

Name: TIMOTHY CHARLES HANNAN

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Specialisation: Water Resources Management, including Climate Change Adaptation, Policy and Strategy Development, Institutions and Capacity Building, Transboundary Water Concerns

Year of Birth: 1956

Nationality: Canadian / British / Irish

EDUCATION AND PROFESSIONAL STATUS

BA (Honours), University of Manitoba, 1982

MSc, Civil Engineering (Water Resources), University of Manitoba, 1985

Member, Chartered Institution of Water and Environmental Management, 1993

Member, Engineering Council (UK), 1997

SUMMARY OF PROFESSIONAL EXPERIENCE

- extensive background in all aspects of water and its management: climate change adaptation, transboundary water cooperation, institutions and governance, law and policy, water management, strategy development, engineering and project planning, environment, hydrology
 - extensive experience in development of water management institutions and institutional capacity building, including transboundary institutions and governance
 - extensive experience as Team Leader on a wide variety of water governance and management projects with a strong emphasis on stakeholder mobilisation and involvement
 - operational and project planning experience for all major water sub-sectors: urban and rural domestic, environmental, floods, irrigation
 - training and technology transfer in water resources management for institutional strengthening
 - work experience in Central Asia, South and Southeast Asia, the Middle East, Africa, UK and Canada
 - strong background working with funding agencies, governments, including ministries responsible for water resources as well as foreign affairs, with environmental organisations, NGOs and stakeholder organisations
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DETAILED EXPERIENCE SUMMARY

2010-11 **Water and Flood Management and CC Adaptation Specialist, Integrating Climate Change Risks into Water and Flood Management by Vulnerable Mountain Communities in the Greater Caucasus Region of Azerbaijan, Azerbaijan**

With increasing vulnerability to flooding and to risks of water availability due to climate change, vulnerable mountain communities in the Greater Caucasus region need to find ways to adapt. This work is a preparation for a project to identify measures to adapt to climate change through improved management and governance at all levels.

2010 **Team Leader & Water Resources Planning and Management Expert, Joint Multipurpose Program 1 Identification Studies (JMP1 ID), Eastern Nile Region**

The Eastern Nile Region is embarking on a joint, multipurpose project, primarily driven by hydropower generation, but also including watershed management, irrigation modernisation and development and floodplain management. The hydropower component is a cascade of four major projects on the Abbay River (Blue Nile) in Ethiopia. The dams have a significant, mostly very positive, impact on the downstream countries of Sudan and Egypt. This will be first such joint investment by the three countries under ENTRO (Eastern Nile Technical Regional Office) and a major boost to regional integration and trade in general and on joint management of the Nile Basin in particular. The study analyses the projects from financial, economic, environmental and social perspectives to identify the preferred cascade sequence, the first priority project, the Anchor project (which includes the other project components), culminating in a project definition ready for financing.

2007-2010 Team Leader and Water Resources Management Specialist, Rift Valley Lakes Basin Integrated Resource Development Master Plan Study, Ethiopia

This is a Master Plan study to optimise resource development for the basin, covering several agricultural components, fisheries, forestry, industry, tourism, wildlife, land and water resources, environmental protection and their integration into an overall development plan. Conflict over land and water resources is already a key issue which will be exacerbated by the rapidly growing population over the next 25 years. The primary objective is to find a way to optimise resource use within the context of sustainable development while minimising conflict potential. Water management institutions are weak and require major capacity building. My second role as water governance specialist is to determine needs and lay out a strategy for strengthening. Specifically, a new law supports the establishment of stakeholder based River Basin Organisations which the project will help in creating.

2006 Programme Evaluator, Nile Basin Initiative (GEF)

This was a short Mid Term Review of the environmental programme for the GEF funded Nile Basin Initiative, based in Khartoum but with nine country members. My responsibility was evaluating the water management and institutional aspects for the nine NBI countries, plus the full assessment for Sudan, Kenya and Tanzania.

2006 Coordinator, Shared Waters Initiative, UNDP, New York

As global coordinator of the SWBM programme I have been responsible for advising UNDP on the needs of the key transboundary rivers, recommend actions UNDP should take on supporting improved cooperation on the shared rivers and liaise with regional donors on funding. I also worked closely with UN ambassadors on developing transboundary water cooperation.

2005 Water Management Advisor for Central Asia, UNDP

I advised UNDP and Central Asian governments on improved water resources management with emphasis on transboundary water cooperation and assisted governments in developing water sharing agreements. Additionally I advised at each national level on institutional and legislative needs in IWRM, to coordinate UN agency activities on water and coordinate with other donor agencies.

**2004-2005 Water Management Advisor, UNDP, Kazakhstan
UNDP/GWP Project for a National IWRM Plan**

My main contributions to this project were as key author of the Kazakhstan National IWRM Plan and establishing the eight stakeholder River Basin Councils to improve water governance at the river basin level. In addition I developed the main components of a Strategy for the Achievement of the MDG target for water supply and sanitation. I worked closely with the principal water government institutions to define water management issues, especially in terms of governance, law and institutional change and strengthening.

**2002-2004 Team Leader and Water Resources Management Specialist, Kazakhstan
Nura-Ishim River Basin Management Project**

Under a World Bank umbrella for improved water governance across the CA region, this project built capacity in the eight newly established River Basin Organisations and the national Committee for Water Resources. Initially focusing on two basins as pilots, it developed process and practice for replication in the eight river basins of the country. The project made a major contribution to writing the new Kazakhstan Water Code (passed in 2003) and its associated Regulations and By-Laws. A key component of the new Code was the institution of stakeholder-led River Basin Councils. The Code was written simultaneously with another key output, the Strategy for the Development of RBOs, providing strong synergy between the new Code and the institutions they support. As Team Leader I was involved in all aspects of the project, with my main technical inputs

focusing on the institution of River Basin Councils, development and strengthening of the River Basin Organisations, the new Water Code, transboundary considerations and developing water resources development plans at basin and national levels.

**2001-2002 Team Leader and Water Management Specialist, Pakistan
Pakistan Water Sector Strategy Study**

This Technical Assistance for the Asian Development Bank assisted the Government of Pakistan in developing a Water Sector Strategy looking towards 2025 and a Medium Term Investment Plan to 2011 as the first stage of the Strategy. The Strategy emphasises interventions toward improvement of water governance as well as structural and technical needs in all water sub-sectors: urban and rural domestic, agriculture, environment, industry. The Investment Plan highlights specific projects in the sector as a way to direct investments from donor agencies and the private sector to where they are most needed. Both the Strategy and Investment Plan have been developed in line with ADB water policy as well as Pakistan's policies for water, the environment and economic development.

**2000-2001 Team Leader and Water Management Specialist, Thailand
Thailand Capacity Building in the Water Resources Sector Project**

This TA assisted the Royal Thai Government in developing a strategy for implementing necessary changes in the water sector through policy reform and institutional developments to establish a unified water resources management system. The project worked with the Office of the National Water Resources Committee on improving water governance through the establishing and strengthening of national and river basin level IWRM. The emphasis was on the establishment of River Basin Committees, now operating in several river basins, which are stakeholder-run organisations representing all water users. With irrigation the main water user in Thailand, the project also worked with the Royal Irrigation Department on developing new priorities and practices in irrigation water management and testing them on eight irrigation pilot projects.

**1999-2000 Project Manager and Water Management Specialist, Turkey
Turkey Emergency Flood and Earthquake Recovery Project (TEFER)**

Managing a consortium of British, Turkish and Dutch specialists in the rehabilitation of 14 flood mitigation systems for the West Black Sea Region, damaged during the flood of May, 1998 and again in the earthquakes of 1999. Sediment transport from the upper catchment of this mountainous region during large floods has been found to reduce the effectiveness of the control structures and we are assessing this effect for new mitigation systems.

**1998-99 Water Management Specialist, UK, Zimbabwe
Integrated Water Information Management Programme, Zimbabwe**

The objective of this DFID funded project was to assist in the development of a national level body for improved water management and to establish stakeholder-based River Basin Councils. As the water management specialist I advised on the practicalities of water governance at national and river basin levels issues and methods of mobilising stakeholders. Equity and efficiency of water use were the main concerns and I advised on approaches to their improvement and assisted to entrench them in the new legislation which was being developed. I also wrote guidelines for national and catchment level IWRM for water resources planners to strengthen capabilities in water conservation, and contributed to the development of an integrated information management system to aid in water management decision making.

**1997-98 Flood Modelling Advisor, UK
Thames River Flood Mapping Project**

I advised a team of hydrodynamic modellers delineating and mapping the flood plain of the Thames River, UK.

**1997 Environmental Water Management Specialist, Syria
Syrian National Environmental Action Plan (NEAP)**

I was responsible for the Water Resources Management component of the Syrian NEAP. A major aspect of the work was advising on formulation of national policies for water conservation and management and the development of strategies for effective implementation of policy considering conservation of water as well as enforcement of water quality legislation. The transboundary issue on the Euphrates was a significant component of the work. I developed and participated in a week-long Water Management Workshop which focused on policy development and which was attended by professionals from all organisations with interest in water resources.

1997 **Urban Drainage Specialist, Vietnam**
Drainage Project for Environmental Improvement in Hanoi – First Stage

Acting in an advisory capacity I reviewed the preliminary design of the main urban drainage system for Hanoi and recommended improvements before going ahead to detailed design and implementation.

1996-97 **Team Leader and Water Resources Planner, Turkmenistan**
Turkmenistan Irrigation and Drainage Project

The primary objective of this World Bank project was to improve water use efficiency in the Karakum Canal in order to conserve water with the declining Aral Sea as a focus. The main elements were improved governance at the ministerial level, improved operational management of the Karakum Canal itself and structural interventions to improve the hydraulics of the canal. Investment strategies were prepared for international funding and feasibility studies and preliminary and detailed designs were completed for two major hydraulic control structures. I worked with deputy ministers on developing new water management strategies and legislation for water use and environmental protection. Of particular importance here were the international implications of water sharing agreements with the other new countries of the Aral Sea Basin.

1995 **Water Resource Planner, Indonesia**
Umbulan Spring Bulk Water Supply Study

I was responsible for analysing the development potential of a large spring for water supply for Surabaya, a city of over three million people which suffers from water shortages and low water quality. The environmental impacts of the proposed scheme on regional water users in terms of both quantity and quality were also analysed.

1988 - 1995 **MOTT MACDONALD LIMITED, UK**
Environment and Water Resources Division,
Senior Engineer and Water Management Specialist

1995 **Programming and Monitoring System Specialist, Indonesia**
Irrigation Subsector Project II

I led a small team in the development of a computerised Asset Management System for the maintenance of irrigation infrastructure for the Provincial Irrigation Services in Central and East Java. Operational water management in both real time and planning modes was also included as a secondary element.

1994 **Water Management Specialist, Indonesia**
Nusa Tenggara Agricultural Development Project

I managed the development of a new central Water Operations Centre to improve the operation of a complex diversion and canal system. The main elements were a real time optimisation model for water allocation and training of the Centre staff and field workers for system operation.

1993-94 **Project Manager and Water Management Specialist, Oman**
Wadi Kabir - Lusayl Detailed Water Resources Assessment and
Detailed Hydrotechnical Recharge Studies in Dhahira Region, Wadi Al Aridh and
Wadi Yanqul

I managed two related projects to assess the water resources and recommend water conservation strategies for a region covering 9500 km² in Northern Oman. Deteriorating water quality and severe water shortages were the major issues in this region. An integrated catchment model was developed to assess the problems and analyse solutions including artificial aquifer recharge, inter-basin transfers and other resource development strategies.

1993 **Water Resources Planner, UK**
Scenario Planning and Risk Analysis Project

On behalf of the newly privatised water authority, the major aquifer systems of the Anglian Region of the UK were assessed to determine the effect of changes in climate, licensing rules and environmental restrictions on the aquifer recharge and the regional water resources to a 2060 planning horizon. I was responsible for the climatological assessment based on the global warming models and the groundwater modelling to simulate aquifer response.

1993 **Hydrologist, Indonesia**
Provincial Irrigated Agricultural Development Project

I was responsible for the hydrological analysis to determine the feasibility of 127 irrigation projects in 13 provinces in Indonesia. Duties also included the development of guidelines for and training of local staff in hydrological assessment methods for provincial irrigation authorities.

1992 **Water Resources Advisor, Indonesia**
Musi Pulp Mill Project

I advised a private sector / government consortium on climatic and water resources constraints and environmental considerations related to the development of a major pulp mill and managed forest project.

1992 **Deputy Project Manager, India**
Madras Metro Flood Relief/Stormwater Drainage Master Plan, Madras

This was a large project to develop and test engineering options for flood alleviation and urban drainage for the city of Madras. I assisted in the project management and was responsible for the hydraulic and hydrological modelling of the rivers and drainage systems of Madras city as well as water quality analysis.

1991 **Hydraulic Modeller, Indonesia**
Surabaya Integrated Urban Infrastructure Development Project

I carried out hydraulic modelling of the preliminary design of the main drainage systems of Surabaya, Indonesia's second largest city, to test options for final design. Duties also included training local drainage engineers in the analytical methods employed.

1991 **Water Resources Planner, Libya**
Sirt-Juffra Development Project

I advised the Planning Committee for the Sirt-Juffra Region on the water resources constraints for the new government administration centres at Sirt and Juffra.

1991 **Water Resources Planner, Pakistan**
Murree Water Supply

I was responsible for the assessment of potential sources for urban water supply for the highland town of Murree.

1989-91 **Resident Hydrologist/Modeller, Oman**

I was responsible for the hydraulic, hydrological and water resources aspects of all projects in the Oman office. The main projects were: **Ghubrah Desalination Plant Flood Protection, Oman National Water Resources Master Plan, Saham-Sohar, Al Khaburah Bani Khalid Al Bu Qurayn Artificial Aquifer Recharge Studies**

1989 **Hydrologist, United Arab Emirates**
Dubai Recharge Dams

Responsible for hydrological assessment of design floods for the safety analysis of four aquifer recharge dams.

1989 **Hydraulic Modeller/Hydrologist, UK**
Callander Flood Study

I carried out storm analysis and catchment modelling to determine design floods, as well as hydrodynamic modelling to determine feasible options for flood control in Callander, Scotland.

1988 - 1989 **Resident Hydrologist, Indonesia**

I was responsible for upgrading the Hydrology Department of the East Java Irrigation Service, through developing statistical packages for hydrological analysis and data handling and training programmes. I also carried out extensive hydrological modelling for the South Lombok irrigation area to determine the feasibility of a new dam for irrigation. Water use was optimised using a dynamic programming based water balance model of the main irrigation schemes. The work included training of staff to operate the water balance model.

1987 - 1988 **CUSO, Maha Sarakham, Thailand**
Water Resources Engineer

I worked with the provincial water resources department as engineer on small scale irrigation projects as well as water supply and water treatment, soil and water conservation, groundwater investigations, supervision of drilling and pump installation for domestic water supply.

1986 - 1987 **STRATA ENGINEERING CORPORATION, Ottawa, Canada**
Drainage Engineer / Hydrologist

Strata is a small geotechnical consulting firm. As the only water engineer, I was in charge of all hydrological and groundwater investigations and soil surveys for the design of drainage systems for various small projects.

1984 - 1986 **UNIVERSITY OF MANITOBA, Winnipeg, Canada**
Tutor in Hydrology and Hydraulics

The University of Manitoba Civil Engineering Department had a programme sponsored by the Canadian International Development Agency for groups of Indonesian engineers to study for Masters degrees. I tutored two of these groups in hydrology and hydraulic engineering, part time during my own M.Sc. programme.

1982 - 1984 **UNIVERSITY OF MANITOBA, Winnipeg, Canada**
Research Assistant

While carrying out research for my own M.Sc., I was also involved in the following research projects, some of which resulted in publications, as a paid research assistant:

- economic and flood probability evaluation of agricultural drainage;
- development of an expected damage function for multiple annual floods;
- multi-objective optimisation for reservoir operation using linear programming;
- time-series analysis and for flood forecasting equations for some sub-basins of the Red River;
- investigation of human responses to flood forecasting.

LANGUAGE CAPABILITY

English : Mother tongue
Thai : Spoken - fair; written - fair; reading - fair
Indonesian : Spoken - fair; written - fair; reading - fair

PUBLICATIONS

'Assessing Access to Safe Water and Monitoring Progress on MDG7 Target 10 (access to safe water and basic sanitation): Lessons from Kazakhstan', Water Policy, 10: 1-24, 2007 Co-authors: S.L. O'Hara, Maria Genina.

'Integrated Water Resources Management in Kazakhstan: What Does it Mean for Water Users?', Water Resources and Water Use – Journal of the Water Supply and Sanitation Industry, Number 8, November, 2004 (in Russian).

'A Solution to the Aral Sea Crisis?: Sustainable Water Use in Central Asia', Journal of Water and Environmental Management, Volume 14, No. 3, June, 2000.

'Irrigation and Water Management in Turkmenistan, Central Asia: Past Systems, Present Problems and Future Scenarios', Europe-Asia Studies, Vol. 51, No. 1, 1999. Co-author S L O'Hara.

'Managing Turkmenistan's Kara Kum Canal: Problems and Prospects', Post Soviet Geography, Vol. 39, No. 4, 1998, Co-author, S L O'Hara.

'An Approach to Water Resources Assessment and Management Using an Integrated Catchment Model: A Case Study From Northern Oman', Proceedings of the Sultanate of Oman International Conference on Water Resources Management Studies in Arid Countries, Muscat, March, 1995, Vol 2, pp 401-410. Co-authors D Storey and M A Glynn.

'Real Time Water Allocation for Irrigation', Journal of the Institution of Water and Environmental Management', Vol 9, No 1, February, 1995. Co-author A V Coals.

'Irrigation Innovation', World Water, Developing World Bulletin, Issue 4, November, 1992.

'Model for Crop Allocation in Rural Flood-plains', Journal of the Water Resources Planning and Management Division, ASCE, 112(1), January 1988, Co-author I C Goulter.

'Rural Land Use Allocation for Flood Damage Mitigation through Dynamic Programming Considering Multiple Annual Floods and Time Dependent Flood Damage Susceptibility'. Thesis submitted in partial fulfilment of Degree of Master of Science in Civil Engineering, University of Manitoba, 1985, 212 pp.

'Agricultural Flood Damage with Multiple Annual Floods and Time Dependent Flood Damage Susceptibility', Proceedings of 2nd International Conference on Hydraulics of Floods and Flood Control, Cambridge, England, 24-26 September 1985, Co-author I C Goulter.

'Model for allocating Water to Energy and Agricultural Production'. Paper presented at the 1984 Summer Meeting of the American Society of Agricultural Engineers, University of Tennessee, Knoxville, Tennessee, June 1984, Co-authors I C Goulter, A J Kettler and D A Kiely.

'Flood Warnings and Flood Responses for the Red River of the North', Water Resources Bulletin, 20 (4), 1984, pp 599-610, Co-author I C Goulter.

'Flooding on Some Sub-basins of the Red River', proceedings of the Canadian Association of Geographers' Conference, June 1982, Co-author J D Milton.

Signed: _____

Date: _____