INITIATIVES POUR L'AVENIR
DES GRANDS FLEUVES
INITIATIVES FOR THE FUTURE
OF GREAT RIVERS

Australia

PORTRAIT OF A COUNTRY SHORT OF WATER


3-BRISBANE
2-NEWCASTLE
DARLING RIVER
6-GOULBURN
4-ADELAIDE
1-SIDNEY
MURRAY RIVER
5-MELBOURNE
ROUTE PLAN

A new trip to Australia and once again, these forever pertinent words of Coleridge :

" Water, Water every where
And not a drop to drink."

Water is everywhere, surrounding this immense island (8 million square kilometres, sixteen times bigger than France). But this water is salty : the Indian Ocean, the Torres Strait, the Pacific Ocean, the Tasman Sea, the approaches to the far north of Antarctica, and so forth.

How can the needs of its 23 million people for freshwater be satisfied ?

Nine tenths of the population live in the southern States through which flow the only two rivers worthy of the name, the Murray and the Darling whose watershed only covers 14% of the territory but 70% of the irrigated surface and nearly half of the country's agricultural production.

For how much longer can these two wonderfully valiant sisters continue to fulfil all the missions expected of them, given that Australia has decided

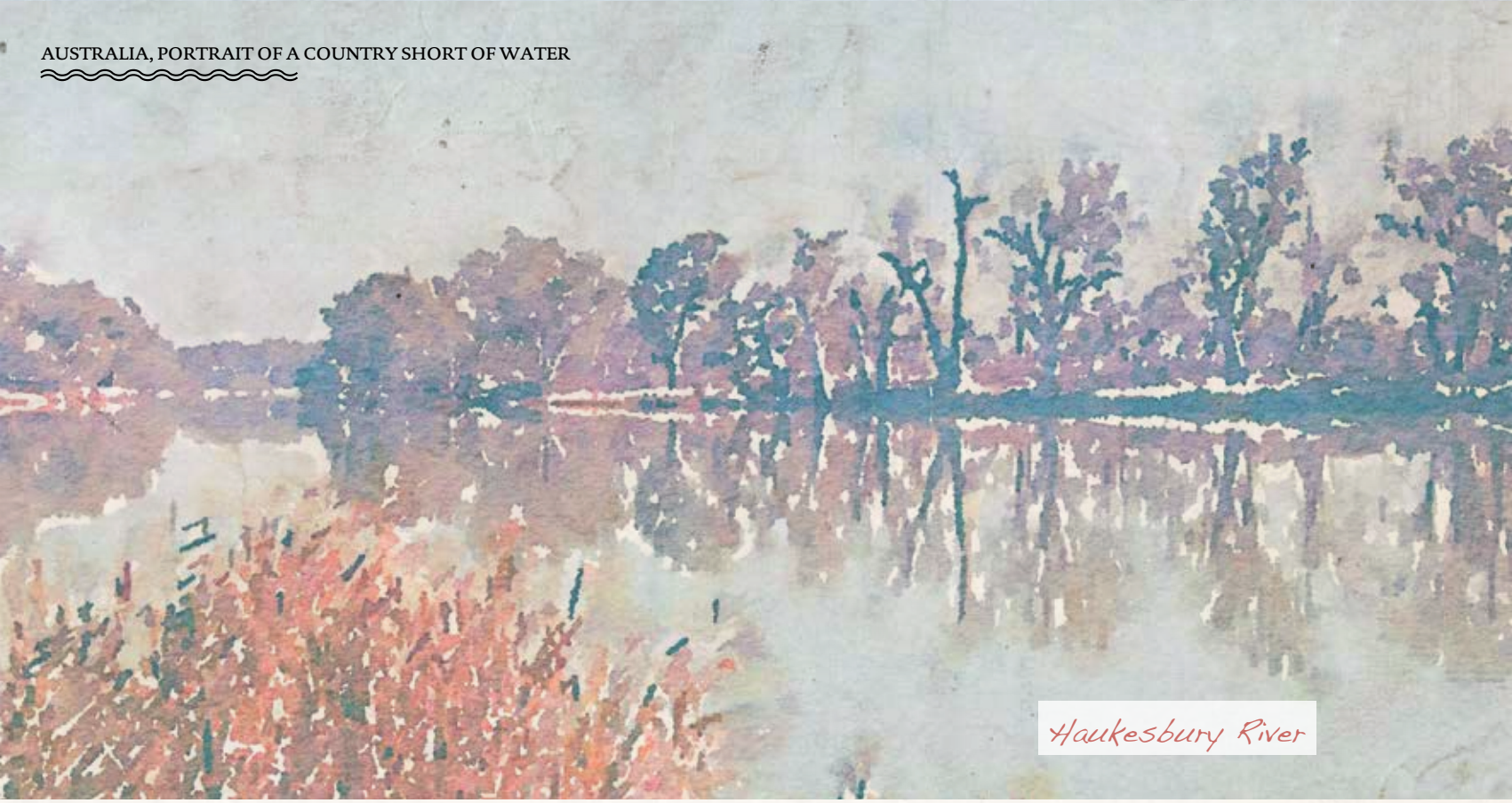
to build its (impressive) development on exploiting its natural resources? But nothing consumes as much water as farming and mining. The first to grow plants and slake the thirst of cattle, the second to extract useful minerals from the matrix.

The first stage :

Newcastle, a port of prime importance !
An immediate immersion in the main paradox of Australia: few countries depend on nature so much. Few peoples live in such osmosis with it. They love beaches and are keen on sailing, hiking, watching wildlife, etc. But few economies are so environmentally unfriendly. Didn't the Prime Minister Tony Abbot proclaim that coal was an opportunity for the planet without attracting great criticism?
Coal is precisely the subject by which we chose to start our journey. Newcastle is the THE coal port, the largest in the world. The countryside around it abounds with mines and the lobbies make themselves heard here like nowhere else. A project exists to build a bridgehead for the port on the high seas within easy reach, with total disdain for the Great Barrier Reef which lies close by and already subject to severe damage.

The trip from Sydney to Newcastle takes three hours by a train labelled "Intercity", but which resembles a French suburban commuter line.


Sydney Opera House



Haukesbury River

Schoolchildren mount and alight stop after stop. The country's youth all in English style uniforms, mostly light blue. The Commonwealth lives on! Many of the youths originate from Asia. How can one forget its geographic proximity ? Three hours crossing suburbs that remind one of London's, small houses surrounded by tiny gardens but from which emerge, weather permitting, huge trees, mostly eucalyptus. From time to time, small forests serve to remind one that national parks exist, as if to recall that, yes, contrary to what critics say, for the most part foreign, the nation and its successive governments have been and are concerned with preserving the ancient plant cover. Three hours to cross the Ku Ring Gai National Park or to travel along and cross reaches of water, rivers (Haukesbury River,

Point Clare, etc.) and wetlands that attempt to fulfil their role in a country dominated by aridity. What a shame that so much salt makes the surrounding sea improper for numerous uses.

What is the role of a university ?
According to its Vice-Chancellor, Newcastle University is at the service of the region from which it springs, a region that has suffered plenty of hard times: an earthquake, the shutdown of the steel mills and refineries (delocalised to more profitable localities) and increasingly frequent and severe droughts. Australia is currently undergoing one of the worst droughts in the last 40 years, in fact since people have been thinking about it seriously ! It's a region that has to invent a new future for itself. The role of the university is to help it negotiate this metamorphosis.
Two questions await urgent responses.
The first is that concerning water management. The Vice-Chancellor is unhappy. The foreign visitors are only interested in the Murray and the Darling, but the local river, one that flows

Teaching about the river

directly into the sea, is called the Hunter and is worthy of interest. Its flowrate has also fallen due to excessive withdrawals. How can the high quality vineyards that terrace the valley be saved ?
Obviously, the university teaches a whole range of technical solutions to improve irrigation. But its pride is based on its expertise in the human sciences. It works on issues such as

The port of Newcastle

the transition needed for the port and the future of the river and its uses. It is necessary to find a way to involve the entire population in carrying out a common project, in spite of contradictory interests. There is a programme whose name speaks for itself: CARE, Contamination Agreement and Remediation of the Environment. Remediation ... how can communities be brought to speak with each other and progress together?
How can they be brought to commit themselves? We come up with the idea to invite Newcastle University to Notre Dame des Landes and Sirvens. Perhaps, by using its magic method of promoting consultation, France could start to build dams and airports again.

The future of the port is the second worry. Everything is fine for the moment. Newcastle is the world's leading coal exporting port. But what of tomorrow and afterwards ? The very kind director of these gigantic installations reassures us.
"Sure, the Chinese purchase less. But after Fukushima, the Japanese have taken up the

torch. What about India, where do you think it will find all the energy it needs for its development? Moreover, our owners, which include the giant China Merchants Group of Hong Kong, are not making any mistakes. They have already planned to invest in order to double our capacities, to load 300 million tons every year instead of the 160 today."

"Do you know where our strength lies? Australia has this wealth, this precious thing that is lacking everywhere else: space. Two hundred hectares are already available."

To further back his certitude, or shore up his confidence, the chairman of this installation reminded us that the port has existed for 216 years (the first coal was exported in 1799) and that the State of New South Wales renewed its concession in 2014 for a duration of 98 years.

The port of Newcastle

"But don't worry about anything; we're also going to diversify".
So as not to spoil this fine optimism we take care not to mention the tiny share taken by grain on the docks of Newcastle, less than 3% of the total. However, the main threat to the port does not come from competition from outside (that of other ports) but from the lag in taking the road to diversification, a direction that beckons immediately if it wants to play an important role in the future and lessen the risk it faces, since this risk is a reality. Coal no longer attracts the attention of financial organisations apart from those of the port, and they are already beginning to leave the ship.

Thus goes the schizophrenia on Australia's eastern coast: a university at the forefront of democratic innovation at the service of the environment and a port that discharges one of the most violent poisons for the planet's climate with matchless efficiency.
In addition, this "bad" port and its coal industrialists provide the "nice" university with most of its funds.

Brisbane, with a little over a million inhabitants, it's the major city in the middle of the east coast; a kind of scaled down Sydney that hasn't given up its goal of equalling its model. Located on a breath-taking coastal site with fine modern architecture and large areas reserved for plants, construction projects abound: the future is in action.

Two universities are on the programme : Queensland and Griffith. They can be found at either end of the city and resemble each other like two identical twin sisters. The competition between them is ferocious. Their campuses in the midst of greenery would make even the most spoiled of French students jealous, they take the same multidisciplinary approach to the issues raised by water management, and they pay the same increasing attention to human sciences. The techniques exist though they must still be

implemented by pertinent governance, and the projects must win acceptance by a population divided by its needs.

Although these two universities collaborate little with each other, the demand for their exceptional competences is worldwide, starting with China, India, Brazil, etc.
But what about Australia?
An embarrassed silence.
The strategies for reducing hydric stress are known and rely on two foundations : a general effort to lessen consumption and community oriented and long-term resource management. Disorganised recourse to desalination is a perfect example of a lack of continuity. There is pressure to build plants during droughts, but when the rains return with strong floods, they become redundant and the programmes formulated to save water during the lean months are forgotten. One can understand why these two wonderful universities dispense their expertise elsewhere, despite its being acknowledged in Australia.
Also, regarding aquatic issue, there are no better prophets than those outside one's own country. Thus to gain greater recognition and more funds for their research, Griffith and Queensland welcome an increasing number of foreign students : 25% today, perhaps 50% tomorrow. Given the high prices families are ready to pay these young people contribute far more than they cost. High level education has become one of the driving forces of the new Australian prosperity. Environmental education is thriving in a country that is hardly a shining example of respect for the most basic natural balances. These men and women of science smile when one mentions the coal lobbies to them and the project to build a port terminal that endangers the Great Barrier Reef. The smile is sad. They don't have the means to get angry.

Why deprive us of an estuary?
When going west until the city of Adelaide, we wanted to discover a strange phenomenon: a river that only rarely flows into the sea. Admittedly, its flowrate is very slow. It takes about four months for the water to flow from its source to its mouth. Some reservoirs are subject


The Murray's banks

to considerable evaporation. Most of the time, the flow of the Murray is so slow that it stops before reaching the sea and sometimes it even flows back to its source.

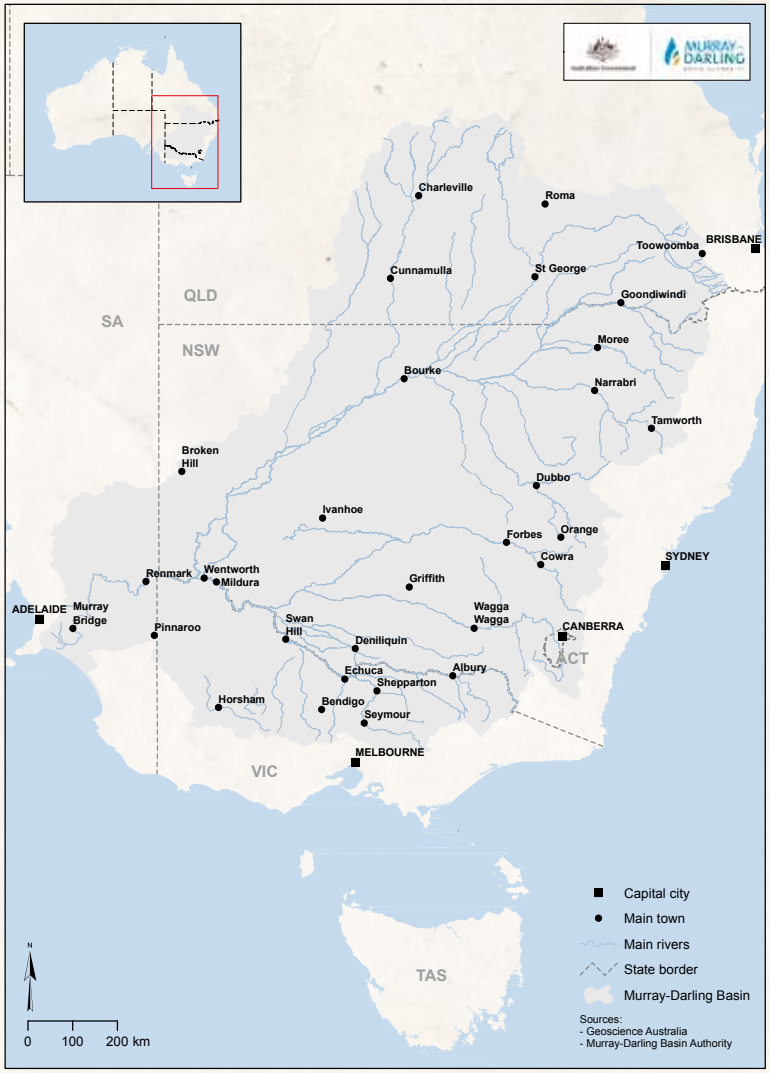
However, the authorities that had invited us failed to listen to our much repeated request. They were probably ashamed. What is a river without a mouth? Well, one can't say we didn't try.

Adelaide, and more generally the State of South Australia, occupies the worst of positions : downstream. All the withdrawals and pollutions occur upstream, in New South Wales and in Victoria. Those unlucky enough to live downstream have only their tears to shed, and however much they cry, it will never be enough to fill a great river.

Up to recently, the rule regarding water was everyone for himself. Farmers and miners, whoever needed it, served themselves without a thought for others.

And then the droughts started to succeed each other. Confronted by the spectacle of desolation and suicides, the need for solidarity became imperative. In 2004, Australia adopted a National Water Initiative endowed with a fund of $1.25 billion. Its programme is implemented by a national commission. A law was voted and an administration called the Murray Darling Basin Authority (MDBA) was set up with the role of managing the entire watershed : the Murray River and its main tributary, the Darling. More than thirteen billion Australian dollars have been injected into a gigantic project to restore irrigation water in the river.

This is a REVOLUTION. In a young country closely attached to its regional independence,



The MDBA's area of action

the power over water was withdrawn from the states and given to a confederal authority that has the last word when allocating the volumes of water people can use. The price of water has increased. Irrigation permits are granted with greater circumspection. Indeed, a market for irrigation permits was created, like that of carbon. One can sell one's withdrawal rights and also buy them.

According to most studies, this series of measures has led to a 50% reduction of water consumption for the same agricultural production.

But concern is growing despite these efforts, since the droughts succeed each other while needs are increasing.

The functionaries of the MDBA cut an almost military image. It's not just any administration; it is obliged to provide results and must wage a real war. Fighting against lobbies, combating waste, funding water saving programmes, refusing to backtrack immediately once heavy rain falls and floods occur, leading some to

claim that the problem has disappeared.
When it esteems that the withdrawals made by farmers have become excessive, the MDBA buys water permits for water that it obviously doesn't use. The flow rate of the river increases (less reduced) by as much.
It's goals are not limited to quantity. The quality of the water must be controlled as well. In addition to the pollution present in all the world's rivers, one enemy must be weakened if it can't be eliminated. This is the case of salt.
In ancient times, many of these regions in southern Australia were covered by the sea. The land has retained a great deal of salt. As long as the earth was covered by vegetation, the salt remained in place gathered around roots like all the other minerals. But as soon as the trees and shrubs were cleared to free land for crops, as soon as the land was irrigated copiously and more, the salt infiltrated into the rivers where the water became increasingly improper for uses such as ... irrigation.
In order to break out of this infernal circle, all kinds of drains have been sunk along the banks. And they pump. But what is to be done with all the salt (two million tons a year)? Nothing, because of its poor quality. So it is heaped in huge rectangles. What of the impact on the atmosphere and what are the risks of infiltration into the groundwater?
There is a project to build a pipeline to discharge this salt into the sea, but funds are lacking and what of the marine ecosystems?
As can be seen, managing the Murray is no easy matter, even when relying on the knowhow of the universities, among the best in the world, even when mobilising ever-larger sums, and even when inventing modes of governance that combine the authority of central government with the constant quest for commitment from the stakeholders, whether professional or public. Beyond technically complex issues, there is something else, far more basic.

How can an essential but increasingly rare resource be shared in society?
It is understandable why so many countries confronted by similar challenges are watching the Australian experience closely. Necessity obliges intelligence. Australia is a length in

Marks showing the changing levels of the Darling in 1861

front of California, which would do well to follow its example. This state, the wealthiest in America, is already faced with severe hydric stress, but it hasn't yet fully grasped the problem or made the decision to implement the obviously unpopular strategies needed to overcome it. It has shied away from telling the almond production lobby that its modes of farming are no longer adapted to climatic change.

Good water management demands ethical behaviour: transparency, sharing and courage, refusal to sacrifice the long-term to the dictates of the present, even if our children are not entitled to vote.

And now, Melbourne, the great rival to the city of Sydney. However, our objective this morning at the end of the austral summer is not urban. We shall marvel at the beauty of the site and the boldness of the architecture later. We've come here for agricultural reasons and have an appointment with the very latest innovation in irrigation. Each to their own reason for travelling.

How can a very large surface area be irrigated ? If your farm is huge and you lack water, and if, notwithstanding, your agricultural ambitions are boundless, here's a piece of advice : leave Melbourne by the M39 highway and drive some five hundred and fifty kilometres northwards, just enough time for you to glimpse the drought struck yellowed pastures and the empty man-made ponds. Soon, you see a panel announcing Goulburn Dam. Follow the arrow. You have come

to the right place to learn about gigantic-scale, modern and automatic irrigation.

Since the end of the 19th century, 1881 to be precise, different infrastructures have been built to store water in this central region of the State of Victoria. The challenge was and still is crucial for we are here in the heart of Australian farming, livestock breeding, arboriculture, market gardening and cereals.

Several years ago, successive droughts forced the authorities to take action. The aging installations no longer satisfied increasing needs with an ever-scarcer resource. An "alliance" was launched between the administration, an irrigation designer, a construction company and a company specialised in electronic services. A public structure was set up to drive the "Future Flow Alliance Program" comprising six sub-areas that were soon to attract 26,000 customers. Thus the program launched an impressive project of renovation and the construction of new facilities in its perimeter. 6,300 kilometres of gravity canals dug or cleaned and sealed, 1,516 irrigation sluices controlled automatically by telemetry, a network of antennae supplied by solar panels, etc.

This entire array of installations operates from 15/08 to 15/05. 110 people have been working on the project since 2008 and call on 400 subcontractors. The current phase of the Goulburn project amounts to an investment of AU$ 148 million.

A thumbs-up to Australian safety objectives and knowhow

Above and on the following page: the Future Flow Alliance Program

Every year, a reserve of 2,400,000,000 litres of water is accumulated, leading a saving of 30% in volume, which is in fact reoriented more efficiently, for a surface area of 68,000 km² irrigated for the sub-area of the district of Goulburn alone. The surface area of the entire project corresponds to almost a quarter of France. In other words, it is the largest irrigation project in the world.

But it isn't finished.
Soon other works will be launched to link other basins (sub-areas) of the State of Victoria.
Budget: an additional AU$2 billion.
However, questions emerge once our amazement has faded and our admiration expressed regarding the speed of implementation, and the efficiency proven in the field.
This water, used so well upstream, will not flow downstream. The poor people of Adelaide! Must they accept to forever forego seeing a "normal" mouth of a river flowing into the sea ? What river? Have you seen it? Yes, in the very greedy State of Victoria.
The second question : Could such works be considered in our country?
The answer is no. The activists against Sirvens would die of heart attack at the first sight of Goulburn.

This is the way of Australia, which, after years of continuous growth, is going through the worst crisis in its history with the slump in prices for raw materials. But there do not seem to be any signs of great worry.

The wealth accumulated makes it possible to foresee and find a direction, slowly, to a new mode of development less dependent on mining revenues, with greater emphasis placed on other driving forces such as services, health, higher education, etc.

This is the way of Australia, with its wealth of raw materials that are cheaper than before since world growth has slowed, consumption has shrunk, and recycling has improved.

This is the way of Australia, where renewal is obligatory due to the shortage of the most important of all raw materials : water.

Decidedly, water, I mean life, demands intelligence.