

WHITEWATER VENUES

ADVANCING URBAN
SUSTAINABILITY





SUPPORTING THE HEALTH AND PROSPERITY OF CITIES AND THEIR PEOPLE

We love our sport, in part, because of its strong relationship with the great outdoors. If you mention the words 'canoe', 'kayaking' or 'paddle' to anyone, they are sure to evoke visions of crystal blue lakes surrounded by thick forest under a clear blue sky.

Its link to cities and urban areas is not so obvious at first glance. However, we feel that our whitewater venues have played – and can increasingly continue to play – a significant role in the health, prosperity and wellbeing of cities and the people that inhabit them.

Across the world, our built environments are facing a myriad of challenges. A difficult economic landscape is exacerbated by physical and mental health issues and environmental risks accelerated by the worsening climate.

Our whitewater centres do not have all the answers, but over the course of the last 30 years several of them have facilitated economic growth, social cohesion and environmental protection in their host communities.

In this report, we explore notable examples and reflect on ways urban areas can utilise these special facilities to help achieve their own sustainable development goals. This, of course, is hugely important for the ICF in the context of our 2022-24 Fit For Future strategic plan, which includes revenue

generation, global development and a climate positive approach as three key pillars to strengthen our sport.

We also see the unique characteristics of whitewater venues as part of our alignment with the IOC's Olympic Agenda 2020+5, particularly its recommendation to strengthen the role of sport as an important enabler for the UN Sustainable Development Goals (SDGs).

All of our disciplines, from canoe slalom to kayak cross, wildwater to freestyle to rafting, can contribute to these goals. Whether that involves creating sustainable economic impact for host cities and communities, or improving mental health and wellbeing for citizens, particularly for Millennials and younger people who have developed a growing affinity with adventure sports.

Our sport and venues can only thrive in environments that make it possible. And while we cannot alleviate our urban environments of all their complex sustainability challenges, we feel our sport, and whitewater venues, are well positioned to be a small but significant part of the solution.

THOMAS KONIETZKO
ICF PRESIDENT

INCLUSIVE, SAFE, RESILIENT AND SUSTAINABLE COMMUNITIES

Cities are home to half of the world's population, and while they are often at the centre of commerce, culture, politics and sport, they are facing increasingly significant economic, social and environmental challenges.

Indeed, one of the United Nations' 17 Sustainable Development Goals (SDGs), Goal 11, is specifically focused on making cities and communities more inclusive, safe, resilient and sustainable.

Our sport, and particularly the whitewater venues that typically occupy urban areas, are well-placed to support that vision, and have been for more than three decades. In line with our 2022-24 Fit For Future strategic plan, we want these venues to continue supporting the sustainable development of existing and

new host cities; through the generation of revenue, contributing to the safety and welfare of its citizens, and accelerating climate and environmental goals.

Ultimately, it is the ICF's vision that slalom venues will enhance our society and the sustainability of cities globally. We are assembling an expert group to drive that vision that will be on hand to support any city planner or entity that wishes to construct a whitewater venue with similar ambitions.

Fortunately, we do not have to start from scratch to demonstrate this vision. Several facilities around the world have carved out a special place in their urban communities, offering local people enjoyment and relaxation, while providing local city planners and governments with economic and environmental benefits.

Despite being built more than 30 years ago, the Parc Olímpic del Segre in Catalonia typifies this vision well. The world's first recirculating water course, built for the Summer Olympic Games 1992 in Barcelona, has thrived ever since. Home to the Cadí Canoe Kayak Club, which has around 200 members, the whitewater course is being used consistently to this day, with local schools and other members of the community invited to try our sport in an iconic setting.

The facility is the base for the Spanish Canoe Slalom national team and regularly hosts ICF slalom World Cups, cementing Parc Olímpic del Segre's status as a world-class performance hub. However, the venue brings so much more than that to its local community.





PARC OLÍMPIC DEL SEGRE



375,000
VISITORS PER YEAR



€4.5M
IN LOCAL ECONOMIC
IMPACT ANNUALLY



SUPPORTS NATURE AND
CLIMATE ADAPTATION

A SHELTER FOR WILDLIFE AND HAVEN FOR LOCAL PEOPLE

A huge flood in the region in 1982 and subsequent work to repair the land created an unexpected opportunity to build the Olympic course, and that symbiotic relationship with nature and all its fragility has remained to this day. Around the venue, in the wider area, sits an urban park with a range of native trees, bushes, species of herbs, grasses and flowers that not only serves as a shelter for wildlife and a haven for local people, but a climate adaptation technique to protect the area from further major floods.

According to the UN, climate adaptation needs will cost cities and other communities up to \$360m by the end of the decade. In the area of Catalonia that the venue sits, climate change has caused more frequent droughts and warm temperatures, and has also affected the seasonal variation in flow of the river. The pumping mode of the course can remedy this by preserving ecological flow in the river while guaranteeing necessary flow for participants using the facility.



A hydraulic power plant integrated in the venue produces electricity for the course and supplies surplus energy to the local grid, reducing carbon emissions related to energy consumption as well as costs. Overall, surplus power exported to the grid is nine times the energy used by the course and the €1m spent on the power plant was paid back in 2015.

With 375,000 visitors every year, the Parc Olímpic del Segre is responsible for €4.5m in local economic impact annually, representing a good return on the €6.5m investment that went towards its construction.

The economic argument for building and maintaining a whitewater centre has never been greater. According to the Outdoor Foundation's 2021 Outdoor Participation Trends Report, whitewater kayaking participation grew in both 2020 and 2021.

ADVENTURE TOURISM BOOMING

In the US alone, 2.6 million people participate in whitewater kayaking and, at 56%, the sport had the highest rate of first-time participants in 2018 compared to all other paddlesports. Adventure tourism is a significant contributor to local economies in Europe, with two-thirds of money spent – €350 per day, per visitor – staying in location.

Additionally, an Ipsos survey from 2019 demonstrated the appetite of Millennials (currently the largest generational consumer group) for adventure experiences, with 83% of Americans, 77% of Chinese and 59% of Europeans in this bracket enjoying at least one.

Those numbers are being reflected at the U.S. National Whitewater Center in Charlotte, North Carolina, which grosses more than \$22m per year. The 22-acre centre has positioned itself as an adventure destination; a four-channel whitewater park (slalom, development, safety training and surfing) is flanked by dozens of land- and water-based activities, including bike and running trails, restaurants, a climbing centre and a live music venue.

Bob Morgan, president of the Charlotte Chamber of Commerce, said the centre was the city's "number one attraction", backed up

by numbers that show 2.4% – or 680,000 people – of the 28.3 million visitors to Charlotte in 2017 were attracted by the venue. More than that, it is responsible for an estimated \$37m in annual economic impact for the city, employing 700 people.

Around 1,500km northwest of Charlotte, the development of a new whitewater facility in Manchester, Iowa, was credited with revitalising the city, with a brewery and kayak and tube rental shops opening nearby, contributing to an estimated \$2m in annual economic impact for a town with just over 5,000 inhabitants.

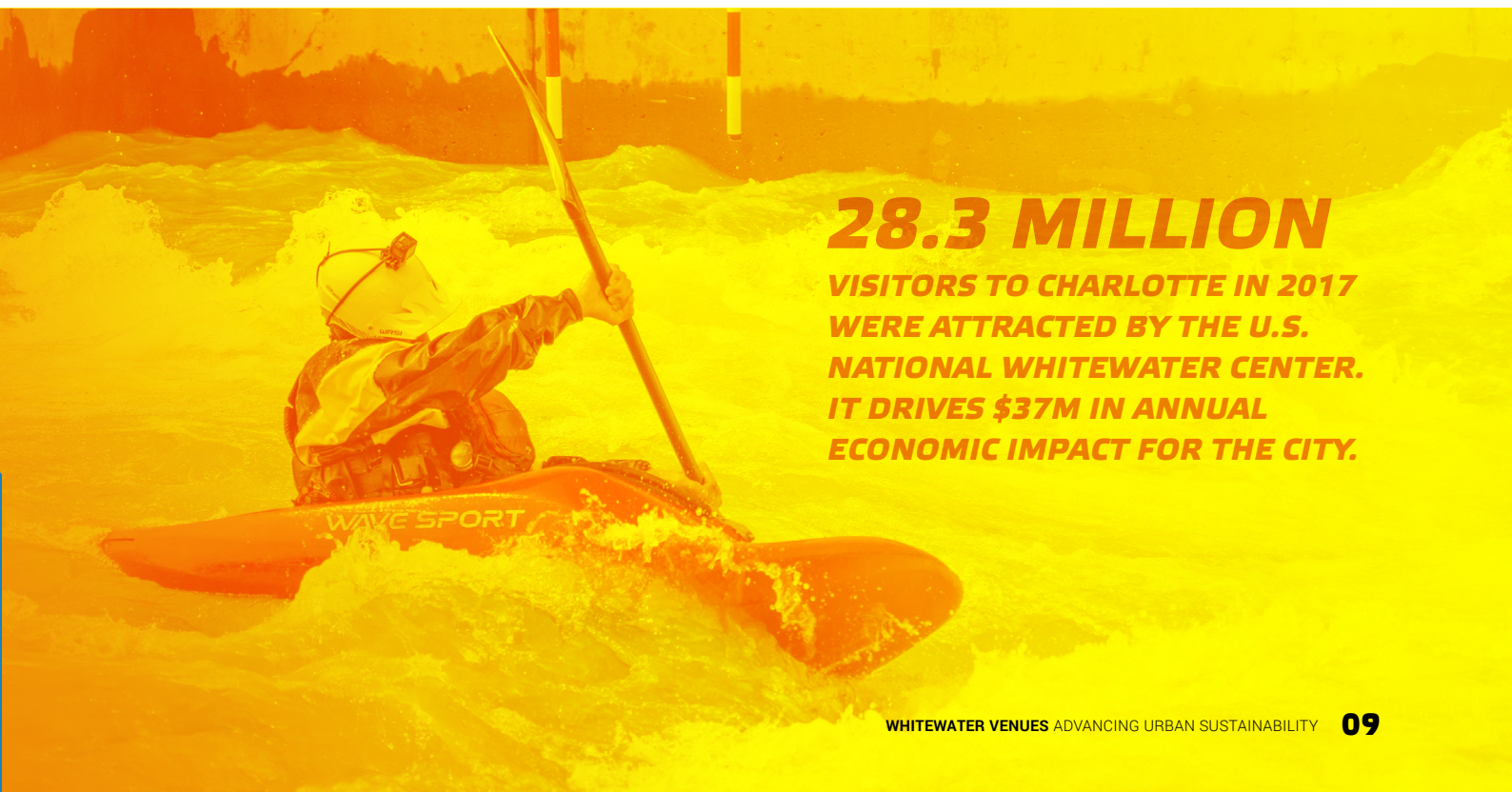
In Oklahoma, the Riversport Rapid facility that opened in 2016 as an addition to a world-class flatwater course has successfully hosted and bid for a number of major ICF events. In 2022, the ICF Stand Up Paddling World Cup was hosted in the connected Oklahoma River, while in 2024 the ICF Freestyle World Cup, Canoe Slalom Super Cup and Canoe Sprint Super Cup will come to the venue. Two years later, in 2026,

the ICF Canoe Slalom World Championships will take place there.

The estimated economic impact of the scheduled races through to 2025 will be \$10m and, like other venues, such as Paris and Sydney, where whitewater and flat water sit together, the Riversport Rapids venue provides opportunities to host all canoeing disciplines and paddlesport games in one place.

But contributing to the success of a city is more than just about finance. Built in 1972 as the oldest artificial course in the world, the Eiskanal in Augsburg is a great example of what can be done when placing community at the heart of the venue.

Constructed in close proximity to the city centre, the Eiskanal has a really strong local club community and is supported extensively by the local government. Known for its inclusivity, children and people with disabilities are able to take part in whitewater sport at all levels.



28.3 MILLION
VISITORS TO CHARLOTTE IN 2017
WERE ATTRACTED BY THE U.S.
NATIONAL WHITEWATER CENTER.
IT DRIVES \$37M IN ANNUAL
ECONOMIC IMPACT FOR THE CITY.



SEAMLESS TRANSFORMATION

The way the Eiskanal fits in with its natural surroundings, and can easily shift from being a community facility to an elite venue capable of hosting thousands of spectators, adds to its economic, social and environmental credentials. The course does not use pumps, instead taking on the natural drop of the river, taking water out of the river Lech for an event before returning it once the competition is over.

Venues that can accommodate a variety of whitewater disciplines, including canoe slalom, wildwater, rafting and freestyle, and that can be fit for purpose from a local point of view while seamlessly transforming into an international competition venue should be the blueprint for all future facilities. Designing courses in a way that incorporates amphitheatre-style spectator spaces and, for example, car parks that can be used for back-of-house facilities and flexible catering services, can reduce both their environmental impact and additional costs related to hosting events.

Augsburg was one of three natural drop courses chosen for our slalom World Cup events in 2023 – as well as Prague and Ljubljana – demonstrating the ICF's wider commitment to sustainability and showcasing

courses that use less energy. Courses like these – urban but set within a natural environment – are also beneficial for people living in more built-up areas.

Countless peer-reviewed pieces of research have indicated strong correlations between spending time in nature and mental wellbeing, including improved attention, lower stress and lower risk of depression. On top of that, whitewater kayaking and other adventure sports can reduce a human's level of stress hormones and release endorphins, which make us feel happy and relaxed.

Depression and anxiety, according to the World Health Organization (WHO), are responsible for 12 billion productive days lost globally per year, while medical journal The Lancet found that for every \$1 invested in combating depression and anxiety, \$4 is returned in health and productivity.

Following the London 2012 Summer Olympic Games, a youth engagement project at the Lee Valley White Water Centre was designed to reduce crime in the local Broxbourne area. Over a five-year period, teenagers living in high-crime areas were invited to take part in a range of paddlesports around Halloween –

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traditionally a period when anti-social behaviour and crime surges. A considerable reduction in reported crime was the result, with a handful of participants becoming members and volunteers at the venue.

While continuing to operate as an elite venue, as the home of British Canoeing's canoe slalom World Class Performance Programme, the Lee Valley White Water Centre was developed primarily as a community-focused centre. Since it opened its doors in 2011, 500,000 people have taken part in paddlesports, either in its 300m Olympic Standard competition course or its 160m Legacy Loop for less experienced paddlers.

As host of the 2023 Canoe Slalom World Championships, the course has committed to using the event as a vehicle to shape positive environmental and social change, reinforcing its status as a hub of sustainable development for the local community.

Key themes and commitments outlined by the organising committee support the sustainability goals of the local area. These include the minimisation of waste, encouraging sustainable travel options for volunteers, staff and spectators, encouraging positive behaviour change among spectators and producing clear sustainability guidance for partners.

REDUCING EMISSIONS AND COSTS

Environmental sustainability has been a key focus when developing Olympic whitewater venues since the London 2012 Games. After being commissioned by renowned canoe slalom course designers, John Felton and Bob Campbell, the Czech Technical University in Prague developed a 1:13 model of the whitewater course designed for Rio 2016, in part, to see where energy could be reduced compared to London. As a result of that work, energy consumption was slashed by 25%, and then reduced further for the course built for the Tokyo 2020 Summer Olympic Games.

Technical work is being done to see how urban whitewater courses can not only reduce their energy consumption, and their impact on the city's energy infrastructure, but how costs and emissions can be minimised by reducing the amount of material (such as concrete) used to manufacture courses.

It is our expectation that current and future venues will support the UN Sustainable Development Goals related to protecting our environment, while our Fit for Future strategic plan aligns with the IOC's Agenda 2020+5 roadmap around climate action and resource management.

As the IOC transitions to its 'New Norm' model of delivering sustainable Olympic Games by working with host cities to reduce their environmental footprint, it is the responsibility of Olympic Movement organisations like ours to promote these goals within our own spheres of influence. In many cases, adopting these principles will also position our events as accelerators of our host cities' own environmental targets.

We envisage a future where we work closely with host cities and venues to develop climate mitigation strategies, reduce waste by adopting circular economy principles, place greater emphasis on the effect we will have on biodiversity – and what we can do to protect and restore natural habits – and promote environmental education and awareness raising.

ALIGNING WITH THE UN SUSTAINABLE DEVELOPMENT GOALS AND IOC AGENDA 2020+5

One of the eight strategic pillars of our Fit for Future strategic roadmap is to activate the paddle sports community to take climate positive actions, while ensuring elite events support global sustainability goals. This overarching objective aligns with UN Sustainable Development Goal 13, Climate Action, as well as the IOC's target of addressing climate change through future Games. We feel that our venues are well-positioned to help the canoe and paddle sports community take climate action, and also contribute to several other UN SDGs:





KEEPING COMMUNITIES SAFE WITH SWIFT WATER RESCUE

One venue that has stood the test of time from an economic and environmental perspective is the Penrith Whitewater Stadium that was constructed for the Sydney 2000 Summer Games. The venue, which cost just over €4m to build, has stood for more than 20 years, with all the original pumps.

However, Penrith's real legacy comes from two main aspects: the first is its ability to get people on the water, and growing champions like Jessica Fox, who has three Olympic medals. The second is a focus on positioning the course as a swift water rescue centre, making the facility financially sustainable but also feeding into the wider social issues

around keeping people safe and upskilling emergency service personnel.

Swift water rescue applies to a scenario where fast-moving water poses a threat to human life. Emergency services personnel have to be trained correctly to improve their chances of saving lives as well as keeping themselves safe. The model operated by Penrith, in which several training modules around swift water rescue are offered, can be adopted at other whitewater centres to increase financial viability and local disaster resilience.

A second elite whitewater centre will be built in Brisbane, Australia, specifically in Redland City.

With the potential to be a future venue for the 2032 Summer Olympic Games, the facility will offer Redland and its surrounding region a world-class facility within touching distance of the city centre. But, after experiencing terrible floods in 2022, where thousands of homes were submerged, the venue will primarily be built as a Disaster Resilience Training Centre that can also host canoe and paddle events.

While Penrith and other venues place the focus on swift water training, the nature of the natural hazards faced by Redland – and Queensland in general – means that this centre will pivot away from training people to react to high speed, low volume events to flooding events that are not as time critical, but that affect several thousand people.

According to Chris Isles, General Manager Advocacy, Major Projects & Economic

THE VENUE IN REDLAND WILL BE BUILT PRIMARILY AS A DISASTER RESILIENCE TRAINING CENTRE THAT CAN ALSO HOST CANOE AND PADDLE EVENTS.

Development for Redland City Council, the new whitewater centre will play a key role in the region's climate adaptation strategy, with flooding forecast to get more frequent as climate change worsens.

While adaptation responds to the impact of climate change, mitigation is a priority for many cities as they try to reduce their carbon impact. At the heart of those plans includes the move away from fossil fuel energy, which accounts for around 75% of global carbon emissions, towards cleaner alternatives.

In general, cities account for much of the world's carbon impact and transitioning to a low-carbon society is a major challenge that involves large-scale behaviour change and the fast adoption of more sustainable ways to power ourselves.

Paddle Australia has developed a proof of concept around the introduction of solar panels and battery storage to keep energy costs low and reduce venues' carbon impact. This is especially significant in a nation where fossil fuels still account for 71% of electricity generation.

HOLISTIC VALUE FOR CITIES

Every urban area has its own challenges, whether they are economic, social, environmental or, more likely, a complex mix of all three. And while our sport and whitewater facilities are obviously not a panacea for every issue being faced by cities and their residents, they have the ability to support a number of sustainable development goals – including the health and safety of a population, economic security or climate

adaptation and mitigation – while offering the opportunity to showcase a world-class sport growing in popularity.

Our vision is for future whitewater venues to be planned and designed with these sustainability issues in mind and, with the support of the ICF and our expert working group, create holistic value for cities and surrounding communities in the following areas:



A SOUND VENUE BUSINESS MODEL AND ECONOMIC IMPACT FOR THE WHOLE COMMUNITY



IMPROVED WELLBEING FOR LOCAL PEOPLE BY COMBINING THE NATURAL ENVIRONMENT WITH ADVENTURE SPORTS IN ACCESSIBLE FACILITIES CLOSE TO URBAN CENTRES



INTEGRATING RENEWABLE ENERGY HUBS TO MITIGATE CLIMATE CHANGE, SUPPORTING LOCAL CLIMATE ADAPTATION AND PROVIDING OPPORTUNITIES TO PROTECT AND RESTORE NATURAL HABITATS

And, ultimately, support the ongoing development of inclusive, safe, resilient and sustainable cities and urban centres.



