Why is water so important to tourism?

Any discussion on tourism and the connected visitor economy needs to take into consideration the natural and social environment which supports our industry.

It could be argued that as an industry we have a tendency to take for granted the very things that make our destinations safe and pleasant places to live and visit. This includes clean water and fresh air.

These resources are taken for granted because we either don’t directly pay for them or if we do pay, the price we pay does not reflect the true value of the resource to society.

Tourism is both dependant on clean drinking water for visitors together with the water resources needed to support the wide range of destination-based activities and services which the industry indirectly relies on. This includes recreational activities such as surfing, swimming and fishing, spas and wellness centres, golf courses and of course natural landscapes and food production.

Water stewardship, water stress and the availability of clean water have now become important planning and development considerations for the tourism industry worldwide. As Professor David Simmons from Lincoln University notes “Sustainable tourism cannot hope to be achieved without a broader commitment and understanding of sustainable outcomes across the wider community.”

In other words you can’t achieve sustainable tourism in an unsustainable destination environment. It is for this very reason that tourism needs to take a leadership role in working with the local community and government to deliver more sustainable business practices.
The Asia Pacific region is inhabited by 60 percent of the world’s population, but it has only 36 percent of global water resources. Water resources in the Asia Pacific region face many complex challenges, resulting in regional hotspots.

The hotspots are areas that face multiple issues including constrained access to water and sanitation, limited water availability, poor water quality and increased exposure to climate change and disasters.

The hotspots identified by UNDCWS (2012) include Pakistan (due to high risk of flooding), Cambodia, Indonesia and Lao PDR (due to exposure to natural disasters and limited access to drinking water and sanitation), India’s Punjab and the North China Plain (facing falling water tables by 2 to 3 m a year). Water-rich countries also face challenges because of deteriorating water quality and high levels of pollution from untreated sewage. Water risk maps for the Asia Pacific region are shown in Figure 1.

**World**

60 percent of the world’s population lives in Asia, which has the lowest per capita availability of freshwater.

**Asia and the Pacific**

80 percent of Asia’s rivers are in poor health, jeopardising economies and the quality of life. $1.75 trillion in ecosystem services per year are threatened.

**South Asia**

This region has the lowest environmental water security, posing huge challenges for sustainable development.

Source: ADB (2013)

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*Figure 1: Water Risk Maps for the Asia-Pacific Region: Quantity and Quality*

Source: WRI, 2012
Water challenges can be assessed along three dimensions, namely cost, availability and quality. The Maldives face critical conditions for all three stress dimensions, with costly water that is limited in supply and poor in quality. The same is true for various regions (northwest and south) of India. Regions in south China and Australia either display acceptable or moderate levels of concern on cost and availability, although degrading water quality remains a concern in south China.

Water stress and scarcity – Why is it a concern to tourism?

Water stress can be related to a threshold that is reached when annual freshwater supplies drop below 1,700 kilolitres per person (equating to 4,660 litres available per day); water scarcity means that fewer than 1,000 kilolitres per person (or 2,740 litres available per day) are available. Moreover, in some circumstances water may be available, but heavily polluted or saline.

Tourism-related water use most likely competes with that of the local population, since both primarily draw on municipal water supply. In some destinations, this additional demand may lead to stress. In Bali, Indonesia, for example, tourism reportedly consumes 65 percent of local water resources, and conflict between hotel industry and local communities is evident.
Over 75 percent of the Asia Pacific countries are experiencing serious water stress, with the region facing an imminent water crisis if immediate steps are not taken to improve water resource management.

The key message for hotel operators is: your business may be located in one of these water stress areas. Make a point of understanding your region’s current water status and the areas which form part of your supply chain. One simple tool is the AqueDuct mapping software available online through the World Resource Institute.

Tourism water equity

To investigate aspects of water equity, two datasets were used to contrast tourism water consumption with that of the local community. The UN FAO (2013) AQUASTAT database is a global information system on water and agriculture which collects and analyses information on water resources and water uses. The indicator of ‘municipal water withdrawal per capita’ was used to provide a basis of comparison with per-guest night water use in hotels, provided through EarthCheck’s database. Sufficient data was available for 21 countries, of which 12 are from the Asia Pacific region.

The highest per guest night water use was found in the Philippines (981 litres/guest-night), China (956 litres/guest-night) and Malaysia (914 litres/guest-night). While tourism's share of municipal water use is typically quite small it can be as high as 7.2 percent as in the case of Fiji. At the same time, countries such as Fiji and most Asian countries are characterised by very low municipal water withdrawal per capita per day (less than 150 litres), indicating greater water constraints on domestic and tourism use in developing or emerging economies.

As may be seen in Figure 4, tourists’ per day water use in Fiji and Sri Lanka exceeds that of locals by a factor of over eight. China, India, Thailand, the Philippines and Indonesia also reflect substantial differences in water use between locals and tourists. Countries where water use by tourists is comparable with that of the local community, or even lower, are typically more developed high income countries.

The analysis of water equity issues in relation to tourism highlights a disparity that is particularly evident in developing countries and those countries that already suffer water scarcity such as China or India. Such imbalances raise serious concerns about water equity and the ethics surrounding water access. The analysis indicates that tourism businesses need to not only focus on their own operations and efficiencies but also to take a broader destination perspective that integrates business needs with those of the local community.
Water use in hotels

Water is required for a wide range of services at a hotel or resort. Water use profiles can significantly vary from one property to another.

Different end users of water in a large hotel are reflected in Graph 1. This analysis relates to a 500m room, upper scale hotel having 80 percent average occupancy which uses approximately 124 million litres of fresh water in a year – equivalent to the volume of water in 50 Olympic size swimming pools.

A sample of data from 210 hotels located in Asia Pacific who are members of the EarthCheck Benchmarking and Certification Programme was used for more detailed water modelling. Using these data, an econometric model was developed to test the influence of different factors (e.g. hotel room number, guest nights, hotel type, price, swimming pools, fitness facilities, restaurants, business facilities and day spas), on total and per guest night water use in hotels.

In addition, a survey of EarthCheck members was undertaken in December 2013. The survey attracted a respondent list of some 181 participants. The respondents provide a truly global sample with 57 countries represented. The survey contained both closed and open-ended questions, with the data compiled for further analysis. A wide range of ideas, innovations, and examples of leading practice were collected through this member survey to complement secondary data sources described above. Where appropriate the survey findings are presented to provide greater richness to the analysis.

The global comparison provides an indication of the strength of the water management programmes in Europe and the extent of water use in south and southeast Asia.
The Asia Pacific comparison provides an indication of the more mature water management programmes in place in Australia and New Zealand.

The Australian data, in particular, reflects the response by industry to the millennium drought 2000-2008 and the ability of both the community and industry to maintain water consumption patterns after the drought finished. Water prices are also a key factor in this water profile.

EarthCheck Research shows that the breakdown into different end users will vary widely subject to the size of the hotel, climate zone and range of services and facilities. Additional considerations include the number of swimming pools and water features which can lead to as much as 30 percent increase in water use; and irrigation of landscaped gardens which can add as much as five percent of total water use.

From the analysis of the current dataset, a key driver of water efficiency was shown as the percentage of all toilets installed being low/dual flush. Other key determining factors of water use were price per night, total number of hotel rooms, and the number of dining/bar and event facilities. In particular, hotels located in Hong Kong had 43 percent lower water use compared with hotels in other Asia Pacific climate zones, while those in the Indonesian Climate Zone 2 (south) had 26 percent higher water use than hotels in other climate zones included in the model (e.g. 3 zones included in Australia, 2 zones in New Zealand, etc.) The high water use in Indonesia is likely to reflect larger tourist resorts with extensive landscaping. Low water use in Hong Kong is likely to be achieved due to the use of salt water in toilet flushing.

**Figure 5: Average water use per guest night in Asia Pacific hotels**

Source: EarthCheck Research Institute (2014)
Key insights from the model were:

- Water economies of scale begin to appear with an increase in guest nights. Once a property has reached a certain threshold in capacity for every 10 percent of additional guest nights, water consumption increased by six percent.
- Having pool facilities has a substantial impact on water use per guest night and can raise water use as much as 30 percent per guest night subject to the number of pools. Having an extra dining or bar facility increases average per guest night water use by six percent.

Understanding high-level relationships between key drivers and water use is important for businesses.

💧 A Tourism Response

The tourism industry needs to take a leadership position in water management at the site, precinct and destination level. As stated at the start of this article, you cannot build and operate a sustainable tourism industry in an unsustainable destination.

The Asian Development Bank (2013) argues that to increase water security, tourism needs to invest in the smart use of a wide range of regional collaboration opportunities:

- Knowledge sharing and networking (including the Asia Pacific Water Forum’s regional water knowledge hubs)
- Capacity development through practitioner networks (including the Network of Asian River Basin Organisations)
- Regional technical assistance projects, such as the regional research and capacity development programme initiated by the Asia Pacific Centre for Water Security
- Performance benchmarking services as provided by EarthCheck, EcoLab and Nalco
- Trans-boundary water resources management (both within and among countries) such as the Mekong Delta

At a site and property level there are three dimensions for action that can be taken forward by tourism operators. These include:

1. Using new technology and design options at the site level
   - High resolution metering technology to track departmental water use.
   - Tracking the relationship between the use of water and energy (water/energy nexus)
   - Harvesting rainwater for use as a primary source of potable water.
   - Using groundwater in such a way as to avoid drawing down the aquifer from which it is extracted.
   - Implementing technologies which are environmentally friendly e.g. low flow showerheads.

2. Supporting organisational change and management
   - Water demand can be reduced by the adoption of best practice water management principles (e.g. demand management, a policy for infrastructure maintenance and renewal, and a management document detailing sinks and sources and how to manage them for conversation purposes).
   - Reduce potable water consumption by using treated wastewater and stormwater for non-potable usage such as for gardens and water features.
   - Ensure distribution and irrigation systems are efficient and well maintained.
   - A proactive Leaks Maintenance and Detection Programme will usually pay for itself in reduced water production costs, a drop in additional pumping costs because of pressure drops in the pipe work and reduced future repair costs.
   - Track utility costs through a bill monitoring programme in the accounts department.

3. Behavioural change
   - Increase your own knowledge and provide opportunity for staff to learn about water conservation and efficiency.
   - Develop staff programmes that provide reward and recognition for excellence in water management and stewardship.
   - Develop a guest education programme which informs and rewards guests for their water use.
Free water kits and resources to look for include:

- Water risk monetizer which has just been released by Nalco and Ecolab
- The Kuoni Water Management Manual for Hotels
- The WaterCheck worksheet by EarthCheck and EcoLab
- The UN FAO AQUASTAT

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WWW.WATERRISKMONETIZER.COM
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About the Author

Stewart Moore is the founder and Chief Executive Officer of EarthCheck and the Executive Director of the APEC International Centre for Sustainable Tourism.

He is a NEIS accredited business consultant and specialises in sustainable tourism planning, destination management and marketing, business development and all issues to do with enterprise and product development.

He is a fellow of the Financial Services Institute of Australia and the Australian Tourism Research Institute and has over 30 years of experience in tourism operations and consulting to both the private and public sector in the Asia Pacific region.

He is on the Advisory Board for the Griffith University Institute for Tourism and is Chairman of the National Centre for Studies in Travel and Tourism.

He has authored a wide range of books and publications in the areas of destination management, risk and crisis management, strategic and regional planning and product development.

About EarthCheck

EarthCheck is the world’s leading scientific benchmarking, certification and advisory group for travel and tourism. Since 1987, we have helped businesses, communities and governments to deliver clean, safe, prosperous and healthy destinations for travellers to visit, live, work and play. We understand the value of big ideas and the importance of clear communication. We know that what can be good for the planet is also good for business.

http://earthcheck.org/

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