Stormwater management around the world
Lessons from Novatech 2010

Dennis Corbett and Marion Urrutiaguer

Victoria
The Place To Be

Melbourne Water

Novatech 2010, the 7th international conference on sustainable techniques and strategies in urban water management was held in Lyon - France, from June 27 to July 1st, 2010.

At the conference, 227 presentations, written by 675 authors and co-authors, representative of 28 countries, were presented.

Of the 227 presentations,
20 were from Australia
including 7 from Monash University
and 3 from Melbourne Water

Main Australian link to the conference is through Monash University and in particular Assoc Professor Tim Fletcher, Department of Civil Engineering, who was on the Conference Organising Committee.

NOVATECH 2010

7e CONFERENCE INTERNATIONALE

Techniques et stratégies durables pour la gestion des eaux urbaines par temps de pluie

PROGRAMME - RÉSUMÉS | PROGRAM - ABSTRACTS

Sustainable Techniques and Strategies in Urban Water management

LYON – FRANCE JUIN – 2010 – JUNE

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What is Novatech about ?

- **The main focus of Novatech is sustainable solutions for the management of wet-weather flows in constructed areas. The conference covers both stormwater management and Constructed Sewer Overflows. Themes are:**

- **Urban planning, operation and urban water sustainable management: strategy, planning and decision aid.**
- **Innovative technologies for stormwater management.**
- **Watershed – scale urban water management: rainfall – runoff and flood; pollution and impact of urban wet –weather discharges.**

What was discussed at this year's conference ?

Presentations on:

- **Dealing with Climate Change;**
- **Improvements in technology, eg better biofilters, permeable pavers, green roofs, sewer overflow management;**
- **The need to use more stormwater in the city landscape rather than have it go into waterways or combined sewer systems;**
- **Making water a more prominent feature in city landscapes.**

- **Traditional storm water management practices mainly rely on a pipeline network to transport storm water runoff from urban impervious surfaces towards the nearby natural water bodies.**

- **More recent concepts in urban storm water management, such as Sustainable Urban Drainage Systems (SUDS), Low-Impact Development (LID) technologies or Water Sensitive Urban Design (WSUD), aim at restoring the critical components of natural flow regimes.**

- **In particular, such techniques are designed to capture, temporarily retain and infiltrate storm water, promote evapotranspiration and harvest water at the source, encouraging evaporation, evapotranspiration, groundwater recharge and the re-use of storm water.**

- **Some key examples include rain gardens, biofiltration swales, pervious pavements, and green roofs.**

- **The problem is that we have too much stormwater !**

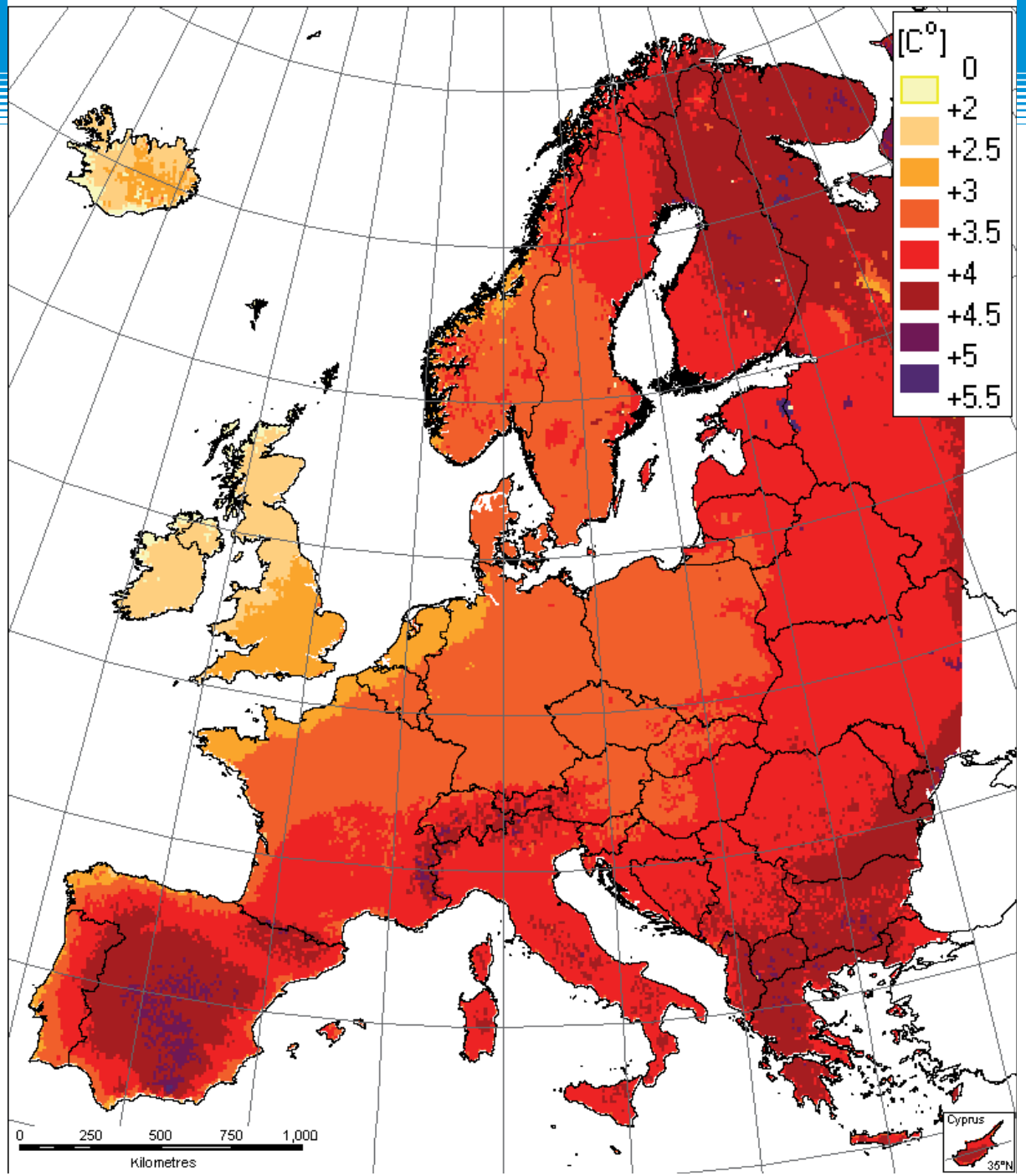
Some key policy drivers from the European Union

- **“Water Framework Directive” (EU, 2000)**

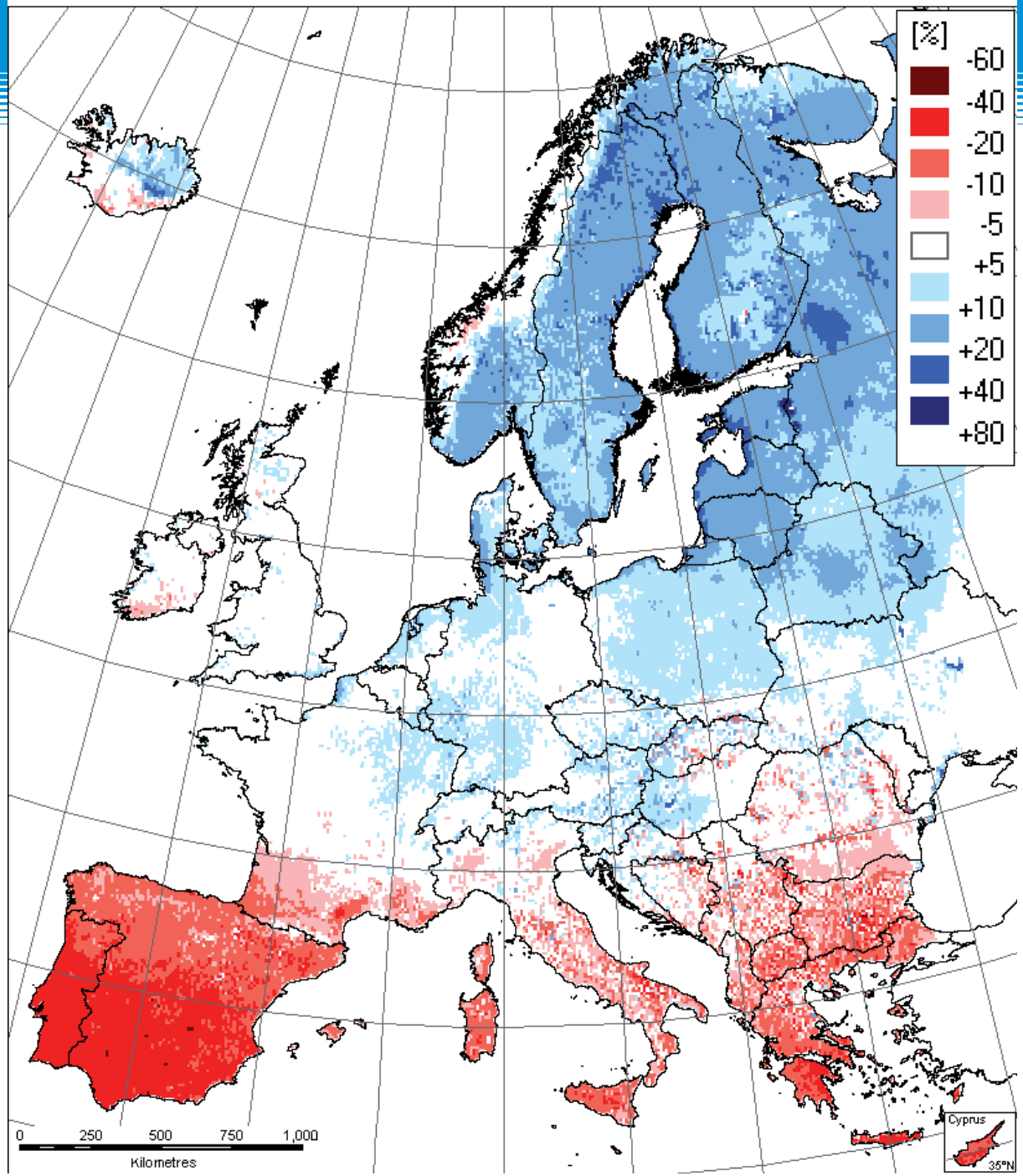
- **“Adapting to Climate Change: Towards a European framework for Action” (EU, 2009).**

  This focuses on reducing the EU’s vulnerability to the impact of climate change.

Temperature: change in mean annual temperature [C°]



Precipitation: change in annual amount [%]



L'eau c'est la vie.
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Liberté • Égalité • Fraternité
RÉPUBLIQUE FRANÇAISE

Ministère de l'Écologie, de l'Énergie, du Développement durable et de l'Aménagement du territoire

CONSULTATION NATIONALE

du 15 avril au 15 octobre 2008

Agence de l'Eau


University of Genova, Italy,
Green Roof project

Green roof runoff experiments in Singapore and The Netherlands

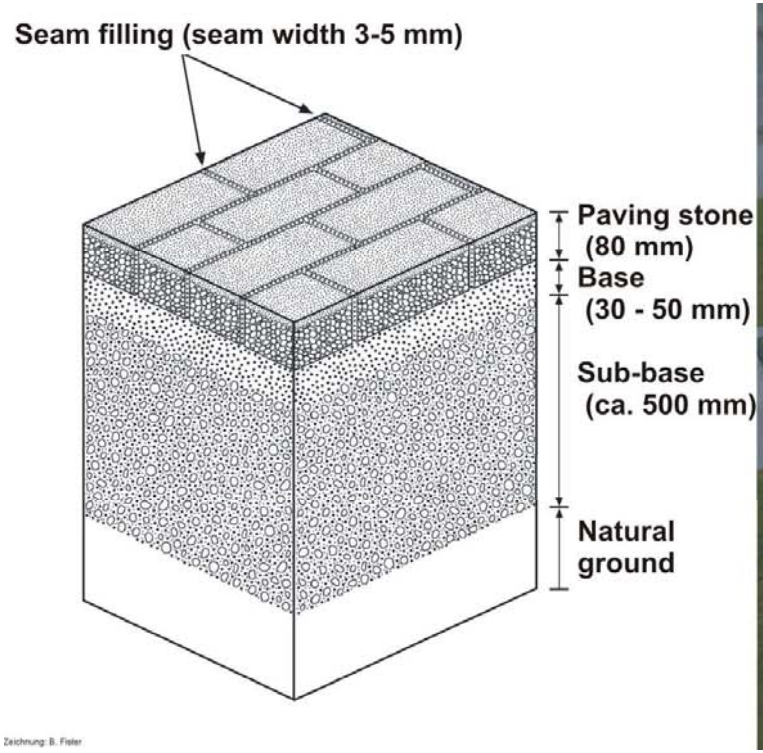
Green roofs in Portland, Oregon, USA, retain 60% of rainfall on average, preventing sewer overflows into the Willamette River.

Green Roofs in Chicago

- **With over 65 hectares of green roofs, Chicago has more vegetated roof space than any other city in the USA.**

- **The city has encouraged green roof construction through a variety of incentives, such as expanding the number of units developers are allowed to build on a property if they install a green roof.**

Permeable pavements:
Testfield in Coesfeld, Germany

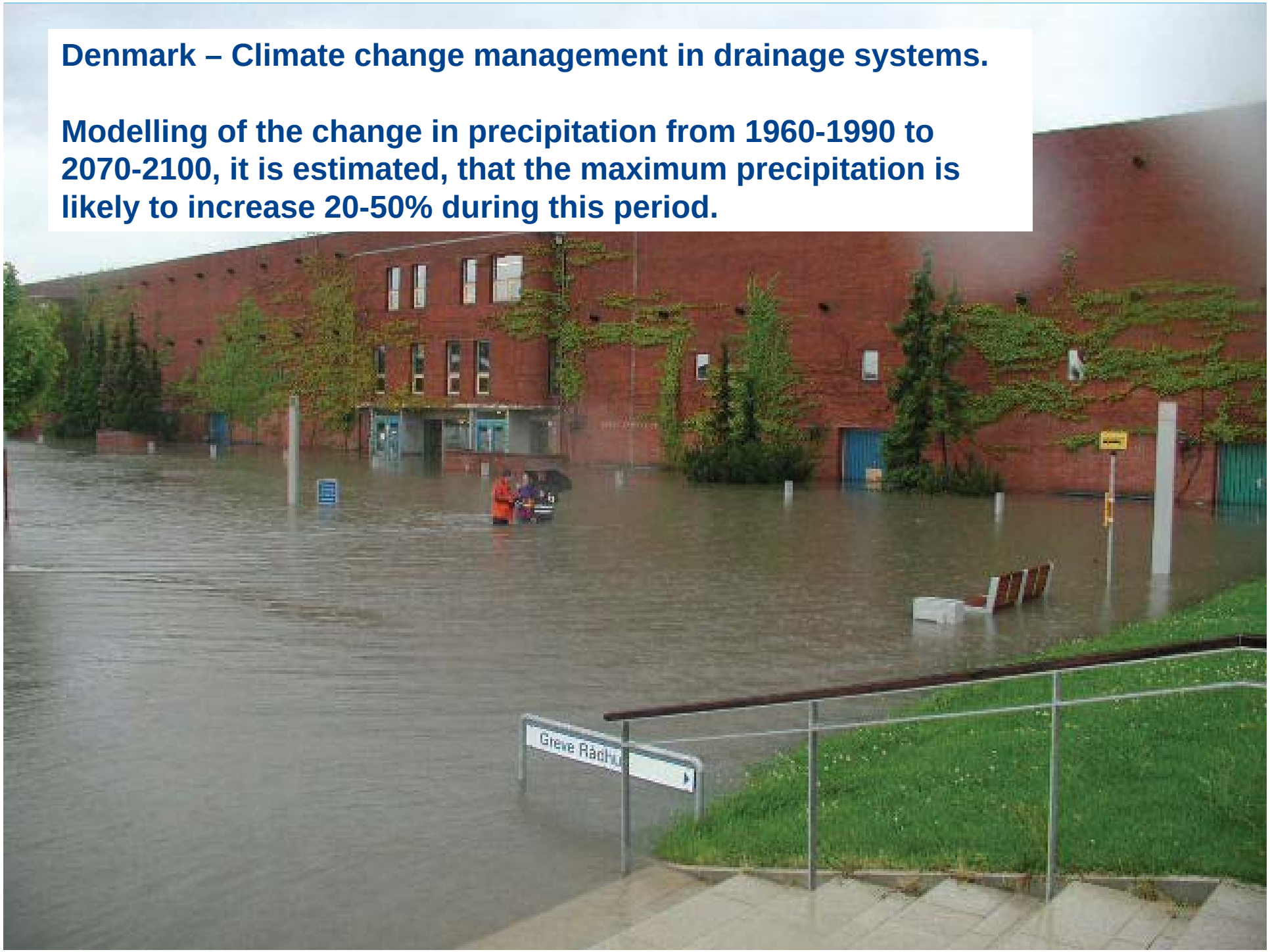



Permeable parking lot in Santander, Spain

Bordeaux is located in a low lying area and is particularly prone to flood water damage so permeable pavements are now required on all new developments.

Denmark – Climate change management in drainage systems.

Modelling of the change in precipitation from 1960-1990 to 2070-2100, it is estimated, that the maximum precipitation is likely to increase 20-50% during this period.



- **The ecological transformation of the River Lippe and its tributaries in the German city of Kamen is combined with the disconnection of storm water.**

- **This creates a green-blue corridor with positive impacts on the local city climate.**

- **Financial incentives for private house owners support the realisation of the ecologically improvement over a length of 2.14 km**

- **The rainwater run-off of about 80 houses with a paved area of 1.1 hectares will be disconnected from the wastewater system and the storm water will be utilised to create a new area of biodiversity.**

- **A green corridor will be built through the city of Kamen contributing to making the city climate-proof. The citizens will be made aware of what they can personally do to face climate change – such as disconnecting their private property.**

Encouraging disconnection of downpipes

Control, treatment and reuse of stormwater, drivers of a bioclimatic city

Rerouting stormwater from houses to then be utilized in creating “green and blue corridors” in the suburbs.

Staten Island “Bluebelts” for stormwater management

Staten Island “Bluebelt: project:

- **The stormwater plan consists of storm pipes that carry runoff from streets and parking lots to existing streams and wetlands. Before stormwater reaches the stream, it passes through a variety of constructed wetlands, basins, and filters, called Bluebelt facilities.**

- **These Bluebelt facilities slow the runoff, remove contaminants, minimize erosion and flooding, and promote groundwater infiltration.**

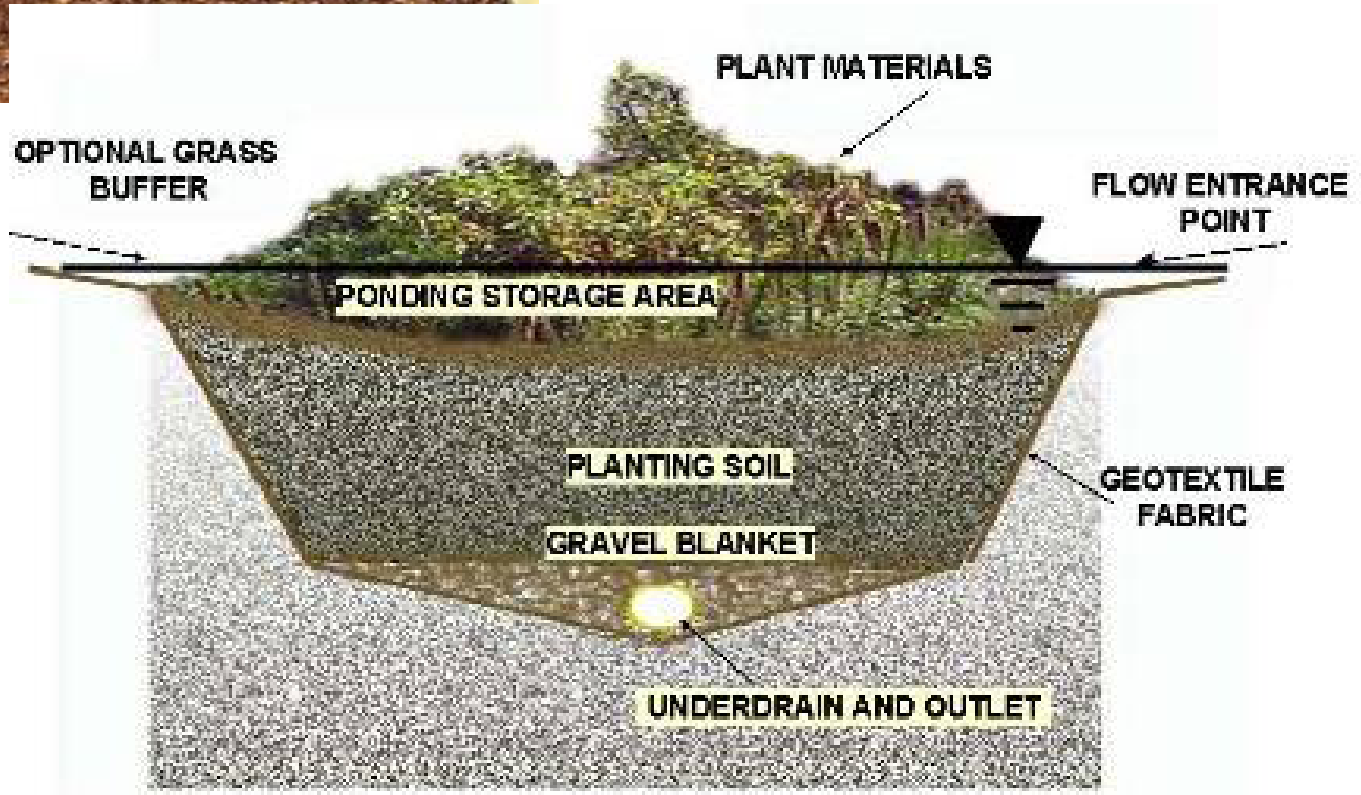
- **The filtered stormwater runoff then flows into streams, which serve as natural drainage corridors that transport runoff from the urban area.**

- **The city restores these streams by re-establishing their naturally meandering channel to reduce water velocity and prevent erosion. The result is an interconnected system of stormwater pipes, wetlands, and streams that drain runoff, filter out pollutants, and recharge ground - water and streams around the island.**

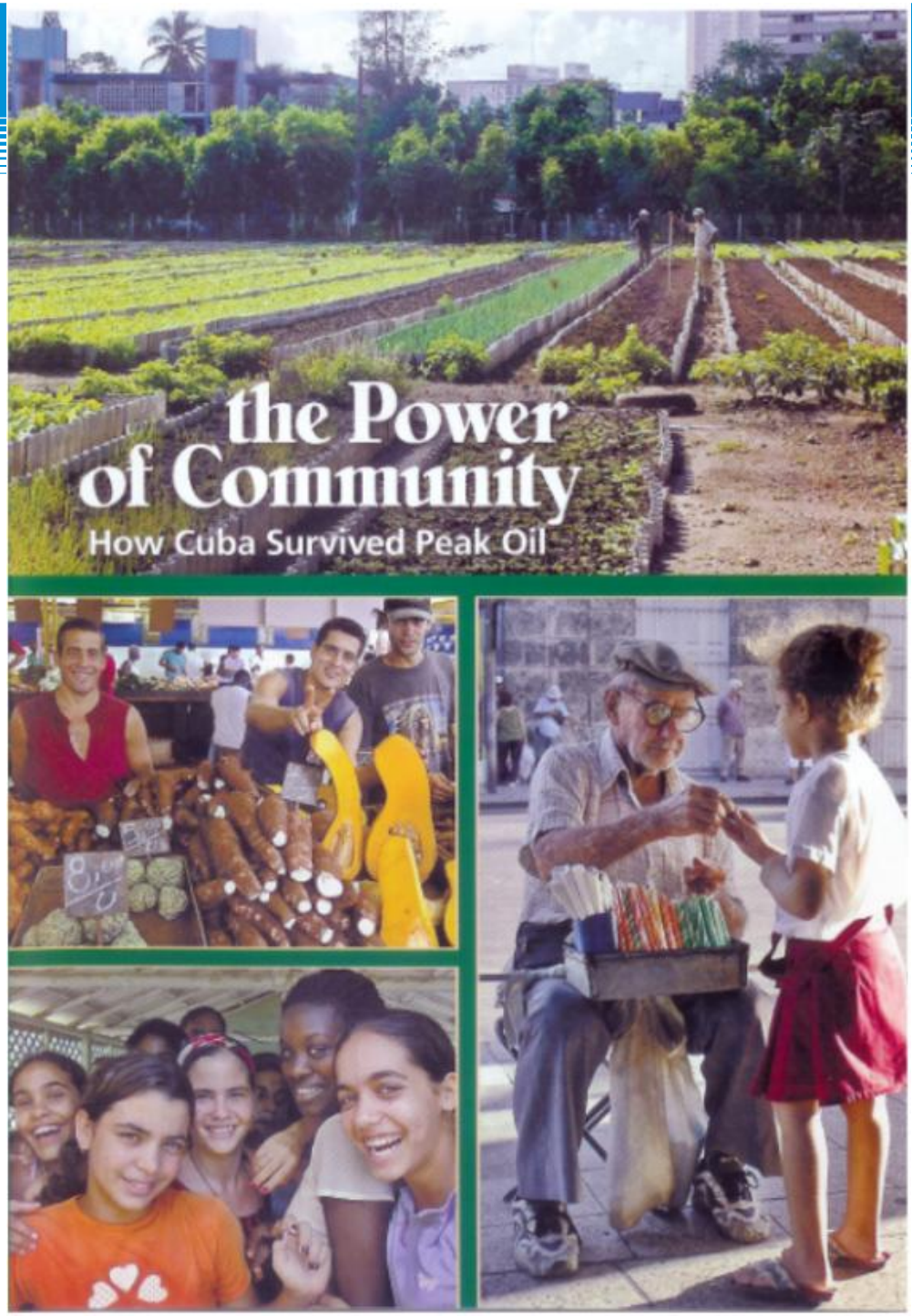

FLOWS TO BLUEBELT
NO DUMPING
NYCDEP

Bioretention provides stormwater infiltration, retention and treatment

Used on lots, or public areas (median strips, parking lots, adjacent to roads)



Brazil: Infiltration trench and Detention trench


the Power
of Community
How Cuba Survived Peak Oil

Regulations are slowly changing to allow more sustainable solutions.

Thanks to the EU Water Framework Directive (EU, 2000) implemented to protect the aquatic environment, certain requirements have been set out involving potential use of Rainwater Harvesting.

In France until very recently, only external uses (garden watering, cleaning, etc.) were allowed, except in special cases (drought, no mains network).

Despite reluctance from sanitary authorities; a new decree in August 2008 authorised rainwater use inside buildings.

France – combined systems not coping with climate change – installing rain water tanks can help to some extent, but won't prevent sewer overflows in case of heavy rain events.

What did Melbourne Water talk about ?

- **“The Evolution of a WSUD Capacity Building Program: The Role of Implementation Targets”**

- **“Achieving sustainable stormwater management in Melbourne, Australia, as part of the journey to a water sensitive city”**

- **“Protecting water quality in the Bays and Waterways of Melbourne, Australia, by managing Nitrogen outputs in stormwater and sewage effluent”**

What did Melbourne Water talk about ?

- **The key issue for Melbourne Water to address stormwater as part of the move towards more integrated water management;**

- **Where Water Sensitive Urban Design fits into the moves towards our planning for Cities of the Future.**

In particular, we talked about:

- Our work with our 38 Councils, assisting them to implement WSUD, including capacity building in local government;
- Integrating stormwater as an issue across all of Melbourne Water;
- Our key projects eg our large wetland programs for reducing Nitrogen in waterways and bys, and our 10,000 raingardens program;
- Our strategic documents eg Better Bays and Waterways;
- Our research partnerships with universities.

In particular, we talked about:

- **Minimising the impacts of development using planning regulations eg Clause 56;**
- **The Stormwater Offsets program – assisting developers to meet their requirements;**
- **Reducing Nitrogen impacts from our sewage treatment plants, as part of implementing the Port Phillip Bay Environmental Management Plan.**

The traditional management of stormwater with a singular focus on flood protection has resulted in the degradation of receiving waters (creeks and waterways).

Melbourne example used by Tim Fletcher - Stormwater managers have an imminent challenge to provide flood protection to the community in a climate-uncertain future, whilst protecting and improving the health of urban streams.

To meet this challenge, stormwater managers must consider new, integrated management options.

The application of allotment-scale rainwater harvesting can moderately reduce flood risk whilst assisting in the protection of urban stream health. It should be one of the suite of tools used to reduce the flooding and ecological impacts of urban stormwater.

Little Stringybark Creek

An alternative economic instrument to encourage take-up of water tanks and rain-gardens

- **Selling the unfamiliar: urban creeks and rivers are sick because they receive too much water;**

- **Putting a $ value on the environmental benefit of retaining stormwater in urban catchments;**

- **Finding the true price: a uniform price auction;**

- **Cost-effective stormwater management that (incidentally) provides a cheap water source;**

- **The first step in restoring an urban creek...next steps, new ideas...**

Little Stringybark Creek

Conclusions from around the world . . .

- **Support for low impact development is growing;**
- **In terms of technical guidance, a great deal of support is available from various sources;**
- **More needs to be done with respect to other prerequisites for implementation: favourable institutional arrangements and regulatory framework; and encouraging stakeholders collaboration;**
- **The world is very interested in what Melbourne Water is doing !**

Giving the rivers back to the community

St-Charles Riverbanks, Quebec, Canada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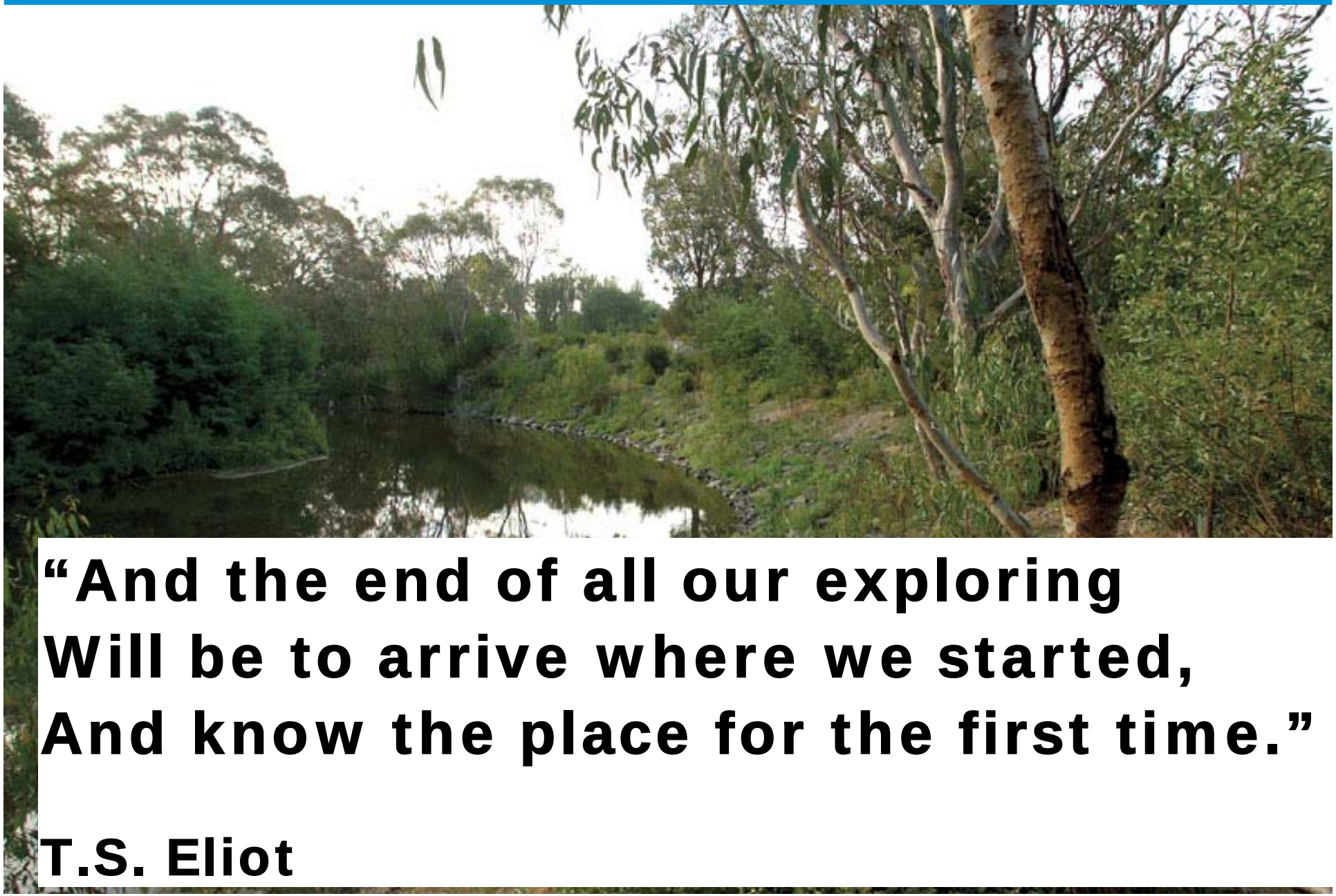

“And the end of all our exploring
Will be to arrive where we started,
And know the place for the first time.”

T.S. Eliot