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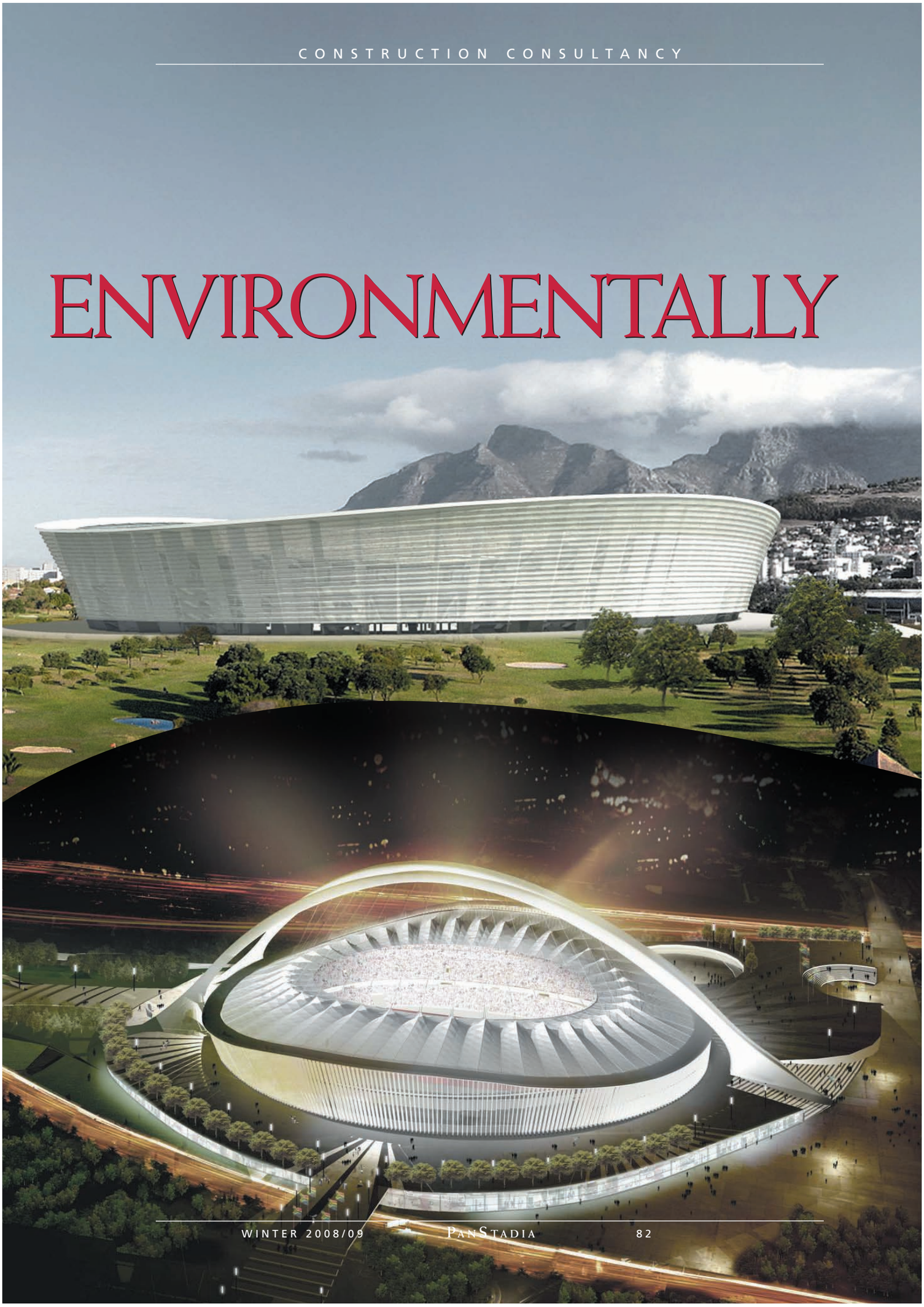

FRIENDLY

Jon Coxeter-Smith, Chairman of DLSI Sports Group, discusses how responding to the Environmental Agenda is vital in the construction of sports and entertainment facilities.

Sustainable development; legacy; sustainability: all words that are becoming ever more frequently used in the areas of sports venue and infrastructure construction. Rightly so too; their use reflects an ever increasing awareness of the impact of what we do and an increasing commitment to act with greater responsibility in this regard.

Sustainability is a huge subject and, as might be expected given the increasing levels of awareness, much is written and said on the matter. Economic sustainability, transportation and legacy planning have been well covered elsewhere, but this article looks at the aspect of sustainability that has not received the same levels of coverage in our sector — the environment — and considers how sport is responding to this environmental agenda.

The Growth of Environmental Awareness

During the last 35 years, Governments have increasingly begun to recognise that the level of environmental degradation and current practices of economic development are having significant impacts on the Earth and its people, and are also posing significant challenges to future generations. Some key milestones in the growth of this awareness are shown on the next page.

Sport has shadowed the increasing levels of general awareness of environmental issues. This rising awareness is catalogued in the sidebar on p89.

Since the Rio Earth Summit where, in Agenda 21, each country committed to draw up a national strategy of sustainable development, we have seen increasing activity in the development of strategies and policies, supporting initiatives, codification of requirements and legislation focused on improving the environmental performance of our buildings and infrastructure. Examples include the tightening of Building Regulations insofar as they deal with energy efficiency, legislation to reduce emissions such as California's greenhouse gas reductions law, AB32, Singapore's NEWater initiative and so on. These have impacted on the field of venue and infrastructure construction just as they have on construction in general. The following case studies illustrate how the sector is responding.

Case Study — Resource Efficiency: The London 2012 Olympic Games

STRATEGY AND POLICY: The London Organising Committee of the Olympic Games and Paralympic Games (LOCOG) has set a strong sustainability policy for the 2012 Olympics. In the area of waste, the policy states that the aim is for the 2012 programme to be a catalyst for new waste management infrastructure in East London and other regional venues, and to demonstrate exemplary resource management practices. Waste will be minimised at source, diverting construction waste ➲

Greenpoint Stadium Cape Town (above left) and Moses Madhida Stadium Durban (left), the semi-final venues for FIFA World Cup South Africa 2010, are being constructed in accordance with the FIFA Green Goal Environmental Programme.

PICTURES COURTESY: GMP

Milestones in the growth of environmental awareness

1972

UNITED NATIONS' CONFERENCE ON THE HUMAN ENVIRONMENT IN STOCKHOLM, SWEDEN.

Attended by 113 nations, it was a start of the global efforts to tackle environmental problems. The conference led to the establishment of the United Nations Environment Programme (UNEP).

1987

THE BRUNDTLAND REPORT, "OUR COMMON FUTURE" PUBLISHED BY THE WORLD COMMISSION ON ENVIRONMENT AND DEVELOPMENT

Alerted the world to the urgency of making progress towards economic development that could be sustained without depleting natural resources or harming the environment. The report provided a key statement on sustainable development, defining it as:

"Development that meets the needs of the present without compromising the ability of future generations to meet their own needs."

1988

WORLD METEOROLOGICAL ORGANISATION (WMO) AND THE UNITED NATIONS ENVIRONMENT PROGRAMME (UNEP) ESTABLISHED THE INTERGOVERNMENTAL PANEL ON CLIMATE CHANGE (IPCC).

One aspect of sustainability that has grabbed the headlines over recent years has been that of climate change. From controversial early findings, there is now largely undisputed evidence that this is a real phenomenon.

The compelling evidence has been assimilated since the establishment of IPCC in 1988.

1992

THE RIO EARTH SUMMIT

A major step forward towards the goal of achieving sustainability, with international agreements made on climate change, forests and biodiversity.

Out of the Earth Summit came Agenda 21, a framework for tackling social and environmental problems, including air pollution, deforestation, biodiversity loss, health, overpopulation, poverty, energy consumption, waste production and transport issues. Importantly, Agenda 21 required each country to draw up a national strategy of sustainable development.

1997

THE KYOTO PROTOCOL TO THE UNITED NATIONS FRAMEWORK CONVENTION ON CLIMATE CHANGE

The Kyoto conference looked at the issue of global warming and how to reduce the emissions of gases, such as carbon dioxide, that are causing it. It set up a framework that required countries to reduce their emissions of greenhouse gases to an average of 5% below the levels they produced in 1990. This reduction should be reached by 2012.

The Kyoto treaty assigned countries with a level of greenhouse gases that they were permitted to produce. Low CO_2 producers can sell their allowances to high CO_2 producers. This is called 'carbon trading'.

The treaty, in its original format, was never implemented. Not enough countries would agree to it. Finally, in 2005, a scaled-down version of the treaty was agreed with 1340 countries. This included industrialised countries like the UK and Russia. However the USA, a major producer of greenhouse gases, is still not part of the agreement.

2002

WORLD SUMMIT ON SUSTAINABLE DEVELOPMENT, JOHANNESBURG

Ten years after the first Earth Summit in Rio, a conference in Johannesburg met to review progress towards sustainable development as set out in the Agenda 21 Programme.

This conference looked at how to improve the living conditions for billions of people on the Earth. Governments agreed to work towards making affordable energy available to more people and increase the proportion from renewable sources. It also considered global warming and climate change.

2006

THE STERN REVIEW ON THE ECONOMICS OF CLIMATE CHANGE, A 700-PAGE REPORT BY ECONOMIST LORD STERN OF BRENTFORD FOR THE BRITISH GOVERNMENT

The Stern Review discusses the effect of climate change and global warming on the world economy. Although not the first economic report on global warming, it is significant as the largest and most widely known and discussed report of its kind.

Its main conclusions are that one percent of global gross domestic product (GDP) per annum is required to be invested in order to avoid the worst effects of climate change, and that failure to do so could risk global GDP being up to twenty percent lower than it otherwise might be.

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Stern states, "our actions over the coming few decades could create risks of major disruption to economic and social activity, later in this century and in the next, on a scale similar to those associated with the great wars and the economic depression of the first half of the 20th century."

In June 2008 Stern increased the estimate to 2% of GDP to account for faster than expected climate change.

2007

NOBEL PEACE PRIZE

The IPCC and Albert Arnold (Al) Gore Jr. were awarded of the Nobel Peace Prize "for their efforts to build up and disseminate greater knowledge about man-made climate change and to lay the foundations for the measures that are needed to counteract such change".

2008

GARNAUT CLIMATE CHANGE REVIEW (DRAFT)

A study conducted in Australia in 2008 by Ross Garnaut broadly endorsed the approach undertaken by Stern, but concluded, in the light of new information, that Stern had underestimated the severity of the problem and the extent of the cuts in emissions that were required to avoid dangerous climate change.

WWF LIVING PLANET REPORT

"Our global footprint now exceeds the world's capacity to regenerate by about 30 per cent. If our demands on the planet continue at the same rate, by the mid-2030s we will need the equivalent of two planets to maintain our lifestyles."

wherever feasible and diverting all Games-time waste away from landfill, and the waste hierarchy of 'reduce, reuse, recycle' to facilitate long-term individual behavioural change will be promoted.

The Olympic Delivery Authority (ODA) has also set a main objective for construction waste; "to optimise the reduction of waste through design, and to maximise the reuse and recycling of material arising during demolition, remediation and construction".

SETTING KPIs: To ensure that the above measures are understood and implemented, KPIs were adopted, which can be categorised into two areas:

- *Materials in (i.e. use of recovered materials):* Recycled content percentage — percentage re-used and recycled content as a proportion of the total value of construction materials on the project
- *Materials out (i.e. waste generation):* Materials recovered — percentage of materials within the waste stream that do not result in landfill.

IMPLEMENTATION: To achieve the best practice KPIs set under the above areas, the ODA put in place simple method of defining and monitoring performance. The measurement and reporting process is incorporated into 'business as usual' activities and the relevant procurement requirements.

Guidance and evidence into how the waste KPIs can be achieved was cascaded through the supply chain, starting with designer teams, filtering down to contractors and then subcontractors. Reporting takes place following the reverse route. Involvement from the whole supply chain is essential as achieving best practice under waste is mostly activity based, which is largely in the hands of the subcontractors. The ODA is working with external consultants and has in-house waste and materials specialists to ensure that the waste KPIs are understood and designed/planned for and to capture data from the supply chain for measuring against the KPIs.

OUTCOMES: The London 2012 Sustainability Plan Progress Report Card December 2008 charts progress

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as of 28 November 2008 against the commitments in the Sustainability Plan. The Report shows that London 2012 is measuring up well against its commitments. Construction phase activities are on track, for example the target to reclaim 90% of demolition arisings for re-use or recycling is exceeded; a site-waste management contractor has been appointed, and a site-wide concrete supply contract is in place (current projections are that concrete provided will have at least 26% recycled content thus exceeding the 25% target). Development of management plans, structures and systems to deliver the Games' time and legacy targets is proceeding according to schedule.

NOTES: In setting and realising waste targets on the Olympic site, the ODA received support from the Waste and Resources Action Programme (WRAP) through their national advocacy programme. WRAP specifically advised on how the policy can transform into achievable targets and recommended specific KPIs that apply to all types of buildings and infrastructure on site. In addition, WRAP provided evidence and guidance for the supply chain that demonstrate how resource efficiency opportunities can be explored and realised

WRAP is a government funded body and their construction programme works to set standards for good practice in waste and resources management for the construction industry. To promote this agenda, WRAP works with clients, designers, contractors, and sub-contractors

Case Study — Emissions Reduction: The Dodger Stadium, Los Angeles

BACKGROUND: The McCourt Group has undertaken major improvements at Dodger Stadium in LA since their purchase of the team in 2004. These improvements and additions are ongoing and will culminate in Dodgers Stadium: The Next Fifty Years, a multifaceted project that includes new building construction, new landscaping, and upgrades to the existing stadium. The project is designed to make the stadium more accessible, attractive and inviting, not just during games, but also before and after games, on non-game days and during the off-season.

In order to establish compliance with California's greenhouse gas reductions law, AB32 the project required a greenhouse gas emissions assessment. The AB32 mandate for reducing California's emissions to 1990 levels by 2020 requires that the state's emissions be approximately 30% lower than the projected 'business-as-usual' levels in 2020. The State in turn requires individual projects to prove compliance with these goals.

METHODOLOGY: For this effort, projections for the carbon emissions associated with operational energy and water consumption, construction materials and transportation were made. While standard methodologies and tools exist to measure emissions associated with operations and transportation, the field of carbon emissions associated with construction and building materials is comparatively new and the standards for evaluation are still being developed. This case study addresses the issue of assessing carbon emissions associated with construction and building materials.

Whilst there is currently no universally accepted method for conducting such an assessment, the methodology applied here is consistent with the reporting principles of the California Climate Action Registry and the World Resources Institute.

Using the cost plans, the quantities of materials and components planned for the construction of The Next 50 Years Project, including steel, concrete, glass, and other materials were assessed. To develop an estimate of the total CO_2 emissions associated with the production of these materials, an emission factor was then applied to each of these material quantities using best available data from:

- The National Renewable Energy Laboratory (NREL)
- Research carried out by Bath University, UK
- The SimaPro database

The resultant carbon assessment is a tool to understand the relative emission impact of construction activities and demonstrates the benefits of utilising existing resources. The carbon dioxide emissions associated with material production will be incurred only once in the lifetime of a material. Therefore these figures are reported in total metric tons of carbon, rather than as a rate of emission.

In addition to quantifying the impact of the proposed Next 50 Years Project, this analysis has provided the opportunity to assess the benefits of retaining the existing Dodgers Stadium. When the stadium was purchased by The McCourt Group in 2004, the option existed to tear down the existing stadium, and build up ➲

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a new one which would presumably include many of the amenities which are to be included in The Next 50 Years Project. By opting instead to preserve the historic Dodgers Stadium, the CO_2 emissions associated with the materials to build a new stadium have been entirely avoided. Though it is possible that a new stadium could be quite different from the existing one, it is reasonable to assume that it would not exceed the scale of the existing stadium and would consist of similar quantities of materials.

OUTCOMES: By maintaining the existing stadium, the Dodgers have not only preserved a historic cultural site, but have also prevented roughly 25 thousand tons of carbon dioxide from being emitted. The results of this study demonstrate the clear benefits, from a Greenhouse Gas perspective, of the prudent use of resources. Whilst it is difficult to reduce the overall construction carbon impact by dematerialising a structure, the Dodgers have leveraged the best opportunity for emissions avoidance; demonstrated compliance with legislation, thus passing this important hurdle in the project approvals process.

Conclusions

It can be seen that Sport is responding positively to the environmental agenda. The leadership in this area demonstrated by major bodies such as IOC and FIFA, and by major events such as London 2012, is reassuring. At project levels too, we can see that the sports venue and infrastructure sector is finding positive and innovative ways to address the requirements emerging from the increased activity in the development of strategies and policies, supporting initiatives, codification of requirements and legislation focused on improving the environmental performance of our buildings and infrastructure.

At the same time it is clear that we will all have to do more as the understanding of the stark reality we face becomes ever clearer. I believe that quite apart from the 'there is no Plan B' argument; there is a compelling case for us to do so. Any improvements in environmental performance, such as energy efficiency will transmit positively and directly to the bottom line.

Given the arguments which rage over the effectiveness of carbon trading, it is foreseeable that some alternative, perhaps price related, mechanism might in time be introduced. Any uniformly applied carbon pricing would directly impact on the cost of materials and therefore construction. Dematerialisation would then become a smart strategy.

In accordance with previous conventional wisdom the costs, whether in currency or carbon, of new construction have been treated as relatively unimportant. It is claimed they form a small proportion of the total life cycle cost. This is based on particular assumptions as to the life of a venue. There are very strong arguments to suggest that in these calculations, the life-span of venues has been overstated. It would appear fallacious to define venue life in terms of the life of steel and concrete. There is much good evidence to suggest that venues become unfit for economic purpose within 25-30 years.

CSR is becoming increasingly important to all business not least to sport. What better area of focus could we choose for our corporate social targets than the environment? In this way we can also target something that will otherwise become a major business problem.

Research has shown that awareness and performance in respect of the environment are increasingly important factors in the way we judge the performance of our leaders. Why wouldn't the leaders in businesses in this sector want to be judged favourably?

The movement is coming. My advice would be to get on board now rather be seen to be dragged along in the wake.

And finally, the big stick. WWF has pointed out the consequences of our continuing to consume resources at the current rate. Stern has told us that that one percent of global gross domestic product (GDP) per annum is required to be invested in order to avoid the worst effects of climate change, and that failure to do so could risk global GDP being up to twenty percent lower than it otherwise might be. We are currently living through a global recession — and finding that very tough. This recession though is small in magnitude by comparison to the scale of correction that Stern calculates would be required. Does anyone want that?

Author's credit: Jon Coxeter-Smith, Chairman, DLSI Sports Group.
Acknowledgements: assistance provided by a number of web sites, most particularly:
www.olympic.org
www.unep.org/sport_env
www.fifa.com
www.london2012.com
www.wrap.org.uk
and by colleagues in the DLSI Sustainability Group.

The growth of awareness of environment in sport

1994

COOPERATION AGREEMENT

UNEP and the IOC cement formal relationship through the signing of an Agreement of Cooperation to incorporate environmental issues in Olympic Games.

CENTENNIAL OLYMPIC CONGRESS, CONGRESS OF UNITY, PARIS

IOC subsequently established a Sport and Environment Commission to advice its Executive Board on environmental issues as they relate to the Olympics. UNEP is represented in the Commission.

1995

FIRST WORLD CONFERENCE ON SPORT AND THE ENVIRONMENT, LAUSANNE

IOC, in cooperation with UNEP, hosts first biennial conference on sport and the environment bringing together representatives of Olympic Movement and other interested stakeholders.

1999

THIRD WORLD CONFERENCE ON SPORT AND THE ENVIRONMENT, RIO

IOC Sport and Environment Commission secures endorsement to proposed response to Agenda 21 by IOC (IOC Session in Seoul) and by the Rio Conference.

The Olympic Movement's Agenda 21 is launched.

2001

ORIGINS OF FIFA GREEN GOAL™ ENVIRONMENTAL PROGRAMME FOR 2006 FIFA WORLD CUP™

In the Summer of 2001 the Organising Committee of Germany, the host nation, decided to commission a comprehensive environmental concept for the World Cup; at the beginning of 2002 instructions were given to a team of researchers from Ökö-Institut and WWF Germany.

In March 2003, the environmental programme, which comprised measurable objectives for waste, energy, transport and climate protection, was presented by the OC to the public.

GLOBAL FORUM FOR SPORT AND ENVIRONMENT, TOKYO

UNEP, supported by IOC, organises its biennial Global Forum for Sport and Environment. The Forum brings together sport and environment stakeholders to recognise best practices on sport and the environment and to encourage sport organisations to do more for the environment.

2003

UNEP GOVERNING COUNCIL

Formal adoption of a "Sport and the Environment" strategy, which seeks to further promote the linkages between sport and the environment among the general public. The programme seeks to develop partnerships with sports organisations, federations and associations to reach out to the public with environmental messages.

2005

IOC MANUAL ON SPORT AND THE ENVIRONMENT

IOC launches its manual providing the basis for the definition and implementation of its environmental policies.

Through its actions over the previous 10 years in proactively embracing the responsibility to promote sustainable development, the IOC has succeeded in establishing environment as the third dimension of the Olympic Movement

FIFA GREEN GOAL™

Organising committee of Germany World Cup and UNEP signed a memorandum of understanding to work together on the realisation and communication of the Green Goal Programme.

2006

FIFA GREEN GOAL™ LEGACY REPORT

Following successfully hosting the 2006 FIFA World Cup™, Germany's Organising Committee publishes the analytical legacy report.

Thirteen out of sixteen Objective of the Green Goal™ programme were achieved.

Experience showed that more would have been possible particularly in the case of stadiums (construction of the stadiums was not in the remit of the OC).

For the first time in the history of the tournament, additional greenhouse gas emissions brought about by the tournament were compensated.

2007

IOC GUIDE ON SPORT, ENVIRONMENT AND SUSTAINABLE DEVELOPMENT

To help the different members of the Olympic family transform the Agenda 21 recommendations into concrete actions and programmes the "IOC Guide to Sport, Environment and Sustainable Development" was created.

The Guide offers methodological and practical tools to the sport community, based on the major principles of sustainable development.

UNEP "CHAMPIONS OF THE EARTH"

Prestigious award from UNEP in recognition of the IOC's responsibility towards and commitment to the importance of sustainable development in sport.

FIFA FOOTBALL STADIUMS: TECHNICAL RECOMMENDATIONS AND REQUIREMENTS, 4TH EDITION

Updated guidelines published. Requirements include extension of Green Goal™ programme to all other FIFA events, especially all future FIFA World Cups™.