

UNITED KINGDOM OF GREAT BRITAIN AND NORTHERN IRELAND

NATIONAL REPORT ON IHP RELATED ACTIVITIES

22nd SESSION OF THE IHP INTERGOVERNMENTAL COUNCIL
PARIS, JUNE 2016

1. ACTIVITIES UNDERTAKEN IN THE PERIOD JUNE 2014 – MAY 2016

1.1 Meetings of the IHP National Committee

1.1.1 Decisions regarding the composition of the IHP National Committee

Two meetings of the United Kingdom National Committee for the IHP were held during the reporting period; on 3 March 2015 and 1 March 2016. Since its formation in 2007 (through the merger of the UK National Committee for the IHP and the UK Inter-Departmental Committee on Hydrology) the *UK Committee for National and International Hydrology* (UKCNIH) has acted as the UK National Committee for the IHP. The committee comprises representatives from UK bodies with a major stake in hydrology and water resources research; the current organisations represented are detailed in Table 1.

Table 1 Representation on the *UK Committee for National and International Hydrology* (as of June 2016).

Centre for Ecology & Hydrology (CEH)
Natural Environment Research Council (NERC)
Department for Environment, Food and Rural Affairs (DEFRA)
Department for International Development (DfID)
Welsh Government
Scottish Government
Department of Agriculture and Rural Development, Northern Ireland (DARDNI)
Scottish Environment Protection Agency (SEPA)
Environment Agency (EA)
Northern Ireland Environment Agency (NIEA)
Met Office
Department for Transport (DfT)
British Geological Survey (BGS)
Centre of Expertise for Waters (CREW)
UK Water Industry Research (UKWIR)
British Water
British Hydrological Society (BHS)
UK Committee of the International Association of Hydrological Sciences (IAHS)
International Association of Hydrogeologists (IAH)
UK National Commission for UNESCO
UNESCO Category II Centre of Water Law, Policy & Science, Dundee
UK interests in IHP Flow Regimes from International Experimental and Network Data (FRIEND)
UK interests in IHP Hydrology, Environment, Life and Policy (HELP)
UK interests in IHP International Sedimentation Initiative (ISI)
UK interests in UNESCO Ecohydrology projects

The Natural Environment Research Council (NERC) Centre for Ecology & Hydrology (CEH) continues to provide the UK IHP secretariat with Professor Alan Jenkins remaining as Chair of the UKCNIH and Dr Harry Dixon as its Secretary.

1.1.2 Status of IHP-VIII activities

The UK is able to contribute towards the IHP through a number of current scientific research programmes at a national and international scale. Contributions cover a range of IHP-VIII Themes and Focal Areas. UK researchers continue to play a leading role in many of the cross-cutting and associated programmes of the IHP. A sample of the UK contributions over the reporting period are detailed below.

ISI Programme

Professor Des Walling (University of Exeter) continues to act as a member of the ISI Steering Committee and Core Steering Group and attended the August 2014 meeting held in Beijing to relaunch the programme. Since this meeting Professor Walling has continued to contribute to the plans for the future development of ISI.

G-WADI Programme

The involvement of UK scientists in the development of the G-WADI programme continued over the reporting period. The G-WADI science community was saddened by the death of Professor Mike Edmunds (University of Oxford) in April 2015. Professor Edmunds had been a long-term supporter of the G-WADI Programme helping set up many of its activities around the globe. In 2014 Professor Edmunds helped establish the two new regional centres in the Arab Region and South East Europe, attending the inaugural meetings in Sharm el Sheikh and Belgrade.

Ecohydrology

Professor David Harper (University of Leicester) continues to play a leading role in coordinating research and capacity building activities in the area of Lake Naivasha (Kenya) and is an advisor to Imarisha Naivasha. The area is an International Ecohydrology Reference Site and IHP HELP basin.

FRIEND Programme

The UK has maintained its involvement in the FRIEND Programme providing support and research contributions to FRIEND initiatives worldwide through the activity of many hydrologists from across the country. A number of UK scientists continue to represent the UK on the Steering Committee of regional FRIEND initiatives.

CEH hosted the EURO-FRIEND Low Flow and Drought Group (Project Group 2) meeting at Wallingford, UK in September/October 2015. It was attended by 27 people from 10 countries (UK, Italy, Germany, Austria, Poland, Norway, the Netherlands, Switzerland, France and New Zealand).

UK scientists have been involved in a number of research initiatives linked to the EURO-FRIEND Low Flow and Drought Group that have delivered outputs over the reporting period, including a Belmont Forum project involving CEH and FRIEND partners on Drought Impacts and Vulnerability thresholds for monitoring and Early-warning Research (<http://www.drought.uni-freiburg.de/>). UK delegates attended conferences and meetings linked to FRIEND including: the European Geosciences Union

Leonardo conference on droughts (<http://www.eguleonardo2014.com/>) in Prague in November 2014 and the final conference of the Drought R&SPI project (<http://www.icdrought2015.upv.es/>) in Valencia in March 2015.

The 7th FRIEND took place in Montpellier, France in October 2014. Six UK authors (from CEH, University of Birmingham and University of Reading) presented papers at the conference.

The UK, through the National River Flow Archive, hosted by CEH, has continued to provide data updates to the FRIEND European Water Archive.

HELP Programme

A number of UK organisations have continued involvement in the activities of HELP basins in the UK and internationally. However, under its renewed Category II agreement (2014-2020), the Centre for Water Law, Policy and Science at the University of Dundee is no longer responsible for the coordination of HELP basins within Europe.

Over the reporting period, the University of Dundee continued to take a leading role in research and stakeholder engagement, with Tweed Forum, in the Tweed HELP Basin in South East Scotland, including projects to develop science evidence base for catchment restoration and delivery of multiple benefits and ecosystem services.

1.2 Activities at national level in the framework of the IHP

1.2.1 National/local scientific and technical meetings

The UK hydrological community continues to convene a comprehensive range of national and local scientific/technical meetings. The British Hydrological Society (BHS) is a UK national society for the advancement of hydrology. The Society's membership is drawn from both the academic (universities and research institutes) and operational sectors. The Society holds regular national and regional scientific and technical meetings related to Hydrology. Over the reporting period numerous meetings have been held on topics such as *Hydrological Impacts of Energy Projects, Natural Flood Management, Groundwater Extremes and Surface Water Impacts, Forest Hydrology and the Impacts of Flooding on Critical Infrastructure*. The Society's latest National Symposium was held in Birmingham in September 2014.

1.2.2 Participation in IHP Steering Committees/Working Groups

UK researchers continue to be involved in wide range of IHP Steering Committees and Working Groups. In relation to the cross-cutting and associated programmes of IHP, UK scientists serve on, amongst others, the committees of FRIEND, HELP and ISI (see Section 1.1.2). The UK National Committee for the IHP is represented on the Governing Board of the Category II Centre for Water Law, Policy and Science by Dr Harry Dixon (see Section 1.4).

The UK continues to actively engage with other National Committees in IHP Region 1, providing contributions to consultations and other initiatives. The UK National Committee was represented at the IHP Region 1 meetings in Brussels, Belgium (October 2015) and Koblenz, Germany (May 2016).

The UK maintains links with the IHP Secretariat in the UNESCO Division of Water Sciences. Over the reporting period the National Committee for the IHP provided a UK response to the Member State consultation on the External Audit of the Governance of the Intergovernmental Programmes

(August 2014), the Survey of IHP National Committees (June 2015) and the consultation on the Intergovernmental Panel on Water and the Statuses of the IHP (September 2015).

Nationally, Professor Alan Jenkins and Dr Harry Dixon (as Chair and Secretary of the UKCNIH) represent UK involvement in the IHP in UK National Commission for UNESCO initiatives. Over the reporting period, contributions reflecting the IHP were made to the Commission's assessment of the Wider Value of UNESCO to the UK 2014-2015 (<http://www.unesco.org.uk/publication/wider-value-of-unesco-to-the-uk-2014-2015/>). Through the Commission the IHP National Committee provides advice on relevant policy issues to the UK Permanent Delegation to UNESCO. Over the reporting period this input has included leading work looking into how UNESCO can successfully map the capacity and impact of its Category II Centre network – a [Policy Brief](#) was published on this topic in 2015.

1.2.3 Research/applied projects supported or sponsored

A wide range of research and applied projects on UK and international hydrology continue to be undertaken with funding from a range of sources. Examples over the reporting period are given below.

The British Geological Survey (BGS) and partner organisations are undertaking three projects as part of the 2nd phase of the UPGro research programme to *Improve the evidence base around groundwater availability and management in Sub-Saharan Africa to enable developing countries and partners in Sub-Saharan Africa to use groundwater in a sustainable way in order to benefit the poor*. The programme is jointly funded by UK's Department for International Development (DFID), Natural Environment Research Council (NERC) and the Economic and Social Research Council (ESRC). Previous outputs from the programme include The [Africa Groundwater Atlas](#) and [Africa Groundwater Literature Archive](#), a searchable online database that brings together a catalogue of nearly 7000 references for literature about groundwater in Africa.

The European Union continues to be an important source of funding for UK international research activities. For example, CEH are leading a project over the 2015-2017 period entitled EDgE which brings together water practitioners, hydrological experts and informatics specialists to deliver new proof-of-concept information and tools for European stakeholders in the water sector to improve their decision-making linked with climate.

The UK Met Office continues to support a wide range of National Meteorological and Hydrological Service providers around the world. Recent initiatives completed include a World Bank review of Trans-Boundary Early Warnings for Flood and Drought management in Africa and Asia (2015), development of climatological and hydrological tools with the Nile Forecasting Centre and development of high resolution forecasts on Lake Victoria.

In 2014 the UK Government launched an initiative intended to strengthen research and innovation partnerships between the UK and emerging knowledge economies. NERC is one of several delivery partners for the Newton Fund and over the reporting period has developed a series of new joint research programmes related to hydrology including a UK/India collaboration on Sustaining Water Resources for Food, Energy and Ecosystem Services.

1.2.4 Collaboration with other national and international organisations and/or programmes

Close links are maintained between the UK National Committee for the IHP (see Section 1.1) and other international organisations/programmes. Professor Alan Jenkins (Chair of the UKCNIH) is the UK Hydrological Adviser to the UK's WMO Permanent Representative, representing UK involvements in the WMO Commission for Hydrology (WMO-CHy). UK scientists continue to be actively involved in a wide range of WMO initiatives.

Linkages with the International Association of Hydrological Science (IAHS) are maintained through Dr Kate Heal (University of Edinburgh), Chair of the UK National Committee for IAHS. UK scientists continue to contribute to a wide range of IAHS Commissions and activities. The 2014 Tison Award for an outstanding paper by a young scientist(s) published in an IAHS publication, was won by the UK hydrologists Dr David Lavers and Professor David Hannah.

Professor Mike Acreman (CEH) continues to offer support to the Ramsar Convention on Wetlands as a member of the Scientific and Technical Review Panel.

UK hydrogeologists continue to be actively involved in a number of Commissions and Working Groups of the International Association of Hydrogeologists (IAH) and close links are maintained between the IHP National Committee and the Association. IAH has 40 national groups, of which the British National Chapter is one of the oldest established and currently has about 220 members. During 2015, the Chapter organised a technical meeting focusing on Early Career Hydrogeologists' current research and the annual Ineson Lecture. Regular links between IHP and IAH are generally facilitated by the Association's Commissions and Networks; those on Climate Change and Groundwater and Transboundary Aquifers are led from the UK.

In Europe, the UK (through NERC/CEH) are partners in the EU Joint Programming Initiative, *Water Challenges for a Changing World* and are part of the consortium aimed at Coordination and Support Action of the JPI process (WatEUR).

1.2.5 Other initiatives

See other sections of report.

1.3 Educational and training courses

1.3.1 Contribution to IHP courses

See other sections of report.

1.3.2 Organisation of specific courses

The UK continues to provide and contribute to a wide range of hydrological training and education both nationally and overseas, including an extensive range of postgraduate degrees in hydrology and related subjects. See other areas of report for examples, including current educational initiatives by the Dundee Category II Centre.

The British Hydrological Society offers a studentship scheme to help support members who wish to study hydrology at postgraduate masters level.

1.3.3 Participation in IHP courses

See other sections of report.

1.4 Cooperation with the UNESCO-IHE Institute for Water Education and/or international/regional water centres under the auspices of UNESCO

UNESCO Category II Centre for Water Law, Policy and Science (University of Dundee)

The Centre for Water Law, Science and Policy was launched as a Category II Centre under the auspices of UNESCO in November 2006. The Centre has submitted a separate Biennial Report to the 22nd Session of the Intergovernmental Council, a number of key elements of which are reflected below and in other sections of this National Report.

The Centre delivers an LLM (Master of Laws) in Water Law, awarded by the University of Dundee. It accepts research students to study for LLMs by Research and PhDs, delivers specialist teaching on other taught Masters programmes within the University and has delivered tuition within UNESCO-IHE. The Centre hosts an Annual Workshop on International Law and Transboundary Freshwater, at the University of Dundee. This is now in its 7th year and annually attracts 30-40 mid-career professionals from government and international organisations.

Over the reporting period the Centre has held nine other major training events across Africa, the Middle East, South East Asia and South America. Some of these training workshops have been co-delivered with the UNESCO Secretariat and regional offices, including the 2015 training workshops in Lebanon and Jordan.

The Centre's publications in the reporting period include peer reviewed literature, project reports and other outputs. All of the work of the Centre contributes in some way to some of the focal areas of the IHP-VIII and to the WWAP objectives. Several outputs have been published in collaboration with UNESCO including: an addition to the International Hydrology Series on *Frameworks for Water Law Reform*, a WWAP Technical Paper on *Transboundary water governance and climate change adaptation* and contribution to the UNESCO publication on Public Participation and Water Resources Management exploring *Transboundary Hydropower Projects on the Mainstream of the Lower Mekong River*.

The Centre cooperates with a wide variety of national and international organisations working in water and development, including other parts of the UNESCO family. In December 2014 the Centre attended a meeting of the Category II Water Centres in Koblenz, Germany and a subsequent meeting of Centres in Paris in December 2015, coinciding with the COP21.

In late 2014 staff from the International Centre for Water Cooperation (ICWC) at SIWI and from UNESCO-IHE visited the Centre to discuss collaboration in water law, policy and governance. The Centre is developing an MoU with ICWC which will relate to both research and teaching / training.

Further details of the Centre's activities and a full list of publications can be found in the dedicated Category II Centre Biennial Report.

1.5 Publications

No list is maintained of UK publications related to the IHP. See other sections of report for examples of related publications.

UK researchers contributed to the 2015 publication *Water, People and Cooperation* celebrating 50 years of water programmes at UNESCO. Sections were authored by the UK National Committee and the Category II Centre for Water Law, Science and Policy.

Staff from the James Hutton Institute, in collaboration with UNESCO, published a new book as part of the International Hydrology Series on the subject of *Water Ecosystem Services – A Global Perspective*.

1.6 Participation in international scientific meetings

1.6.1 Meetings hosted by the country

UK scientists have led and contributed to numerous international scientific meetings in relation to the IHP over the reporting period, both in the UK and abroad. See other sections of the report for examples of these meetings.

In May 2015, the UK National Committee for the IHP convened a Special Session at the International Water Resources Association's World Water Congress in Edinburgh. The session focussed on *International Catchment Management Science and Application* and highlighted current and future activities related to the IHP and Hydrology and Water Resources Programme of WMO. Speakers included the Secretary of the IHP.

1.6.2 Participation in meetings abroad

See other sections of report.

1.7 Other activities at regional level

1.7.1 Institutional relations/cooperation

See other sections of report.

1.7.2 Completed and ongoing scientific projects

See other sections of report.

2. FUTURE ACTIVITIES

2.1 Activities planned until December 2016

UK hydrologists will organise and contribute to wide range of forthcoming activities, including the British Hydrological Society's 4th International Conference (30 August – 1 September 2016, Cranfield University) and 7th Annual International Law & Transboundary Freshwaters Training Workshop (27 – 30 June 2016, University of Dundee, UK).

2.2 Activities foreseen for 2017-2018

2.3 Activities envisaged in the long term

UK scientists intend to continue their participation in the IHP, contributing to a wide range of initiatives and programmes as funding permits.