WELCOME TO DAMIEN PEARSON, GENERAL MANAGER

Damien Pearson has joined eWater in the recently created role of General Manager. Reporting to the eWater Limited Group CEO, Michael Wilson, Damien will be responsible for the day-to-day management of eWater’s software development and hydrological modelling services and contribute to the strategic direction of the eWater Limited Group.

IMPROVING LIVELIHOODS IN NORTHERN CAMBODIA

More than 300,000 people living in Stung Staung river basin in Northern Cambodia rely on agriculture for their livelihoods. Access to a clean water supply is fundamental

for wellbeing and health particularly to prevent transmission of the COVID-19 virus. Increased food security, higher income for farmers and improved health in the villages can be expected if the reliability and quality of water supplies in the province can be enhanced through improved sharing of existing water

supplies.

Partnering with the World Bank and support from the Royal Government of Cambodia (RGC), eWater undertook a study to assess the challenges of water supply development and to establish an enabling environment, based on scientific evidence, for a water sharing dialogue between authorities, farmers and relevant water users and assist with developing a long-term investment plan for water supply utility for Staung district in Kompong Thom Province.

(AdobeStock, Rice worker planting rice in a rice field, by Michel)

Study Area

The Stung Staung river rises in the mountains of Northern Cambodia before flowing 213 km to the iconic Lake Tonle Sap, one of the largest freshwater lakes in the world. In its northern reaches, the river flows through forest before entering expansive cropland to the south. The majority of the 217 villages in the catchment are along the river in the

farming districts which cover about a third of the catchment. More than a quarter of the people in the river basin live in poverty.

Competition between irrigation and village water supplies is increasing as climate change varies the annual rainfall pattern. Barrage '*Samsep Kagna*' of 7,200 ha is the only large irrigation scheme in the catchment. Other existing schemes include 17 medium schemes and 8 small schemes (Figure 1). Currently, rainfed paddy rice is the main crop in the command areas, but further downstream field and garden crops are more common.

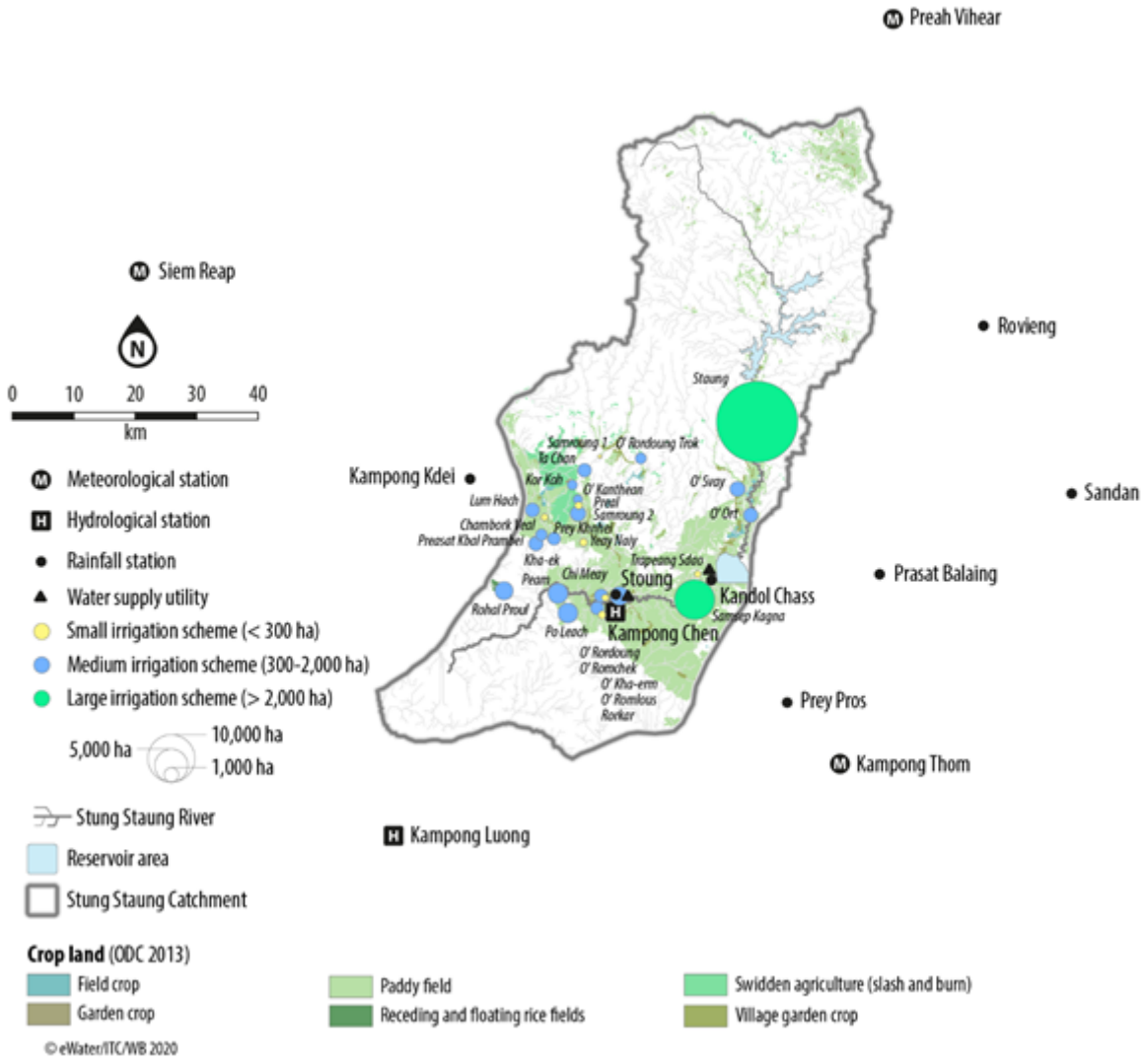


Figure 1: Irrigation schemes and water supply utility in the Stung Staung Catchment.

To help manage the water competition and cope with climate change, a large water reservoir of the Staung Water Resource Development Project with a potential area of 30,000 ha is planned.

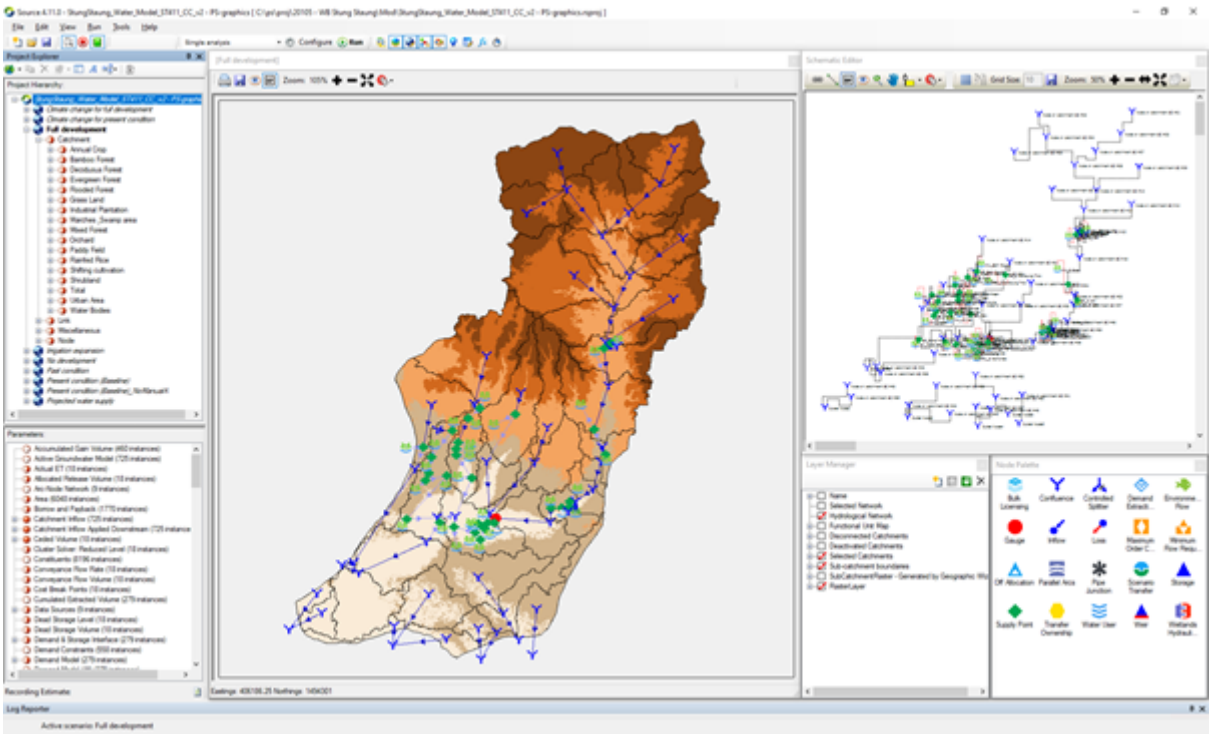
Clean water supply in the coverage areas comes from the

Stung Staung River, supplemented with groundwater from a 200m deep tube well next to the treatment plant near the river. A World Bank's Water Supply and Sanitation Improvement Project (WaSSIP) aims to increase water supplies to villages by up to four times through a new water supply utility near Barrage '*Samsep Kagna*'.

Development of a Source model to assess demand and supply

Through 2019-2020, funded by the World Bank, eWater, in collaboration with the Institute of Technology Cambodia (ITC) and Ministry of Water Resources and Meteorology (MOWRAM), and Ministry of Industry, Science, Technology and Innovation (MISTI) undertook a comprehensive catchment assessment in the Stung Staung River and developed a Source model to support dialogue on a water sharing plan in the catchment. The outcome of the assessment will support the design of future water supply infrastructure and investment potential of the RGC and the

World Bank in Staung district.



Stung Staung River Source Model

Methodology

The data review included demography, geography, water sources, status and trends of water supply and demand, initial potential risks and mitigation measures. Additional hydrometeorological datasets were collected to help refine the existing country-wide Source model to form the Source Stung Staung Model, the model supports hydrological and water system modelling. The hydrological model was used to undertake a water balance assessment that characterised

the natural condition (rainfall-runoff process) in the catchment. The water system model was run to quantify water demand from various sectors, mainly irrigation activities and municipal water requirements.

Once the hydrological characteristics for the catchment were defined, several future scenarios were formulated and later assessed using well calibrated models of the pre-development and future-development scenarios. This allowed for an assessment of potential hydrological risks. The simulations quantified surface water availability from the natural processes of rainfall-runoff and water resource use by different sectors. Hydrological baseline statistics were developed, which characterised the water supply/demand balance on a monthly, seasonal and annual basis.

Climate change impacts

An analysis of rainfall patterns over the Stung Staung Catchment reveals an observed change in rainfall between the past condition (2000-2011) and the present condition (2012-2019). The pattern of mono-modal with a peak in

September has changed to bi-modal with peaks in July and September. A decrease in rainfall in August was clearly observed for all the key stations. Particularly, a big change in rainfall was observed at Stoung in the lower section of the river. Monthly rainfall in the wet season dropped about 100 mm. A significant drop was in September: decreasing from about 400 mm to below 200 mm. The climate change assessments suggest a decrease in all flow ranges from the present condition.

Pathway to resilient water resources

The project allows the Cambodian authorities to consider the developed workflow and application of the Source Modelling Platform for water balance analysis and catchment assessment as a scientific tool to support water allocation mechanisms.

The study recommended, through community discussions, establishing a minimum requirement for water quantity and quality as the priority for domestic water supply.

Understanding community priorities will assist the large water storage managers in developing an equitable water sharing plan for domestic and irrigation water. While there is a potential for expansion of irrigation scale, the irrigation modernisation should be taken into account of water balance to improve the sustainability of the irrigation system, providing benefits to farmers and the downstream biodiversity and aquatic environment in the river. Crop intensification would lead to higher irrigation water demand resulting in water shortage so shifting the crop growing calendar could be considered as a way to ease water shortages in May and June.

With signs of less water available in the future, the villages in the river basin need to discuss their options, such as crop diversification to high value crops, which may generate greater income with less water. The study provides valuable details and guidance for the authorities and villagers in the river basin to mitigate risks and for Development Partners to investigate water resource development option and enhance water resource management benefits in the Stung Staung Basin.

Related information

Read this article by the CAVAC (Cambodia-Australia Agricultural Value Chain Program) for more on the use of water models in Cambodia
https://cavackh.org/public/post/using-water-simulation-models-to-support-sustainable-water-resources-management

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MUSICX 1.1

The eWater team has been working hard on a number of updates to MUSICX, with a new version out now, highlights include:
– MUSIC-link
– The ability to add notes to individual nodes
– Additional recorders, including Overflow, Pipe flow, Water Level, Storage, Water Demand and Reuse
– allowing a Monthly Pattern as Data Source for PET

Download here

Watch the release webinar

SOURCE 5.12 IS NOW AVAILABLE

Current licence holders can now download the latest version of Source.

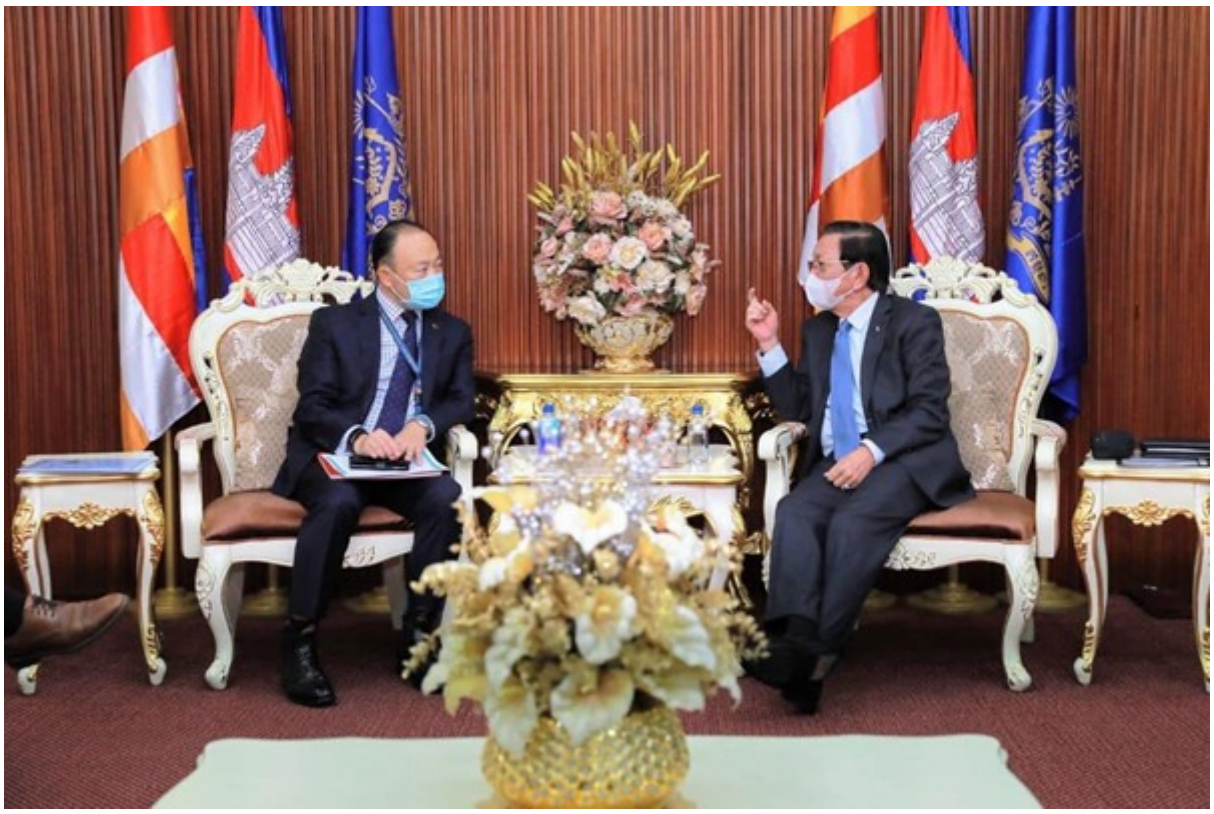
Key enhancements in version 5.12 include the addition of Supply Point Distribution Loss, updates to Urban Developer and a range of minor enhancements.

Find out more

AUSTRALIA GIFTS EWATER SOURCE TO CAMBODIA

In a special ceremony in Phnom Penh, Australia’s Ambassador to Cambodia, His Excellency Pablo Kang formally gifted access to Australia’s national water modelling platform, eWater Source to Cambodia’s Minister of Water Resources and Meteorology (MOWRAM) His Excellency Lim Kean Hor.

This technical exchange forms part of Australia’s ongoing support for sustainable water management throughout the Mekong region.



eWater Source, Australia's national hydrological modelling platform will assist the Cambodian Government to better understand the availability of water resources throughout the country. It will provide a stronger evidence base on which to make decisions about the development of water infrastructure and the allocation of water for a range of users – cities and towns, farming and freshwater fisheries, hydropower and industry.

"The sustainable management of Cambodia's precious water resources is crucial to support the socio-economic development of our cities and of our growing agriculture and energy sectors, while preserving our unique environment"

stated His Excellency Lim Kean Hor.

“We welcome the offer by the Government of Australia to provide both technical tools and capacity building support so that Cambodians can learn from the Australian experience and improve our management of water resources for the entire country.”

In response, Ambassador Kang said “We are pleased to share an important Australian innovation – the eWater Source platform –with our neighbours and friends in Cambodia, because doing so will help ensure water governance is based on solid evidence and can contribute to Cambodia’s post-COVID recovery”

eWater has worked with the Mekong River Commission (MRC) its member countries (Cambodia, Laos, Thailand and Vietnam) for many years. Starting in 2013, eWater developed a Source model of the entire Mekong River and major tributaries, ultimately leading to eWater contributing to the 2018-19 MRC Council Study using Source to integrate information and existing

basin models.

In 2017-19, eWater, in partnership with UNESCAP, Geoscience Australia and the Australian Bureau of Meteorology implemented a pilot in Cambodia using space-based data to help water users in drought prone countries to better understand and manage droughts. eWater provided updated technology and access to satellite data through the Geoscience Australia Open Data Cube to improve the ESCAP Regional Drought Mechanism. In 2019 eWater was appointed as an adviser to MOWRAM in Cambodia under a World Bank project.

A NEW HOME FOR ICE WARM

In July 2020, ICE WaRM, the International Centre for Excellence in Water Resource Management, entered into a collaboration with eWater Ltd to re-launch its international water education and

training program.

The collaboration will build on the established strengths of both organisations. ICE WaRM’s substantial experience in designing and delivering education, training and capacity building programs will be enhanced by eWater’s practical training in water modelling tools and capacity building to connect modelling with policy, regulation and management.

The new program will be strengthened by the range of ICEWaRM education and training programs that draw on South Australia’s’ water technology and expertise.

Arranging international study visits will step up a level through the combined practical experience and detailed knowledge of the Australian water sector of ICEWARM and eWater.

ICEWaRM’s strong commitment to inclusiveness across its programs will complement eWater’s efforts, in gender equity and social inclusion.

Visit the ICEWaRM website

COVID-19:WATER IS ESSENTIAL FOR PUBLIC HEALTH

Containing the COVID-19 virus is a global public health challenge.

According to the World Health Organization (WHO), frequent and thorough hand washing can help reduce your chances of contracting infectious diseases such as COVID-19.

But it is hard to wash your hands if you don’t have access to clean water – and worldwide 780 million people do not have access to an improved water source.[1] In 2017, poor sanitation and limited access to hand-washing facilities contributed to around 1.5 million deaths worldwide. In the least developed countries, 22% of health care facilities have no water service, 21% no sanitation service, and 22% no waste management service.[2]

The pandemic has devastated the lives of poor people across the developing world. COVID-19 threatens to hit the world’s poorest nations disproportionately, the United Nations has warned, not just as a health crisis but as a social and economic crisis for billions of people in the months and years

to come.

The UN Development Program expects income losses to exceed $220 billion in developing countries as economic shutdowns linked to the coronavirus bite, and nearly half of all jobs in Africa could be lost.

Exacerbating the crisis is climate change which primarily impacts the water cycle. UN Secretary General, Antonio Guterras has noted that 40% of the world's people are affected by water scarcity and more than 90% of disasters are water-related.

Water scarcity is a global problem that needs collective action. There is no more urgent a time to address the world's water crisis than now, when people are constantly being reminded to use water to combat the spread of the virus.

Key to addressing water scarcity is improved water management. We must ensure sustainable and equitable water for all, if we are to stem future crises. Finding the balance in allocations between agriculture, industry and growing urban centres while protecting the environment is

an ongoing activity for governments, and hydrological models remain a vital tool, particularly when it comes to predictions of the future.

eWater was established by Australian Federal and State governments to provide watermodelling tools, technical support and capacity building in Australia and internationally. eWater works with DFAT, the World Bank, Asian Development Bank, the Mekong River Commission, and a range of government water authorities across the Indo-Pacific to help manage water better with a view to providing reliable water supply and sanitation for rural and urban communities to improve health and wellbeing for all.

In restricting the spread of the COVID-19 virus and in adapting to climate change, improved water management is critical and must be given higher priority.

[1] World Health Organization (WHO) and UNICEF. Progress on Drinking Water and Sanitation: 2012.

[2] WHO Fact Sheet: Drinking Water June 2019