



**European
Union
Contest for
Young
Scientists**

*September 2001
Grieghallen, Bergen, Norway*

PRACTICAL GUIDE TO BERGEN 2001



EUROPEAN COMMISSION
RESEARCH DIRECTORATE-GENERAL

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WELCOME TO BERGEN

Welcome to the 13th European Union Contest for Young Scientists

The Norwegian Foundation for Youth and Science welcome you to Bergen. We hope the 13th European Union Contest for Young Scientists will give you a good time in Norway and that you will use the time to get acquainted with other fellow participants whether you are a young scientist, escort or visit the EU Contest in another capacity.

The EU Contest is one of the largest European Commission events ever hosted in Norway. His Royal Highness Crown Prince Haakon of Norway is patron of the EU Contest and will attend the prize award ceremony with Director General Achilleas Mitsos from the European Commission Research Directorate-General.

We have prepared a programme for you to learn to know each other and Norway and for the public of Norway and media to get a glimpse into the exiting world of science through your research.

Enjoy your stay – good luck!

Anders Groenli

Sissel M. Holmern

Alexander Refsum Jensenius

TRANSPORT AND ARRIVAL

Your first meeting with Bergen will be Bergen Airport – Flesland. This airport is located 20 km south of central Bergen.

Flesland is a small modern airport with few gates in the civilian terminal. In addition to the civilian terminal it has a heliport for North Sea oil fields and a military/NATO part. The terminal has some small shops, cafeteria, pub, bank and a post office. Braathens and Scandinavian Airlines (SAS) are handling agents for international airlines.

Contestant teams will be met by EU Contest

representatives at the airport and guided to the contest hotel. Visitors who arrive on their own can either use the airport bus (to the “Fish market” stop, about 30 min., 55 NOK) or use taxi (about 250 NOK).



ACCOMMODATION

The EU Contest hotel is the Clarion Admiral Hotel. Both contestants, escorts, staff, jury and special guests will stay in this hotel.

The Admiral is housed in a building on the main Bergen waterfront of Vaagen overlooking the Hanseatic Wharf – “Bryggen”. The building was erected in 1906 as a warehouse for trading companies, but was converted to hotel in 1987 and refurbished several times since then. This means that the hotel is modern, but none of the rooms are alike and the warehouse look with brick walls is still visible in many of the rooms. The participants will stay in double or triple rooms with bathroom.



Clarion Admiral Hotel is about 15 minute walk from the exhibition centre in Grieghallen.

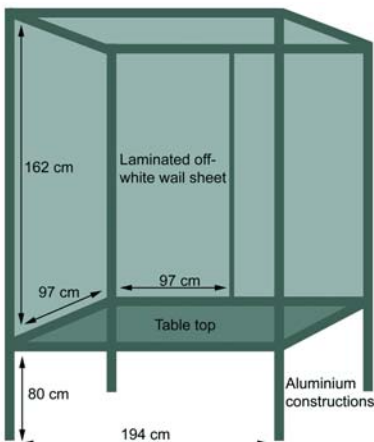
The view from the hotel can be observed through live cameras (you will find a link to this at www.eucontest.org).

EXHIBITION

The 64 projects will be exhibited in Grieghallen. Grieghallen is located in central Bergen next to the art galleries at the lake Lille Lungegårdsvann.

The world famous composer Edvard Hagerup Grieg (1843-1907) has given his name to the building. Grieghallen was designed by Danish architect Knud Munk and finished in 1978. It is the major concert and festival hall in Western Norway and the main venue for the annual Bergen International Festival. Grieghallen was rebuilt with conference facilities in 1996, but the main concert hall seating 1500 people is still the main part of the building. The Eurovision Song Contest 1986 is among the major events that have taken place in Grieghallen.

The contestants will be provided with a stand space with the measurements provided below.



The participant stands will, along with the European Commission stand be placed in the first floor foyer of the main concert hall. The ground floor of the foyer will have stands presenting the European Patent Office, the Research Council of Norway, local research institutions and sponsors.

Address:

If you have parcels that are being delivered to Grieghallen the address is:

Grieghallen

Edvard Griegs plass 1

NO-5015 Bergen

Norway

Any items delivered **before Sunday 16 September** must be sent to the following company for storage (at the expense of the contestant) and clearly marked with the contestant name, country and "EU Contest, Grieghallen":

Transport og Lagerservice AS

Liamyrane 16

NO-5132 Nyborg

Norway

Tel: +47 55 19 55 50

Facsimile: +47 55 19 55 15

PRELIMINARY PROGRAMME

Saturday 15 September

- Arrivals at Bergen Airport – Flesland (some arrive 13 or 14 Sep)
- Participants gather at the Bergen Aquarium

Sunday 16 September

- Excursion to Sogn with Bergen- and Flåm Railways, visit to Aurland Hydroelectric Power Station, the Lærdal Tunnel, Kvikne's Hotel and journey on the Sogne Fjord with high speed catamaran

Monday 17 September

- Assembly of presentations
- Reception at the University of Bergen
- EU Contest Lecture with Research Leader Helge Drange from the Nansen Environmental and Remote Sensing Centre

Tuesday 18 September

- Jury Interviews
- Opening Ceremony in the presence of Minister Trond Giske and Mayor of the City of Bergen Ingmar Ljones

Wednesday 19 September

- Official Open Day/Schools visit the exhibition
- Jury Interviews
- European Patent Office Lecture by EPO-Examiner Pamela Moskowitz

Thursday 20 September

- Prize Award Rehearsals
- Meeting of National Organisers
- Jury Interviews
- Meeting of the Nobel Minds with Professor Ivar Giaever (Physics 1973), Professor Gerardus t' Hooft (Physics 1999), Professor Sir Harold Kroto (Chemistry 1996) and Professor Ben Roy Mottelson (Physics 1975). Chaired by Director-General Achilles Mitsos of the European Commission Research Directorate-General
- Concert at Grieg's home - Troldhaugen
- Tour of Bergen

Friday 21 September

- Presentations of Special Award Institutions: European Northern Observatories, European Space Agency, Ny-Ålesund Large Scale Facility and European Space Camp Andøya
- -Prize Awards Ceremony at King Haakon's Hall in presence of HRH Crown Prince Haakon of Norway, Director-General Achilles Mitsos of the European Commission DG Research and Chief Commissioner of the City of Bergen Anne-Grete Strøm-Erichsen
- Removal of exhibition
- Final reception at King Haakon's Hall

Saturday 22 Sep:

- Departures from Bergen Airport – Flesland (some depart 23 or 24 Sep)

WEATHER

Bergen and weather are closely related. Even though the sun might shine from a blue sky, you should prepare for rain.

The “Bergen School” defined modern meteorology with Vilhelm Bjerknes (1862-1951) as a main figure discovering frontal systems and publishing the thesis “On the Dynamics of the Circular Vortex with Applications to the Atmosphere and to Atmospheric Vortex and Wave Motion”.

The Bergen area is one of the areas in Europe with the highest annual precipitation. The average for one year is 2250 mm rain or snow and for September 283 mm. (Similar figures for London

is 600 mm/55 mm; for Berlin 580 mm/50 mm and for Athens 375 mm/15 mm).

When you come to Bergen in September you should be prepared for unstable weather ranging from sunny 15°C to 5°C with heavy rain and wind.



CLOTHING

When considering what to pack for your trip to Bergen you should be prepared for three different kinds of clothing:

Casual

The everyday attire when you are exhibiting your project and on excursions is casual.

Prize awards and final reception

On Friday 21 September you will participate in the prize award ceremony at the medieval

King Haakon’s Hall. HRH Crown Prince Haakon will be among the invited guests and the ceremony will be conducted in a formal matter. We would appreciate you bringing a national costume for the prize awards, but if this is difficult for you it is possible to wear a nice dress or (preferably dark) suit.

Outdoors

We will have several outdoor visits. Among these is a trip to the mountain and fjord district of Sogn. You should bring warm rain- and windproof clothing for these outdoor experiences. Keep in mind the weather forecast.

PRICES AND CURRENCY

Norway is among the most expensive countries in the world.

We will provide all meals and necessary transportation, but if you would like to buy souvenirs or snacks we have some prices that you could use in comparing with commodities you are used to:

0,5 litre Coca-Cola

in discount shop: ca 10 NOK

in kiosk: ca 18 NOK

in café: ca 30 NOK

The currency used in Norway is Norwegian krone (plural: kroner) divided into 100 øre. Most shops will accept credit (such as Mastercard or Visa) and debit cards (Maestro or Cirrus). ATMs are readily available all over Bergen.

As of 20 August 2001 some exchange rates are:

1 Norwegian krone = 0.12 Euro

1 EUR = 8.11 NOK

1 Norwegian krone = 0.11 US Dollars

1 USD = 8.87 NOK

1 Norwegian krone = 13.58 Japanese Yen

1 JPY = 0.074 NOK

1 Norwegian krone = 0.07 British Pounds

1 GBP = 12.82 NOK

The following notes are valid in Norway now:

- 50 kroner note with picture of story collector Peter Christen Asbjørnsen (1812-1885)
- 100 kroner note with opera singer Kirsten Flagstad (1895-1962)

- 200 kroner note with physics professor and Norsk Hydro co-founder Kristian Birkeland (1867-1917)
- 500 kroner note with novelist and Nobel laureate Sigrid Undset (1882-1949)
- 1000 kroner note with painter Edvard Munch (1863-1944)
- 1000 kroner note (old version) with “father of the constitution” Christian Magnus Falsen (1782-1830)

The current coins come in denominations 50 øre, 1 krone, 5 kroner, 10 kroner and 20 kroner.



MEALS

You will be served a combination of traditional Norwegian dishes and modern international food during your stay in Norway. If you require a special diet we would appreciate your notice as soon as possible.

Breakfast

Breakfast in Norway is fairly comprehensive and considered an important meal. We will most of the days have breakfast at the large breakfast buffet at Clarion Admiral Hotel.

Lunch

Lunch in modern Norway is usually a lunch pack made in the morning and brought to school or work. At the EU Contest you will some days be served a light meal like a baguette and other days have warm lunch.

Dinner

Dinner is usually hot food (meat, fish or vegetarian) with potatoes, rice or pasta in Norway. This

will also be the rule at the EU Contest, but we will also try some easier dishes or more traditional Norwegian food.

We will provide access to fruit and refreshments at the exhibition.

Alcoholic beverages

There are very strict rules on consumption of alcohol in Norway.

People under the age of 18 are not allowed to drink alcohol and the minimum age for drinking spirits is 20.

Bars and pubs usually have licence to sell alcoholic beverages, but will lose this licence if they are caught selling to minors. This means that they will not allow minors access to their establishments. Many pubs and bars have 23 or 25 year age limits.

GROUPS

The participants will be grouped with 6-7 others. To commemorate the 100th anniversary of the Nobel prizes each group will be named after a Nobel laureate. The groups will have one student helper each that will assist the participants. Each will group will consist of participants from different countries to emphasise the Europe- and world-wide scope of the EU Contest and give all participants the opportunity to get to know people from many different countries.

BERGEN

The EU Contest city of 2001 is Bergen, Norway. This city has been host to international gatherings throughout its almost one millennium long history.

Bergen was the capital of Norway in the middle ages and the largest city in Scandinavia in the same period. Now Bergen is a modern city with 230,000 inhabitants. Bergen is a major international centre for marine research and houses the largest academic institutions in Western Norway: The University of Bergen, the Norwegian School of Economics and Business Administration, Christian Michelsen Institute for Science and Intellectual Freedom, Norsk Hydro Centre for Petroleum Research and the Institute of Marine Research.

King Olav Kyrre is officially recognised as the founder of Bergen in 1070 AD. With an excellent harbour Bergen provided an ideal place for continental traders to meet fishermen from the northern parts of Norway to trade.

The German Hanseatic League made Bergen one of the four cities where they set up main trading office together with Bruges, London and Novgorod. German and Dutch traders made a strong impression on the city of Bergen from the late middle ages to the late 16th century. It is still possible to see German and Dutch influences through street names and surnames of several of the “old Bergen families”.

The trade and industry of present Bergen is still strong in the fields of fish trading and shipping, but North Sea petroleum activities has increasingly become part of Bergen’s areas of excellence.

The 19th century meant a great cultural upswing for Bergen:

Henrik Ibsen (1828-1906), widely regarded as the father of modern prose drama, worked as “stage poet” at Den Nationale Scene (the national theatre in Bergen) for six years in the early 1850s. At this early point in his career Ibsen benefited from being sent by the theatre on a study trip to Denmark and Germany (later he was to spend a



large part of his life on the continent). While in Bergen he wrote, among other things the Norwegian historical drama “Lady Inger of Østraat” (1855).

Edvard Grieg (1843-1907), one of the most important composers in the 19th century. His music is a beautiful mixture between old Norwegian folk tunes and orchestrative craftsmanship. Among his most famous works are the A-minor Concerto, Ballade in G minor and Peer Gynt. Most young pianists have also played some of his 100 lyric pieces. Grieg lived most of his life in Bergen, in his home at Troldhaugen.

Ole Bull (1810-1880) was together with Litz and Paganini the biggest “pop-star” in 19th century Europe. His skills on the violin was such that women fainted and men lost money. He toured all over the world and was a great ambassador for the Norwegian folk music. He build a palace outside Bergen with room for all the souvernirs he had gathered around in the world. In his last years he lost almost all of his enormous fortune in an attempt to build a perfect city, Oleania, in the USA.

Fridtjof Nansen (1861-1930) is one of the greatest multi-talents Norway has fostered. After finishing zoology studies in Christiania (Oslo) he set off on an expedition with the sealer Viking in 1882 studying animal life, ice movements, ocean currents and winds. Nansen got back to Norway and was given a curator position at Bergen Museum (the precursor to the University of Bergen) - still a very young man! Nansen spent six years in Bergen and finished an outstanding first Norwegian doctoral thesis in neurology “The Structure and Combination of Histological Elements of the Central Nervous System” (1887). After

leaving Bergen Nansen went back to the Arctic: the first person to cross Greenland on skis (1888), expedition investigating ocean currents carrying the ship *Fram* from east to west in the arctic ocean, closest to the North Pole on skis (1895), first Norwegian ambassador to Great Britain (1906), major contributions to the establishment of oceanography as a science, first League of Nations High Commissioner for Refugees (1921), helped save 30 million starving people in the USSR and given the Nobel Peace Prize in 1922.

Gerhard Armauer Hansen (1841-1912) is the man who discovered *Mycobacterium leprae* – the cause of leprosy. Before Armauer Hansen’s work it was disputed whether leprosy was contagious or hereditary. Armauer Hansen worked on his leprosy research as a doctor at St. Jørgen’s Hospital in Bergen. With its three large leprosy institutions Bergen became an international centre in the leprosy research in the 1850s. Armauer Hansen’s breakthrough came in 1873 with the discovery of *Mycobacterium leprae*. He continued his work infecting nurses and patients with the bacteria in order to test whether *M. leprae* really was the cause of leprosy and instigated new laws on the care of leprosy victims. Despite the unethical nature of his research Gerhard Armauer Hansen won international recognition and leprosy is now also known under the name Hansen’s disease.

Vilhelm Bjerknes (1862-1951) is the man who is credited with founding the “Bergen School” in modern meteorology. This work developed scientific principles for meteorology: More extensive weather observations provided new knowledge about the atmospheric processes that lead to a certain weather condition. The main paper by Bjerknes is “On the Dynamics of the

Circular Vortex with Applications to the Atmosphere and to Atmospheric Vortex and Wave Motion” His work was particularly important in order to understand the thermal processes that cause movements of air and oceans.

Stein Rokkan (1921-1979) was important in the development of comparative social sciences. Rokkan did ground breaking work in the implementation of new theories and methods, the construction of databases and development of practical research cooperation that made multinational analyses of political structures possible. He founded Norwegian Social Science Data Services, was responsible for establishing the

Department of Sociology and to a large extent the Faculty of Social Sciences at the University of Bergen.

Today the University of Bergen is one of the most internationally oriented educational and research establishments in Norway. UoB and other academic institutions in Bergen attract a high number of international visitors due to various scientific areas of expertise recognised throughout the world. Bergen has also established itself as a major city in modern culture with annual Bergen International Festivals since 1953 and being a European City of Culture in the year 2000.

CULTURE

Norwegians are more informal than many other peoples. It is usual to use first name to a person you have met before – even with teachers or managers at work. Clothing is also mostly informal except for festive occasions.

Most people in Norway (at least those born after 1945) speak English. English is taught from the second year at school. Many also speak German while some speak French or Spanish. Scandinavian languages have a common basis and most Scandinavians can understand each other.

Norway is particularly rich in dialects, some of which are quite distant from the standard language. Written Norwegian exist in two forms: “Bokmål” or “riksmål” is derived from the Danon-Norwegian language of the civil servants used during the union with Denmark (1397-1814) while “nynorsk” was introduced in the late 19th century as a more genuinely “Norwegian” language derived from dialects little effected by Danish. Bokmål is used by approx. 84% of the population.

A small indigenous population in Norway use the sami language.

HARD FACTS ABOUT NORWAY

Government administration

Official name: The Kingdom of Norway (Kongeriket Norge)

System of government: Constitutional monarchy

The Royal Family:

Harald V, King of Norway, born 21 February 1937

Sonja, Queen of Norway, born 4 July 1937

Haakon, Crown Prince of Norway, born 20 July 1973

Mette-Marit, Crown Princess of Norway, born 19 August 1973

Märtha Louise, Princess of Norway, born 22 September 1971

Area: 385,155 sq. km, including Svalbard and Jan Mayen territories

Population: 4,504,000 as of 1 January 2001

Monetary unit: Norwegian kroner, NOK

Length of coastline: 21,192 km, including fjords

Largest lake: Mjøsa, 362 sq. km

Highest mountain: Galdhøpiggen, 2,469 m

Inflation rate, 2000: 3.1 per cent

Gross domestic product (GDP), 1999: 1,192,826 mill. NOK

Gross domestic product (GDP) per capita, 1999: 267,328 NOK

Development aid expenditure, 1999: 0.91 % of GDP

Geography

Geographic position mainland Norway:

North (Magerøy): 71° 11' 09" N.Lat.

South (Mandal): 57° 57' 31" N.Lat.

West (Utvær): 04° 29' 57" E.Long.

East (Vardø): 31° 10' 07" E.Long.

Length of common frontiers: 2,542 km

Sweden: 1,619 km

Finland: 727 km

Russia: 196 km

Shortest distance north/south: 1,752 km

(Source: Statistics Norway)

Economy

Exports, 1999: 466 bnNOK

Imports, 1999: 394 bnNOK

Petroleum (products and services) exports: 37.8% (176bnNOK)

Shipping (products and services exports: 12.9 % (60bnNOK)

Tourism: 3.6 % (17 bnNOK)

Foreign trade, 1999

EU: Imports 67.8 %; Exports 74.0 %

Developing countries: Imports 11.5 %; Exports 6.9 %

USA: Imports 8.0 %; Exports 7.6 %

Japan: Imports 4.2 %; Exports 2.7 %

HISTORICAL BACKGROUND

The first recorded political integration of Norway happened at the beginning of the 10th century under King Harald Fairhair.

This was during the Viking period (9-11th century) of Norwegian, Danish and Swedish expeditions and expansion in all directions with the creation of Kingdoms and settlements in present day Russia and Ukraine, Ireland, Normandy, Great Britain, Iceland, Greenland and North America. Christianity was introduced into Norway in the year 1000.

Due to the King's marriages and inheritances, Norway became linked to Sweden in 1319 for twenty years and after a last period of independence under King Haakon VI, with Denmark in 1380. A few years later Sweden also was included in the union, which took the name of Kalmar from the town where Erik III was crowned King of the three united countries in 1397. Shortly after Sweden had left the union in 1523, Lutheranism was imposed to Norway in 1536.

In 1814, as a consequence of the Napoleonic wars, Norway was given from Denmark to Sweden. On May 17 (National Day) the Constitution was signed, which entered into force under the new union with Sweden.

Finally, on 7 June 1905, following a dispute with the Swedish King on the right of establishment of a Norwegian consular service, independence was proclaimed and in November Prince Carl of Denmark became the first king of modern Norway under the name of Haakon VII.

At the same time an intense period of explorations in the high North was initiated by Fridtjof Nansen in 1888 and continued in the South, culminating with Roald Amundsen's arrival at the South Pole in 1911.

During World War I, Norway remained neutral, together with Denmark and Sweden, while its merchant navy was put at the allies' service. As a result, the Svalbard islands were placed under Norwegian sovereignty by the Paris Treaty in 1920, followed by the Jan Mayen island, also in the Arctic. The dependencies in the Antarctic of Pierre I and Bouvet islands and Queen Maud Land on the Antarctic continent came soon later.

Again neutral at the beginning of World War II, Norway has been nevertheless occupied by Germany from 1940 to 1945. In 1949, it entered into the NATO alliance. Despite two failed attempts by referendum to enter in the European Community in 1972 and in the European Union in 1994, Norway is solidly attached to the European construction through the EEA Agreement. It is member of all relevant multilateral organisations including the Nordic, Barents and Baltic Councils, EFTA, OECD, WTO, Council of Europe and OSCE. It has acquired a solid reputation for peaceful settlement of conflict since the establishment of the Nobel Peace Prize in 1901, Fridtjof Nansen's humanitarian activities in the Society of Nations after World War I, support of UN, substantial development aid and the Oslo Middle East Peace Accords of 1994.

(Source: The European Commission External Affairs Directorate-General)

RESEARCH IN NORWAY

Norway is greeting the new millennium with research and development as a national priority. The parliamentary report entitled “Research at the beginning of a new era” forms the basis for one of the most ambitious investments in the history of Norwegian research policy.

In the years ahead, the strengthening of long-term fundamental research will be a main objective. In addition, priority will be given to research into four areas where society is facing great challenges:

- Marine research
- Information and communication technology (ICT)
- Medicine and health care
- Environmental and energy research

An Ocean of Opportunities

Marine Research. Norway is among the world's leading exporters of seafood. With its long coastline and surrounding seas and ocean, Norway has excellent conditions for exploiting renewable marine resources. Fish has been among the country's most important export products for more than a thousand years. During the last decades, Norway has put a systematic emphasis on research and development in the marine sector. This has made fishing and aquaculture a knowledge-based industry.

Recent estimates show that value creation in the Norwegian marine sector can be increased six

times from its current level by the year 2030. Increased research is a precondition for the realization of this potential. The research is directed toward the whole chain of processes, from the development of new breeding technology to the marketing of finished products.

Norway has an international responsibility for a sustainable management of marine resources. Without rational resource management, ecological diversity and the basis for the creation of value are destroyed. Consumers demand pure, high-quality products. Therefore, marine research will also focus upon such fields as ocean pollution, the development of stocks, and fish health.

The Norwegian Institute of Marine Research is a central institution in these fields, both nationally and internationally. It is one of four Norwegian institutions that have been awarded the status of “Large Scale Facility” within the EU Framework programme for Research.

-What makes a good Salmon?

During the past ten years, Norwegian researchers have developed better and more efficient vaccines to combat various types of fish disease. Early in the 1980s the use of antibiotics was widespread in the Norwegian fish farming industry. The sick fish, however, were unable to absorb the medicine through the feed. Instead, a large portion of antibiotics dispersed outside the fish farms inflicting serious damage on the marine environment.

The fish farming industry also suffered several

financial losses due to fish disease. Thanks to long term and systematic research, the use of antibiotics in the fish farming industry has been dramatically reduced, from 50 tons in 1988 to less than 600 kilos in 1999. During the same period, the production of salmon increased from 50 000 tons to 400 000 tons, while the quality of the product was considerably improved.

Technology for the Future

Information and Communication Technology. Society is increasingly influenced by the growth and expansion of Information and Communication Technology (ICT). Few other countries have a higher number of computers per capita than Norway and the ICT industry is already an important export sector. For example, Norway is a large international producer of equipment for satellite communications. The commitment to research in the field of ICT has many goals.

Research provides the foundation for the Norwegian ICT industry to develop new products and services of high quality. It is important that research environments participate actively in the development of knowledge and technology. Recruitment is to be increased partly by encouraging more women to seek education in ICT.

Information and Communication Technology should contribute to social progress by bridging distances and connecting people. Environmental health is an example of sectors in which Norway has stressed the use of solutions based on ICT.

Research will also promote knowledge about the social and cultural aspects of the use of ICT. The social sciences and humanities are crucial to this research.

Healthy Citizens

Medicine and Health. Never before have so many patients received medical care in Norway, and their treatment is mainly covered by public funding. Through knowledge, experience and new technology, medical science has revolutionized the treatment of patients. At the same time, an increased demand for health and social services has led to considerable problems of capacity in the health sector. Norway will meet these challenges with a broad commitment to research in the medical and health care fields.

Today, Norway has strong research environments capable of participating at the cutting edge of international research in fields such as brain research, molecular biology, tele-medicine, nutrition and psychological treatment. The aim is to have more Norwegian research groups participating in international collaboration.

Moreover, Norway is one of the few countries in the world with a complete, nationwide health registry. Such registries are important for research into the spread of diseases and studies of preventive medicine. An extensive public health service also makes it profitable to engage in large clinical studies in Norway.

-Health without Boundaries

Tele-medicine means that the health service makes use of tele- and data communications to treat patients, determine diagnoses, and instruct personnel in other institutions. The regional hospital in Tromsø is ranked among the world leaders in relation to tele-medical qualifications. From this hospital alone in 1997 there were 9.000 diagnoses made by means of tele-medicine. The use of picture telephones, e-mail and other services enable doctors in the districts to consult

with experts in the central hospitals. Today, Norway offers tele-medical services from all the country's central hospitals. The interpretation of x-rays, tele-surgery and assistance in the determination of diagnoses are among the services offered.

Environment and Energy

The world is facing serious environmental problems, while the need for energy continues to increase. As an energy-producing and environmentally conscious country, it is only natural that Norway is building expertise that may contribute to the solution of the global and environmental challenges we face.

Through international agreements like the Kyoto Agreement, Norway has assumed a great number of international responsibilities. One of the priorities in Norwegian research policy is research in the area of intersection between energy and the environment.

This research will contribute to the development of more effective and environmentally safe energy production, and to a reduction in environmental pollution.

In order to be effective, environmentally oriented energy research must be interdisciplinary, involving technical, scientific and sociological research. Norway already has several such research and educational programmes. The Norwegian University of Science and Technology (NTNU), as an example, offers an interdisciplinary course in both energy and environmental aspects. The Research Council of Norway has also established various research programmes combining research on environmental and energy issues.

-Nothing to Waste

Each year the population in Western Europe produces a total of 200 million tons of combustible waste. Most of this ends up as an exploited resource. The Norwegian company, ENERGOS, has introduced a new method of recovering energy from residual waste.

Using advanced technology developed at the SINTEF Foundation in Trondheim, the company's plants are able to grade and incinerate all types of industrial and household waste. Between 75 and 100% of the waste is used to produce energy, and the emissions resulting from this process are reduced to a minimum. ENERGOS has already delivered seven energy recovery plants to Germany. The technology is being further developed to exploit more of the world's potential for recovering energy from waste.

The World as an Arena for Research

In the area of research, international cooperation is fundamental. As a small nation, Norway is dependent upon research collaboration with other countries. Yet, in many areas of research, the country is competitive on an international level.

International research cooperation takes place through informal contacts between researchers and through organized programmes and networks. Traditionally, Norwegian researchers have collaborated extensively with researchers in the United States, which is still very much the case. The Nordic countries have always been natural partners for Norwegian researchers. This, especially, holds true for Norwegian industrial research.

- European Research

Since the mid-1980s, great changes have occurred in the pattern of international research collaboration. Cooperative research efforts have become more extensive and formalized. Norway is a member of several international “joint ventures” based mainly in Europe.

First and foremost, we take part in research collaboration within the European Union. In addition, we participate in research laboratories and organizations such as ESA, CERN, EMBC/EMBL, ESRF and other important European research networks such as EUREKA and COST-collaborations.

The EU Framework Programme for research is presently the largest international research programme Norway is involved in. Norway has participated in EU framework programmes since 1987. Through the EEA (European Economic Area) Agreement, Norway has participated as a full-fledged member since 1994.

The Norwegian contribution to the EU Framework Programme constitutes approximately half of our country’s total expenditures on international research collaborations. The cooperation promotes research quality, exchange of knowledge and develops networks between researchers. Norwegian researchers participate in all areas, particularly in the areas of ICT, transportation, energy and environment, marine research and socio-economic research.

- Norway as an Arena for Research

In several different areas of research, Norway offers facilities and research environments that are quite unique by international standards.

Polar research is but one example of an area where Norway has long research traditions and obvious advantages. Fridtjof Nansens “Fram”-expedition across the Arctic Ocean during 1893-1896 was more than just a test of human endurance. This was a scientific expedition that fathered the beginning of Norwegian Polar research. Today, Norwegian universities and research institutes can provide expertise in this area that is quite unique. The Norwegian island group of Svalbard offers the easiest accessible Arctic area in the world, while having a well-developed infrastructure.

- A Window to Outer Space

The international research organization, EISCAT, has positioned one of its radar installations outside Longyearbyen on Svalbard. It is among the most technologically advanced radars of its kind, representing great advances in international space research. The radar has already been used by a large number of researchers from the seven EISCAT member nations and their collaborating partners world wide.

This collaboration has already resulted in breakthroughs on sun-winds, Aurora Borealis and polar winds. These are phenomena that greatly influence the Earths atmosphere. The EISCAT organization is also engaged in an extensive exchange of information with equivalent radar installations around the world.

(Source: The Royal Norwegian Ministry of Education, Research and Church Affairs)

EMERGENCIES, ILLNESS, ETC.

In case of emergencies the following telephone numbers are used in Norway (call free of charge from all phones):

Fire department:	110
Police and Rescue:	112
Medical Emergencies:	113

We urge national organisers and participants to contact Norwegian staff or student helpers immediately in the case of illness or needed assistance. There will be people trained in first aid available at the exhibition hall.

The Bergen Municipal Medical Emergency Centre is located 500 metres from Grieghallen. Haukeland University Hospital in Bergen is one of five main hospitals in Norway and among the largest hospitals in Northern Europe. It is able

to provide most kinds of specialised health care.

We expect that all parties involved with the EU Contest have organised adequate health, accident, and travel insurance that covers them for both the travel and duration of the Contest before leaving their home country.

You might under certain terms be entitled to medical treatment covered by the National Insurance Scheme of Norway if you are a citizen of EEA countries (EU, Iceland and Liechtenstein), Canada, Chile, Croatia, Hungary, Slovenia, Switzerland, Turkey or USA.

People with tickets provided by the Norwegian Foundation for Youth and Science and its travel agent Bennett BTI Nordic might, under certain terms, be entitled to insurance coverage for the flight.

NORWAY AND THE EUROPEAN UNION

Norway's relations with the EU are mainly governed by the Agreement on the European Economic Area (EEA). The EEA Agreement is in force since 1.1.1994 and extends the Single Market legislation, with the exception of Agriculture and Fisheries Management, from the 15 EU Member States to Norway, Iceland and Liechtenstein. The EEA Agreement gives Norway full access to the Framework Programmes for Research, Technology and Development in the European Union.

Relations between Norway and the EU through EEA co-operation, as well as bilateral relations,

are close and generally smooth. Norway is also associated to the Schengen Agreement and thus a part of the European Union Area of Freedom, Security and Justice. Norway has applied for membership of the European Union three times, but the Norwegian population has, with narrow margins, rejected the membership accords in referendums in 1972 and 1994. However Norway remains one of the countries with which the EU currently maintains its closest links through the EEA and Schengen Agreements.

(Sources: The European Commission, External Affairs Directorate-General and the Royal Norwegian Ministry of Foreign Affairs)



13th European Union Contest for Young Scientists

Organised by:



EUROPEAN COMMISSION
RESEARCH DIRECTORATE-GENERAL



**Stiftelsen
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