

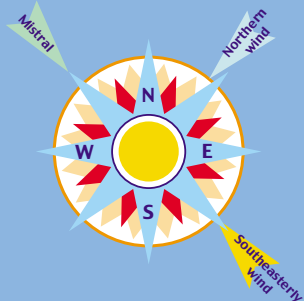
# Old Friend and the Sea

## Prevalent winds in the Gulf of Trieste:

**North wind:** falling gusty wind from the northeast that cools down and mixes waters of the Gulf of Trieste;

**Southeasterly wind:** warmer and more humid wind from the southeast that pushes waters toward north; when it blows for longer periods the sea can flood lower parts of towns and roads at high tide;

**Mistral:** wind from northwest and sign of a stable weather situation, important in the summer.



## The Gulf of Trieste is unique

In the Gulf of Trieste the Mediterranean comes together with the Dinaric system and the Alps. All three landscapes strongly influence the natural features of the Gulf of Trieste; therefore the biological diversity of the Gulf is also exceptional.

### Vulnerable Area

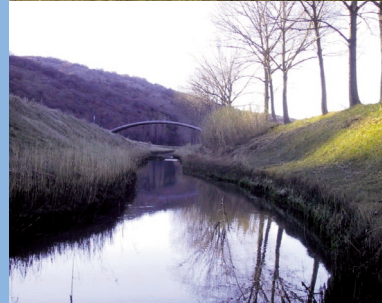
Owing to its closed position and shallowness the Gulf of Trieste is an exceptionally sensitive ecosystem, particularly in the summer season when the temperature of the water increases, and at times of stable weather with bad air circulation. As well as the burdens which originate on land, increasing maritime transport further endangers the environment.

### The Abrasive Type of Coast

Steep and crumbling cliffs of marl and sandstone are a characteristic feature of the Slovenian coast.

### The Accumulative Type of Coast

Large quantities of sandy sediments deposited in particular by the Soča River (and in Slovenia to a smaller extent by the Rižana, Badaševica and Dragonja Rivers) result in a coast that faces a shallow sea with a gently shelving sea bottom.



### The Po River Influent

The Po River on average brings into the Adriatic 1460 m<sup>3</sup>/s of water. These waters are heavily burdened with industrial, agricultural and domestic waste.

### The Soča/Isonzo River Influent

The Soča/Isonzo River has a significant impact on the Gulf of Trieste. In periods of intense rains it carries a large quantity of floating material (tree trunks), which float on the surface and can endanger smaller boats before they are washed up on the coast.

### Karst

Because the first scientific description of the Karstic landscape was made between Trieste and Divača, the Slovene term Karst has been accepted in scientific literature and used as a term denominating the limestone landscape type all over the world. The Institute for Karst Research in Postojna (a Scientific Research Centre of the Slovenian Academy of Sciences and Arts) continues the scientific tradition of Karst research and is among the leading such institutions in the world.

### The Karstic Waters

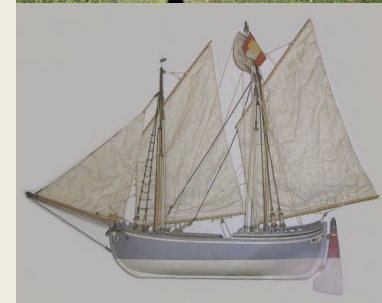
Karstic underground waters flow in systems with extremely low self-purification capacity and high level of vulnerability to pollution.

### Surface Waters

Slovenian Istria, whose geology is based on flysch, is crossed by the network of the Rižana, Badaševica and Dragonja Rivers. High waters occur in particular in the winter season and in summer the rivers almost dry up.

### Air

The principal source of pollution is transport which is the densest on the main highways; there we also register the highest concentrations of hydrocarbons, CO<sub>2</sub>, NO<sub>x</sub> and CO. Transport emissions increase severalfold in July and August when high temperatures produce ozone.



### Agriculture

The traditional terrace culture on flysch slopes was very well adapted to the environment as it reduced erosion, increased the cultivated surface and played an exceptionally valuable role in water retention.

### Salt pans

The northernmost Mediterranean salt pans. Salt extraction is remarkably adapted to the environment (use of solar and wind energy); together with its interesting byproducts (salt mud, heavy salt water) it enabled the launching and development of spa tourism at Portorož. Sustainable salt production among other things made possible the existence of one of the principal spawning grounds for endemic fish in the Adriatic.

### Shipbuilding

Important reserves of wood in the forested hinterland and the need for boats in the Middle Ages stimulated shipbuilding in Piran, Izola and Koper. Today the Izola Shipyard is one of the main polluters of the sea and the sea bed.

### Fishing

Owing to the mixture of sweet and salt water various fish populate the Gulf of Trieste. The catch in the Slovenian part of the Gulf has been estimated to approximately 2000 tonnes annually; an equal quantity is believed to be produced at fish farms. In certain periods of the year the breeding and consumption of shellfish are harmed by pollution and the phenomenon of toxic algae.

### The Port of Koper

Rapid growth of the Port of Koper, that now exceeds 10 million tons of freight per annum, has resulted in important economic development, with consequent substantial burdens on the environment.

### Fresh Water

At the peak of the tourist season, which coincides with the dry season in the region, the central water source of the regional Rižana waterworks barely satisfies the demand. Additional quantities of water are ensured by connection to the Karst waterworks, the wells in the Dragonja Valley and the modernisation of the waterworks. The introduction of an economic price for water, which is now the most expensive in the country, had a strong impact on water demand. It stimulated the discontinuation of unreasonable irrigation with fresh water, and technologies which are dirty and wasteful of water.

### The threat to Fresh Water

The central water source is potentially most threatened by transport activities, in particular by the Kozina-Rupa road connection and the Koper-Divača railway connection. They both cross the immediate hinterland of the pump.

### Protected Areas

Protected areas are like green vegetation islands that mitigate the impact of traffic, noise and a range of emissions. In addition they retain precipitation and humidity, lower the temperature in summer and thus create a more agreeable microclimate, which is necessary for pleasant residence and the development of tourism.

### The Škocjanski zatok

The establishment of the Škocjanski zatok Nature Reserve represents an excellent development opportunity. As part of a new urban developmental plan for the City of Koper that includes water and water space as an important factor, Škocjanski zatok could substantially improve the quality of life in the town and its surroundings.



### The Marine Biology Station of the National Institute of Biology

is the leading Slovenian institution for research on marine biology. The Marine Biology Station collects data on levels of pollution of the sea with various substances; pollution sources; the effects of pollution on the marine environment and organisms; and changes over time in the status of the marine environment. These data are of great importance to an integrated assessment of current development and planning.



Summary of the UNEP/MAP/Ministry of the  
Environment and Spatial Planning workshop  
“Water, the Key to the Sustainable Development”  
(Fiesa, January 2002)

The active participants of the three working groups were the representatives of the Municipalities of Koper, Izola and Piran; the Ministries of the Environment and Spatial Planning, of Economy, of Transport, of Agriculture, of Defence, inspectorates and representatives of tourist associations, schools and nongovernmental organisations.

The opinions of the participants could be summarised as follows: on **“environmental assets”**:

- ensure the coexistence of culture and nature,
- conserve the quality of the sea and the coast as a natural resource and asset,
- the coast and the sea are also of importance for identity;

on **“important environmental issues”**:

- physical interventions in sensitive parts of the water world (waterfront and the water world of the Rižana, the Badaševica and the Dragonja),
- water pollution due to inadequate wastewater collection and treatment system,
- insufficient protection of water sources,
- concentration of population in the coastal area,
- developmental conflicts with regard to agricultural/industrial/tourist use;

on **“assets to be conserved”**:

- give waters the space for their dynamics,
- free access to the sea,
- conserve natural morphological features and habitats on the waterfront,
- conserve a clean sea,
- rehabilitate local water sources and wells in the hinterland.



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Slovenia, Dunajska c. 48, 1000 Ljubljana, Slovenia,  
Phone: +386 1 478 7335, Fax: +386 1 478 7415, e-mail: milena.janezic@gov.si  
Author of concept and text: Mitja Bricelj

Design: Andrejka Čufer

Photos: M. Bricelj, T. Makovec, V. Bemetič

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UNEP/ MAP Coordinating Unit, Athens, Greece  
tel: 301-7273100  
fax: 301- 7253196-7  
e-mail: unepmedu@unepmap.gr  
www.unepmap.gr

## Opportunities and addresses

### Slovenian Legislation and Policy

The 1993 *Environmental Protection Act* complies with the basic principles of Agenda 21: the principle of integration of the environment, cooperation, prevention, the polluter pays principle, compulsory insurance, compulsory subsidy measures, promotion, public participation and the principle of protection of rights.

The 1991 *Resolution on the Maritime Orientation of the Republic of Slovenia* emphasizes the importance of the maritime orientation of economic development and lists the relevant steps in this direction.

The 2001 *Environmental Protection Action Plan for Slovenian Istria* deals with the issue of water resources, protection of water quality (protection regimes for local communities, industry, the roadsides), water supply, wastewater treatment, methods of discharge of wastewater into the sea, issues of protected areas and a regional concept for waste management.

Regional Offices of the Environmental Agency of the Republic of Slovenia coordinate the implementation of administrative tasks, management of a public service for protection of the coastal sea against pollution, registration of environmental data, and management regimes in protected areas.

The Regional Development Agency is expected to consider the principles of integrated coastal management and the environmental characteristics of Slovenian Istria in developmental planning.

### European Legislation

The *EU Water Framework Directive* adopted by the European Parliament and the European Council (2000/60/EC) establishes a framework for joint action in the area of waters and represents an important step toward sustainable use of water resources in Europe. It introduces the compulsory preparation of management plans for river basins, which include coastal waters one mile off the coast.

### International Cooperation

The *Mixed Slovenian-Italian-Croatian Commission for the Protection of the Adriatic Sea and the Coastal Areas Against Pollution* is active in areas of research concerning the quality of the Adriatic Sea, the coordination of pollution prevention systems, the environmental safety of maritime transport and integrated coastal management.

The *Adriatic-Ionian Initiative* establishes increased subregional cooperation on environmental matters. The *Convention for the Protection of the Marine Environment and the Coastal Region of the Mediterranean* protects the marine environment and coastal regions of the Mediterranean, and tries to achieve reduction of emissions and the sustainable use of water sources. Slovenia became a member of the so-called Barcelona Convention in 1993.

### Regional Maritime Programmes

The *Mediterranean Action Plan (MAP)* involves twenty countries. In 1995 the Programme was extended so that it now reflects the contemporary understanding of relations between the environment and development from the sustainable perspective.

The *Regional Marine Pollution Emergency Response Centre for the Mediterranean Sea (REMPEC/RAC)* offers to its partners comprehensive information and logistical assistance in case of environmental accidents at sea.

The *Blue Plan* is a planning centre that prepares development tools and indicators.

The *Priority Actions Programme (PAP)* deals primarily with integrated planning in coastal regions and is a leading focus for the preparation of national and international coastal development plans in the Mediterranean.

The *Spatially Protected Areas (SPA)* programme develops methodologies for protection and for the preparation and implementation of management plans in protected areas.

*Environment Remote Sensing (ERS)* by using satellite pictures completes the data on environmental processes in the Mediterranean for planning purposes.

The *Cleaner Production Regional Activity Centre (CP/RAC)* disseminates information on the use of cleaner technologies, their advantages and usefulness, by transferring knowledge and methodologies.

### Institutions

Hidro Koper Company for Construction and Water Management  
Obrtniška 15, 6000 Koper  
tel.: +386 5 613 30 00, fax: +386 5 613 30 11

Ministry of the Environment and Spatial Planning  
Environmental Agency of the Republic of Slovenia, Regional Office Koper  
Pristaniška 12, p.p. 115, 6000 Koper  
tel.: +386 5 639 84 96, fax: +386 5 639 84 95

Ministry of the Environment and Spatial Planning  
Inspectorate of the Republic of Slovenia  
for the Environment and Spatial Planning,  
Regional Unit Koper, Trg Brolo 4, 6000 Koper  
tel.: +386 5 663 23 40, fax: +386 5 663 23 41

Institute for Conservation of Cultural Heritage of Slovenia,  
Regional Unit Piran ,Trg bratstva 1, 6330 Piran  
tel.: +386 5 673 15 37, fax: +386 5 673 15 36

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## The Slovenian Mediterranean and Sustainable Development

*“Sustainable development is development that satisfies our needs today without threatening the ability of future generations to satisfy their own needs.”*

*World Commission on the Environment and Development (WCED)  
in the report Our Common Future, 1987*

For the inhabitants of Slovenia the sea is an extremely important asset, offering natural resources and natural richness. It is so precious that the newly independent state included it on the national coat-of-arms and flag. For man the waterfront has always been attractive. The coast offers exceptional development opportunities, from transport and a place to live to recreation and tourism. These last two are based precisely on the impact of the experience provided by the waterfront. Therefore the price of real estate on the coast is high. The dynamic waterfront in Slovenia is an important legal category defined as “natural public good”.

This leaflet is therefore a story and an initiative at the same time. It is a story of one of the smallest Mediterranean gulfs, privileged by an excellent geographical position and an extraordinary biological diversity. The leaflet is also an initiative: to motivate individuals and organisations to search for creative solutions, which could offer an opportunity for sustainable maritime development. Only with an economy adapted to nature will we be able to realise all of the opportunities presented by this natural treasure. This is a challenge that raises great expectations for all of us.

### Gulf at the top of the Mediterranean

At the gulf of Trieste the Mediterranean indents Europe the most deeply, which accounts for the Gulf’s exceptional importance to transport.

Three countries share the marine ecosystem of the Gulf of Trieste with its adjacent river basins: Italy, Slovenia and Croatia. The Slovenian coast is only 47 km long, which is only one thousandth of the entire Mediterranean coast.



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