UNU-INWEH began an 11 month project under contract with the National Environment & Planning Agency (NEPA) in Jamaica to enhance and develop the management plans for 3 MPAs in Jamaica (Negril, Portland Bight, and Montego Bay). This project is part of a larger EU/UNEP/GOJ Climate Change Adaptation and Disaster Risk Reduction Project. This project is expected to improve the country's climate change adaptation efforts and increase resilience to related impacts by improving the management and protection of healthy coastal ecosystems and restoration of degraded coastal areas. Site visits were conducted by a team from UNU-INWEH to each of the 3 MPAs during February 2013, after which 3 draft plans were developed (August 2013). Two stakeholder consultation meetings were held (October 2013), to provide an opportunity for key stakeholders to comment on the plans; the final draft plans were submitted to NEPA in November 2013.



MPA Patrol Boat

Project/Activity

Economics of Land Degradation

Economics of Land Degradation

Project Manager: Thomas, Richard

The “Economics of Land Degradation” (ELD) is an initiative for a global study to make the economics of land degradation an integral part of policy strategies and decision-making. The main focus is on increasing political and public awareness of the costs and benefits of decisions impacting land and land-based ecosystems.

Ultimately, ELD aims to raise sustainable land management to a higher priority level on global and national agendas, establish a global standard through scalable, applicable total economic valuations, and provide reports targeting decision-makers, private sector, and scientists.



Implementation Status

UNU-INWEH continued its role as scientific coordinator of the ELD by establishing and participating in a competitive review process for case studies to be funded by the initiative. Out of 65 proposals received, three were funded. A further call for existing case studies resulted in over 185 studies that have been databased and mapped. UNU-INWEH also participated in a capacity building workshop in Rwanda organised by the Global Mechanism of the UNCCD.

Through initiative funding, UNU-INWEH contracted a Project Assistant who participated in preparing the ELD Interim Report that was launched at the UNCCD COP-11 in Namibia, September 2013. This report is now a communication tool, describing ELD's activities, vision, targets, approach, and case study summaries. The report generated private sector interest, and UNU-INWEH participated in related events during the Business Forum of the UNCCD COP-11. UNU-INWEH was invited to attend the World Business Council for Sustainable Development workshop on Agribusiness Solutions in November 2013, and agreed to be on the Steering Committee of the Soil Academy – a collaboration between the private sector, UN agencies, and other bodies, focused on strengthening decision-making processes, conserving soil, and promoting sustainable land and water management.

Details of the ELD initiative can be found at www.eld-initiative.org.



UN Photo, Stuart Price

Land degradation and desertification threatens fertile land throughout the world

Project/Activity

The Hima Initiative

Hima Initiative

Project Manager: Saleh, Walid

Worldwide, there is increasing recognition that sustainable development is not possible without the active involvement of local communities. Natural resources (land and water), across the West Asia and the North Africa (WANA) region have especially become subject to high rates of resource exploitation and environmental degradation. This means there is not only decreasing water and land productivity, but incurred losses in biodiversity, and in the structure and functions of ecosystems. The conventional model of sustainable development that focuses on socio-economic aspects has little success in the WANA region and other parts of the world, because it ignores the local knowledge, traditions, and ethics which can be the drivers of change in the development process. Conservation has focused on centralised planning and decision-making processes, putting faith only in the ability of governments to achieve conservation and manage natural resources, and not entrusting communities with this responsibility. While there has been some success in saving threatened species and habitats, conservation success is increasingly being undermined by growing conflicts over natural resources in and around areas identified for conservation, and by the increasing opposition of local communities who have started to fight for their rights on land from which they have been displaced from, while being provided with short-term benefits.

A number of challenges and constraints remain in the WANA region, namely: the formulation of a common definition and understanding of sustainable development; the establishment of a clear and concise political platform defining specific goals and priorities for action; and the adoption of an integrated approach to sustainable development which can address economic and social issues alongside and in-line with environmental priorities.

Implementation Status

UNU-INWEH continued working with UNESCO, IUCN, and UN-ESCWA towards the promotion of the Hima (a land use zoning and environmental protection concept which refers to a pre-Islamic practice in the Arabian Peninsula), as a sustainable development model that takes into account the human values, ethics and traditional knowledge as a pillar of sustainable development. This concept was presented at The Arab Development Forum -Voices and Choices for the Development Agenda in the Arab Countries (1 April 2013, Amman, Jordan).



Project/Activity

Marginal-quality Water Use and Health in Dry Areas

Marginal-Quality Water Use and Health in Dry Areas

Project Manager: Qadir, Manzoor

Given current demographic trends and growth projections, as much as 60% of the global population may suffer water scarcity by 2025. Water quality deterioration is expected to intensify in dry resource-poor countries, due to human activity and climate change. By implication, marginal-quality water – saline water and urban wastewater – will increase in these countries.

To narrow the gap between freshwater demand and supply, farmers in water-scarce countries are increasingly irrigating with these marginal-quality waters, creating a risk to environmental and human health. In June 2011, the International Center for Agricultural Research in the Dry Areas (ICARDA) and UNU-INWEH initiated a joint programme addressing water quality and health in dry areas, with additional discussions with the International Water Management Institute (IWMI) in late 2011. In 2012 all three agreed to the programme formally, with a full-time senior staff based at UNU-INWEH. The initiative's scope involves greater focus on water recycling, and safe and productive re-use of wastewater/greywater, with cornerstones of: anthropogenic and climate change effects on water and land quality, the water quality–health nexus, economic dimensions of water and land quality deterioration/improvement, and institutional and policy intervention.

World set to use much more wastewater: Study

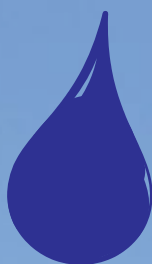
UN-backed study says annual treated wastewater in North America roughly equals volume of Niagara Falls; less than 4 percent is reused. Amid growing competition for freshwater from industry and cities, coupled with a rising world shortage of potash, nitrogen and phosphorus, an international study predicts a rapid increase in the use of treated wastewater for farming and other purposes worldwide. However, research shows that treated wastewater — comparable in North America alone to the volume of water flowing over Niagara Falls — is mostly unused and, in many nations, not even quantified.

- THE ECONOMIC TIMES

Implementation Status

Major research and capacity development activities are:

1. *Capacity Development Project on Safe Re-use of Wastewater in Agriculture:* An alliance of UN-Water members and partners (UNU-INWEH, FAO, WHO, UNW-DPC, UNEP, IWMI, and ICID) held a 5th regional wrap-up workshop in Indonesia in March, and a wrap-up workshop in Iran in June with representatives of 70 UN member states from Asia, Africa, and Latin America;
2. *Global Study on Wastewater Generation, Treatment, and Use:* A desk study showed only 55 of 181 countries have complete data on all three aspects of wastewater – production, treatment, and use;
3. *Participation in Global Wastewater Initiative (GWI):* Contribution as a member of the Steering Committee and joint publications, and;
4. *Part of WHO Task Force on Guidelines for Wastewater Use:* Communication is progressing as WHO plans to revise 2006 guidelines.



Project/Activity

Sustainable Management of Marginal Drylands, Phase II (SUMAMAD-2)

Sustainable Management of Marginal Drylands, Phase II (SUMAMAD-2)

Project Manager: Bigas, Harriet

This 5-year project (2009 - 2013) was based on funding provided by the Flemish Government of Belgium and built on the first, 5-year SUMAMAD phase (2003 - 2007) that focused on assisting developing countries in northern Africa and Asia in enhancing the sustainable management and conservation of their marginal drylands. The new phase, SUMAMAD-2 emphasised training, capacity building, and interaction with landowners and farmers. It also paid specific attention to climate change and policy measures needed to effectively adapt to the changes in marginal drylands. It involved a collaborative network of researchers and institutions in 9 countries (Bolivia, Burkina Faso, China, Egypt, India, Iran, Jordan, Pakistan, and Tunisia), jointly managed by UNU-INWEH and UNESCO.

The project had three major objectives: (1) Fostering scientific drylands research focused on improvement of dryland agriculture, sustainable water conservation and harvesting practices, and restoration and rehabilitation of degraded drylands (2) Preparation of policy-relevant guidelines for decision-makers in drylands [i.e., developing scenarios for land-use changes, including the assessment of trade-offs and economic valuation of dryland services], and interfacing with relevant policy-formulation institutions and processes in respective countries, and (3) Promoting sustainable livelihoods in drylands by encouraging alternative income-generating activities and diversification of economic options.



SUMAMAD

Implementation Status

With the project formally coming to a close, 2013 was a wrap-up year for activities. Country partners completed the remaining activities within the overall framework of the project on its 3 main objectives. The project held its final international workshop in June 2013, where country partners presented the results and achievements of their projects over the project's entire five-year period (2009 - 2013). Notable achievements include: more sustainable quinoa production systems in the highlands of Bolivia; the introduction of ecological orchards to replace cotton production in the Hippopotamus Biosphere Reserve in Burkina Faso; the restoration of natural grasslands through the introduction of chicken farming and the establishment of an eco-husbandry demonstration site with investment from the central government in China; the development of a floodwater management system to recharge aquifers naturally in Iran; and, the development of a community grazing management plan together with local communities in the Dana Biosphere Reserve in Jordan. A scientific publication noting the project's achievements by country site was released in June.



Integrating manure and water for food production, Bolivian altiplano

Project/Activity

Water Security

Water Security

Project Manager: Bigas, Harriet

It has been long recognised that secure and sustainable access to clean water is essential to human health, economic growth, and a range of other critical uses from food production to navigation. At the same time, there has been a growing appreciation of the relationships between water, peace, and security at both local and regional levels, and an increasing need to focus global attention on these challenges. This had led to a definitional challenge between “water security” as a reference to secure and sustainable access versus the use of “water security” to describe water as a contributor to conflicts and tensions. This global challenge has been recognised by disparate groups such as UN-Water, the InterAction Council (IAC - a group of 35 former heads of state) and the United States Intelligence Community.

The water security initiative at UNU-INWEH aims to engage in the global dialogue on the global water crisis. In particular, it aims to explore the multi-dimensionality of water and its central role in achieving many development goals, as well as its links to ensuring peace and security. It aims to create a dialogue with policy-makers in order to engage them in creating opportunities for solutions to overcoming the water crisis through cooperation, innovation, and dialogue. Exploration of the role that water must play in achieving global security will be accomplished through engagement with key players, such as UN-Water, the IAC, and the Walter & Duncan Gordon Foundation, and others.

Water as vital to national security as defence, UN says

Amid changing weather and water patterns worldwide and forecasts of more severe transformations to come, calls have been growing for the UN Security Council to include water issues on its agenda. And there's rising international support for adopting “universal water security” as one of the Sustainable Development Goals — a set of mid-term global objectives being formulated to succeed the UN's Millennium Development Goals, agreed by world leaders in 2000 for achievement by 2015.

- THE GLOBE & MAIL

Implementation Status

In 2013, UNU-INWEH partnered with the Political Science Department of Government College University in Lahore in a joint international conference that examined the role of politics in water resources governance in the Indus Basin. UNU-INWEH contributed three presentations related to water security.

As Co-Chair of the UN-Water Task Force on Water Security, UNU-INWEH led the development of the UN-Water Analytical Brief “Water Security & the Global Water Agenda”, which represents the collective perspective of UN-Water on water security. The brief provides a working definition for the concept of water security, and presents the broader set of issues and challenges that fall under the umbrella of water security. It also highlights possible actions or coordinated policy response options that will be needed to increase water security globally at local, national and regional levels. It was released on 22 March 2013, and was officially launched as part of the World Water Day celebrations both in The Hague and New York. It additionally fed into other events during the International Year of Water Cooperation such as the High-Level International Conference on Water Cooperation and Stockholm World Water Week.



Project/Activity

GEF International Waters: LEARN



GEF International Waters: LEARN

Project Manager: Mayfield, Colin

Implementation Status

A collaboration of the GEF's IW:LEARN project, a special open-access volume in the journal *Environmental Development* was published in 2013. It includes a treasury of articles available with open public access until the end of 2014 at <http://www.sciencedirect.com/science/journal/22114645/7>. GEF partnered with UNU and UNEP to extract lessons from this project portfolio. The volume builds on a 2012 study of the use of science in roughly 200 GEF-supported transboundary water projects involving public investments of more than USD 7 billion over 20 years. It is highlighted by papers detailing innovations in science-based management and scientific research authored by past or present projects from the portfolio. The papers underline the overarching lesson that science must play a central role in decisions and investments involving trans-boundary water issues. At the heart of this are concerns of cardinal importance: food and energy security, adaptation to climate variability and change, economic growth, and human security.

UNU-INWEH is also coordinating the research, writing, and development of a publication which showcases the GEF IW Marine Portfolio and demonstrates the impact of GEF investments on food security, livelihoods, economic stability, and regional security. It will be a colourful and informative document targeted at GEF IW focal area (projects), participating countries, donors, and communities. Its purpose is also to assist with efforts leading to the next GEF replenishment, together with the range of new UN Development Programme publications. It will be divided into two themes: (1) Coastal Livelihoods and (2) Regional Stability, and draw on lessons and results geared towards informing each theme. The overall objective of this publication is to illustrate how the IW investments are supporting a range of different aspects and sectors, and to raise awareness of how GEF IW interventions contribute to preserving and improving the global environment.

Managing shared waters: Treasury of papers helps capture 20 years of lessons

The science-based management and governance of shared transboundary water systems is the focus of a wide-ranging collection of articles now published in a special edition of the Elsevier journal *Environmental Development*. A collaboration of the GEF IW:LEARN project and UNU-INWEH, the special open-access volume includes a treasury of articles available with open public access until the end of 2014.

- REUTERS

Project/Activity

The Water Learning Centre



The UN Water Learning Center (WLC)

Project Manager: Mayfield, Colin

The WLC entered its 9th year of operation in 2013, having seen over 120 students graduate with a UNU Diploma in Integrated Water Resource Management (IWRM).

The WLC promotes topics such as sustainable water management, water-health, mangrove ecosystems and climate change (the latter 3 are currently in development) through a core curriculum provided by international experts in respective fields, offering opportunities for continuing education and skills upgrading. For example, the IWRM course curriculum consists of 10 courses of 25 teaching hours equivalent per course, with tutorial and case study material as well as independent work assignments and examinations. For all courses, a UNU Diploma is granted after completion.

Each curriculum offers a broad-based coverage of the principles and practices of the respective subject, providing the students with core knowledge in the natural sciences, engineering, health, governance, public administration, social sciences, economics, resource conservation, strategic planning, and aspects of program and project management.

The long-term, overarching goal of the WLC is to enhance national capacity for the development and implementation of sustainable natural resource management strategies in developing countries at local, regional, and sub-regional levels. The program is directed to practicing professionals wishing to upgrade their knowledge of the various natural resource management concepts and practices.



Project/Activity

Environment and Health Training for Water Professionals - Kenya and Tanzania

Environment and Health Training for Water Professionals - Kenya and Tanzania

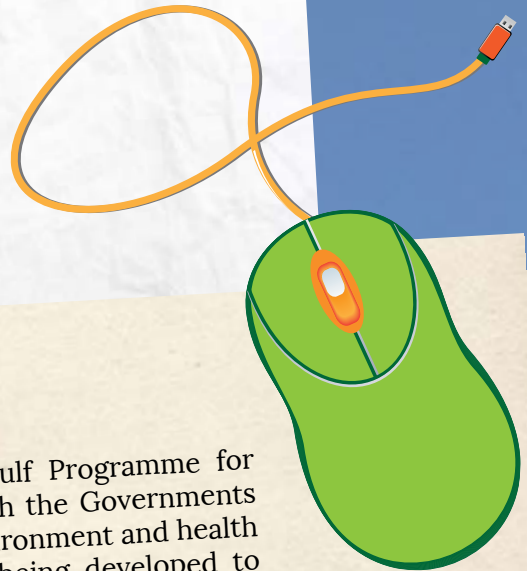
Project Manager: Mayfield, Colin

The development of a training programme using distance-learning techniques for water professionals in Kenya and Tanzania. The programme will focus on the relationships of water to health issues, globally and regionally in East Africa.

Implementation Status

Through partnership and support from the Arab Gulf Programme for Development (AGFUND), UNU-INWEH is working with the Governments of Kenya and Tanzania to develop a curriculum on environment and health training for water professionals. The curriculum is being developed to tertiary education standards delivered via the StudySpace™ software platform of the Water Learning Centre (WLC).

To date, the course has been developed and a regional workshop held in East Africa with water and health experts to finalise content. First delivery of the course will occur in 2014.



Project/Activity

Water-Related Sustainable Development Goals

Raise water spending, get \$1.0 trillion benefits - U.N.

Report by UNU and UNOSD, with support of SEI launched by Friends of Water in NY. The first comprehensive, evidence-based analysis of options for integrating water into the new Sustainable Development Goals (SDGs) that will define the international development agenda after the UN Millennium Development Goals (MDGs) expire in 2015.

- REUTERS



UN Photo, Kibae Park

Catalyzing Water for Sustainable Development and Growth

Water-Related Sustainable Development Goals

Project Manager: Wallace, Corinne

Implementation Status

In partnership with UNOSD and supported by the SEI, UNU-INWEH has prepared an independent evidence-based analysis of how water can be addressed in a development agenda beyond 2015. The framework developed can be applied to other themes and provides principles for SDG development.

From the analysis, it is clear that water should not be treated as a “sector” alone, but as a cross-linked issue - especially given its crosscutting nature and essential roles in social and economic development and environmental integrity. To this end, the experiences of the MDGs, and aspirations for the SDGs, and the existing water-based proposals have influenced the breadth of what a dedicated water goal would need to encompass, how it would link to other themes, and what would be needed from an implementation perspective.

After stakeholder consultations and broad peer review, the report was finalized in October 2013 and launched in New York as a Friends of Water side event at the Open Working Group 27 November, 2013.

Project/Activity

From Waste to Wealth: Sustainable Wastewater Management in Uganda

From Waste to Wealth: Sustainable Wastewater Management in Uganda

Project Manager: Wallace, Corinne

Lack of appropriate human waste treatment is unnecessarily contributing to morbidity and mortality, especially in rural communities. In terms of public health impacts, 10% of the global burden of disease is related to water, sanitation and hygiene (Pruss Ustun et al., 2008). Child mortality (under 5) is reduced by 2.45 per 1,000 with access to improved sanitation (Cheng et al, 2012) and poor sanitation costs an estimated \$260 billion per year in economic losses (World Bank WSP).

Given that almost all wastewater in developing countries is discharged directly into water bodies, it is imperative to develop sustainable approaches to manage this wastewater. This initiative, funded through a grant from Grand Challenges Canada, takes the view of waste as a resource. It is proposed that the economic benefits of nutrient recycling, biogas generation, soil amendment, and new livelihoods from wastewater management will be a financial incentive for communities in developing countries to collect and treat their waste. As such, this initiative will develop a national wastewater management framework for the Republic of Uganda.



Building capacity and training the next generation

Implementation Status

The project integrates community, provider, and private sector perspectives and roles to ensure sustainable services beyond the life of the project. To date, the project has:

- Built capacity in the Ministry of Water and Environment to undertake biomethane potential (BMP) analyses through the provision of equipment and training to laboratory staff;
- Brought stakeholders together to explore needs, opportunities and frameworks for the initiative (see <http://inweh.unu.edu/wp-content/uploads/2013/09/From-Waste-to-Wealth-Workshop-Proceedings.pdf>);
- Developed scenarios for urban, rural, informal and institutional settings and,
- Undertaken an assessment of local biogas initiatives in Uganda.

Project/Activity

Knowledge, Attitudes Practices, Empowerment (KAPE)

Knowledge, Attitudes Practices, Empowerment (KAPE)

Project Manager: Wallace, Corinne

Implementation Status

The project focuses on the provision of safe water to marginalised communities in the Lake Victoria basin of Kenya. Graduate students from McMaster University, the University of Waterloo, and Uganda Christian University/Save the Mothers are working with researchers at UNU-INWEH and the Kenya Medical Research Institute to collect data (through focus groups, interviews, sanitary surveys, and water quality testing) related to drinking water and sanitation. While data collection is ongoing, major differences have already been observed in knowledge, attitudes, and practices across genders, age groups, and family status. The community's perspectives must be incorporated into the empowerment stage of the research, which will involve the development of (sustainable) interventions. As of today, the vilage of Usoma has running water and they are selling it to the community!

Funding for the project has been secured from the Social Sciences and Humanities Research Council of Canada, the Rotary Club of Hamilton, and local organisations. A community water committee was established in one community in November 2012, and the construction of a sanitation block and water kiosk is already complete. The project has been expanded to include water and sanitation access in health care settings, with a focus on maternity wards for improved mother and infant health outcomes.



Brick building



Sand harvesting

Project/Activity

Hydrosanitas Knowledge Portal



There is a major gap in the ability of rural, remote communities to address drinking water challenges



Hydrosanitas Knowledge Portal

Project Manager: Wallace, Corinne

Implementation Status

There is a major gap in the ability of rural, remote and otherwise marginalised communities to address drinking water challenges. The development of an interactive knowledge base of safe water provisioning solutions for these communities globally will provide simple, yet comprehensive information on proven solutions in order to empower and inform decision-makers. These communities often do not have sufficient expertise or resources to determine which technologies or options are available, or how to effectively mobilise resources for their deployment. The result is lack of adequate safe water provisioning in these communities, usually leading to serious health consequences. While the problem is particularly severe in developing countries, it occurs in developed countries as well.

It is important to note that many solutions - technological, policy-based, and behavioural - exist and have been demonstrated to work. However, without coordinated access and a mechanism to rate the quality of the information provided, the resulting information deficit is preventing local action, even in developed countries. The goal of this project is to build upon advances in mobile and web-based communications to develop a consolidated next generation repository of knowledge for the water sector that will facilitate information exchange for stakeholders. Information will be consolidated in a knowledge portal that will document proven approaches to protecting and treating drinking/wastewater. These approaches will be appropriate to the type of water resource, physical environment, and social, economic, and cultural contexts of the users.

To date, several partner and stakeholder workshops have been held, and a beta version of the knowledge portal is currently being tested through the Waste to Wealth initiative. Discussions are under way with other partners regarding content development (e.g., for wastewater treatment), and a final workshop in 2014 will result in the portal interface design prior to launch.

Project/Activity

Water Associated Disease Index

UNU-INWEH, Sarah Dickin



A vector control worker applying insecticide spray in Brazil

“This is a lovely integration of theory, data and implications for practice: a critical discourse analysis that provides some useful information for policy on dengue fever - a growing global public health issue. Mulligan and colleagues analyse policy documents and key informant interviews to unpick some framings that are impeding progress on dengue control. I welcomed this paper as an exemplar of ‘useful theory’ as well as for its empirical contribution to our knowledge on policy transfer.”

- CRITICAL PUBLIC HEALTH
EDITOR'S CHOICE COLLECTION

Water Associated Disease Index

Project Manager: Wallace, Corinne

Implementation Status

This project has been developed to create a diagnostic tool that can measure and map the vulnerability of individuals and communities to specific water-related diseases in the face of global environmental change. The project is intended to support long term resource allocation decisions for mitigating potential risk as evidenced by changes in that risk over space and time. The project is a joint UNU initiative (INWEH, IIGH, and EHS), with partial funding from the Canadian Institute for Health Research and the Malaysian government. The diagnostic tool methodology, using Dengue fever in Malaysia as an exemplar, has been published in the journal, *PLoS One*.

A report on the global application of WADI:Dengue is under development and the framework for WADI:Schisto, a schistosomiasis-based tool, has been developed. This will be applied to the Lake Victoria Basin in partnership with the Kenya Medical Research Institute. Additional funding is being sought to develop local tools for Canadian public health practitioners to support future outbreak preparedness under global environmental change scenarios

Capacity Building

Water Without Borders



Water Without Borders Students 2013



Water Without Borders Fieldtrip



Water Without Borders Uganda

UNU-INWEH, Robyn Waite



Water Without Borders

Project Manager: Wallace, Corinne

Implementation Status

The joint graduate programme between UNU-INWEH and McMaster University entitled “Water Without Borders,” entered its 4th year of operation in 2013. The programme is intended to attract students from a range of backgrounds (natural sciences, human sciences, and health sciences) and disciplines (e.g., geography, engineering, business, philosophy, and medicine) corresponding with the academic specialties at McMaster University. The programme focuses on the need to investigate key research issues at the water-health nexus while contributing to both policy and capacity building. Successful students receive a university degree and a UNU Certificate upon successful completion of both programmes requirements.

Field trips have been held in Uganda and Kenya, with visits to rural communities, UN offices, local governments, NGOs, and water/wastewater treatment plants. 16 students have graduated from the programme so far (2013), with certificates presented at the Water Without Borders Reception held annually in October. Future expansion of the programme is under discussion with several Ontario universities.



Capacity Building Master's Degree Programme in Dry Areas

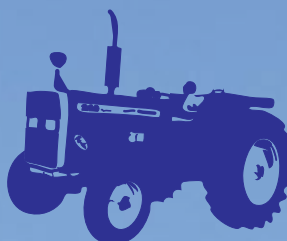
Master's Degree Programme in Dry Areas

Project Manager: Thomas, Richard

The MSc Programme is designed to enhance the capacity of developing countries to facilitate management of their drylands resources. It is intended to provide young professionals and scientists with an international perspective on resource management approaches in drylands, and allow them to gain practical experience in different dryland countries. The programme is jointly organised by 8 partner institutions. It includes an intensive 4-week short course held at one of the host institutes, followed by a 6-month period of field research supervised by one of the project partners, ultimately leading to the development of a Master's thesis. The programme has a strong multi-disciplinary focus and encourages development of a network of professionals from developing countries working in this field. It is anticipated that graduates from the Programme will go on to develop careers in academia, government, non-governmental, or international agencies.

Implementation Status

In 2013, the 8 partners to the MSc Programme (UNU, IRA, INAT, ICARDA, CAREERI, TU, GM, and CIHEAM-Bari) agreed to extend the Agreement of Cooperation for another 5 years until 2018. The 8th cycle of the MSc Programme (2013-14) was initiated, with a total of 5 students in this year's cycle: 2 from Tunisia, 2 from China, and 1 from Japan. CAREERI hosted the 4-week lecture course for the 8th cycle students in Lanzhou, China in September - October 2013. The Parties to the UNCCD also endorsed a Partnership Agreement that UNU-INWEH helped draft during its COP-11 meeting in September 2013, which is expected to facilitate the attendance of UNCCD fellows at the lecture course.



Science-Policy Bridging

The Global Water Security Agenda

The Global Water Security Agenda

The water security initiative at UNU-INWEH aims to connect the complex and inter-connected challenges of water security to the broader global water agenda, highlighting water's centrality to achieving increased levels of development, sustainability, and human well-being, while also exploring the role of water in achieving long-term peace and political stability. Led by UNU-INWEH, the initiative aims to bridge this knowledge to policy-makers by increasing their understanding of water security challenges and engaging them in dialogue on these issues, in order to explore opportunities for lasting solutions.

The UN-Water Analytical Brief, co-developed by UNU-INWEH, provided an opportunity to contribute to the increasing dialogue on water security, with a particularly timely relevance for providing input into policy discussions on the development of the post-2015 SDGs. To this end, the UN-Water Analytical Brief provided a basis for discussions during the Third Session of the UN General Assembly Open Working Group on SDGs for the discussion on Water and Sanitation in May 2013, in which the topic and definition of "water security" were hotly debated, with water security being considered as the water goal for the SDGs.



Science-Policy Bridging High-Level Engagement with UNCCD

High-Level Engagement with UNCCD

UNCCD COP-11 (held in September, 2013 in Namibia) adopted a plan co-authored by UNU-INWEH, to establish a novel mechanism to provide the convention with policy-relevant scientific advice. They endorsed a decision proposed by its Committee on Science & Technology (CST) to establish a science-policy interface (SPI) to enhance the UNCCD as a global authority on land degradation and sustainable land management. This follows the development of a modular mechanism to input science into the convention by a 12-member ad hoc working group (AGSA) that included Dr. Richard Thomas, Assistant Director for Drylands at UNU-INWEH.

The proposed modules consist of a SPI, an independent group of scientists, and regional science and technology hubs. The SPI is an intergovernmental interface that will consist of members of the Bureau of the CST, 5 scientists nominated from each regional implementation annex of the UN, 10 scientists chosen through an open call and 3 observers - one each from: civil society, an international organization, and a relevant UN organization. It represents a smaller and more nimble process than, for example, the current Intergovernmental Panel on Climate Change (IPCC) that supports the UN Framework Convention on Climate Change.



Full details of the AGSA report and COP decision can be found at:

www.unccd.int/Lists/OfficialDocuments/cop11/cst3eng.pdf

<http://www.unccd.int/en/about-the-convention/the-bodies/Pages/default.aspx>

Publications

Books, Reports, and Peer-Reviewed Articles

Topic: *The Water-Health Nexus*

UNU and UNOSD. 2013. **Water for Sustainability: Framing Water within the Post-2015 Development Agenda.** United Nations University Institute for Water, Environment and Health, UN Office of Sustainable Development and Stockholm Environment Institute.

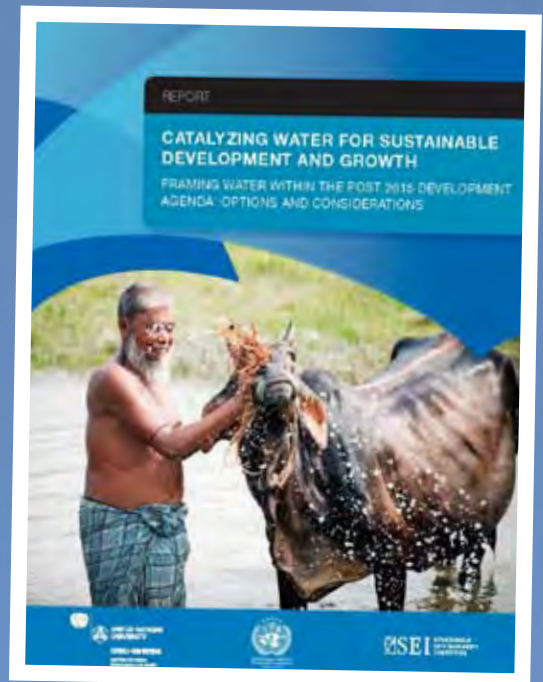
Schuster-Wallace C.J. and Zafar Adeel SUBMITTED **Achievements and Opportunities: Drinking Water, Sanitation and Health as 2015 Approaches,** Academies of Science.

Schuster-Wallace C.J., Dickin S.K. and Metcalfe C.D. SUBMITTED **Climate Change Impacts on Health: Waterborne and Foodborne Diseases. In Handbook of Global Environmental Pollution,** Environmental Change and Human Health Series, Springer.

Schuster-Wallace C.J., Elliott S.J. and Bisung E. IN PRESS **The Water-Health Nexus.** In Geographies of Health and Development, Ashgate.

Dickin S.K., Schuster-Wallace C.J., Elliott S.J. 2013. **Developing a Vulnerability Mapping Methodology: Applying the Water-Associated Disease Index to Dengue in Malaysia.** PLoS ONE 8(5): e63584. doi:10.1371/journal.pone.0063584 (<http://www.plosone.org/article/info%3Adoi/10.1371/journal.pone.0063584>)

Dickin S.K., Schuster-Wallace C.J., Elliott S.J. ACCEPTED **Mosquitoes & vulnerable spaces: Mapping local knowledge of sites for dengue control in Seremban and Putrajaya, Malaysia** Applied Geography



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UNITED NATIONS
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Topic: Coastal Ecosystems

Kritzer, J., C. Hicks, B. Mapstone, F. Pina, and P. Sale, 2014. **Ecosystem-based Management of Coral Reefs and Interconnected Nearshore Tropical Habitats**. In: The Sea, Volume 16, Marine Ecosystem-based Management, edited by Michael J. Fogarty and James J. McCarthy, Harvard University Press, Cambridge MA USA, ISBN 978-0-674-07270-1, pp. 369-428.

Sale, P.F., 2013. **Older, but less wise**. Nature 493: 167-168.

Sale, P.F., 2013. **The futures of coral reefs**. In: Klaus Rohde (ed), The Balance of Nature and Human Impact, Cambridge University Press, Cambridge UK, ISBN 978-1-107-01961-4, pp. 325-334.

Van Lavieren, H., and R. Klaus, 2013. **An effective regional Marine Protected Area network for the ROPME Sea Area: Unrealistic vision or realistic possibility?** In: Special Issue of Marine Pollution Bulletin "Coral Reefs of the Gulf: Past, Present, and Future of a Unique Ecosystem" (Vol. 72, Issue 2).

Van Lavieren, H., and J. Burt. **Managing impacts from rapid, large-scale coastal development in the Arabian/Persian Gulf**. In book: Changing Coasts and oceans – Contemporary Coastal and Oceans Management Issues. IN PRESS.



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Topic: Freshwater

UN-Water, 2013. **Water Security & the Global Water Agenda. A UN-Water Analytical Brief.** United Nations University.

Environmental Development, **Volume 7**, July 2013,
Page IFC, ISSN 2211-4645.
([http://dx.doi.org/10.1016/S2211-4645\(13\)00076-6](http://dx.doi.org/10.1016/S2211-4645(13)00076-6)).



Topic: Drylands

Mueller, L., M. Suleimenov, A. Karimov, M. Qadir, A. Saparov, N. Balgabayev, K. Helming, and G. Lischeid. 2013. **Land and water resources of Central Asia, their utilisation and ecological status.** p. 3-59. In: L. Mueller et al (Editors) Novel Measurement and Assessment Tools for Monitoring and Management of Land and Water Resources in Agricultural Landscapes of Central Asia. Springer International Publishing, Heidelberg, Germany.

Mueller, L., U. Schindler, B. C. Ball, E. Smolentseva, V.G. Sychev, T.G. Shepherd, M. Qadir, K. Helming, A. Behrendt, and F. Eulenstein. 2013. **Productivity potentials of the global land resources for cropping and grazing.** p. 115-142. In: L. Mueller et al (Editors) Novel Measurement and Assessment Tools for Monitoring and Management of Land and Water Resources in Agricultural Landscapes of Central Asia. Springer International Publishing, Heidelberg.

Murtaza, G., A. Ghafoor, M. Zia-ur-Rehman, and M. Qadir. 2013. **Marginal-quality water use as an ameliorant for tile-drained saline-sodic soils in a rice-wheat production system.** p. 295-311. In: S.A. Shahid, M.A. Abdelfattah, and F.K. Taha (Editors) Developments in Soil Salinity Assessment and Reclamation: Innovative Thinking and Use of Marginal Soil and Water.

Qadir, M., P. Drechsel, and L. Raschid-Sally. 2013. **Wastewater use in agriculture.** p. 2675-2680. In: S. E. Jorgensen (Editor) Encyclopedia of Environmental Management. Taylor & Francis, New York, USA. Published online: 03 May 2013.

Qadir, M., F. Vyshpolsky, K. Mukhamedjanov, U. Bekbaev, S. Ibatullin, T. Yuldashev, A.D. Noble, A. Karimov, A. Mirzabaev, and A. Aw-Hassan. 2013. **Enhancing the productivity of high-magnesium soil and water resources in Central Asia.** p. 465-474. In: L. Mueller, A. Saparov, and G. Lischeid (Editors) Novel Measurement and Assessment Tools for Monitoring and Management of Land and Water Resources in Agricultural Landscapes of Central Asia. Springer International Publishing, Heidelberg, Germany.

Qadir, M., A.D. Noble, and C. Chartres. 2013. **Adapting to climate change through improving water productivity of soils in dry areas.** Land Degradation and Development 24: 12-21.

Mateo-Sagasta, J.; Medlicott, K.; Qadir, M.; Raschid-Sally, Liqa; Drechsel, Pay. 2013. **Proceedings of the UN-Water Project on the Safe Use of Wastewater in Agriculture.** UN-Water Decade Programme on Capacity Development (UNW-DPC) Proceedings Series No. 11; Bonn, Germany.

ELD Initiative (2013). **The rewards of investing in sustainable land management. Interim Report for the Economics of Land Degradation Initiative: A global strategy for sustainable land management.** Available from: www.eld-initiative.org



Want to Raise Crop Yields by 2.5 Billion Tons? Give Land a Break
UN-backed and UNU-INWEH published report, 'Economics of Land Degradation,' debuts at world desertification conference. Adopting proven sustainable land management practices could raise world crop supplies by an estimated 2.3 billion tonnes, worth \$1.4 trillion, experts say in a study being released at a major global desertification conference.

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- Prof. Peter Sale, Assistant Director
- Ms. Hanneke Van Lavieren, Programme Officer & Latin America and Caribbean Region Coordinator

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UNU-INWEH Director, Dr. Zafar Adeel, presenting at World Water Week 2013



UNU-INWEH Programme Support team with UNU auditors



Hanneke Van Lavieren and seminar presenter Charles Trick



Richard Thomas (left), Professor Susan Watt, Zafar Adeel



The UNU-INWEH team celebrating World Toilet Day, November 2013



Project Officer Harriet Bigas (left), Lucilla Spini, and UNU-INWEH intern, Ben Heikoop



UNU-INWEH's booth at McMaster Innovation Park's tenant fair

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