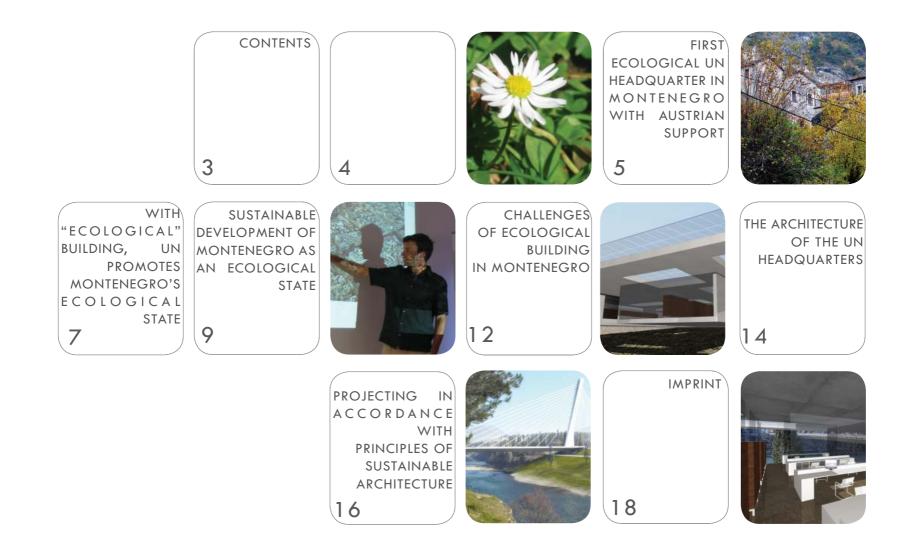


# IN MONTENEGRO



This Project was financed by

Austrian Development Cooperation

## FIRST ECOLOGICAL UN HEADQUARTER IN MONTENEGRO WITH AUSTRIAN SUPPORT

THE FIRST "ECOLOGICAL" **HEADOUARTERS** OF THE UNITED NATIONS. WHICH UN SHALL ACCOMMODATE ALL SUBSIDIARY ORGANIZATIONS ACTIVE IN MONTENEGRO, WILL BE LOCATED IN PODGORICA. NOT JUST A MODEL FOR THE region, this will also set an example within the United Nations as it WAS CONFERRED BY THE UNITED NATIONS.

#### Written by: Florian Raunig, Austrian Ambassador in Montenegro

The project to build the first "ecological" headquarters of the United Nations in Montenegro as a lower energy building is one of the numerous actions and projects in the area of renewable and alternative energy conducted by the Republic of Austria, within the scope of development cooperation with partner countries and other donors worldwide in particular South Eastern Europe and Montenegro.

#### **Design by Austrian Architect**

The building, whose conceptual design and latest technology is based on low, external energy supply, was designed by Daniel Fügenschuh, an Austrian architect from Innsbruck, who was selected by a competition. Heat and electricity are generated by solar energy, while the cooling system is fed from the nearby Moraca River.

The project is an example of cooperation between bi- and multilateral actors. While the architectural draft, the artistic direction as well as the required special equipment was financed by the Austrian Development Agency, the Ministry of Foreign Affairs in Montenegro is paying for the building costs and the United Nations Development Programme for the building design and supervision. The building ground was courtesy of the city of Podgorica. Project execution organization was undertaken by the successful organisation World University Service Graz, which has a long-standing presence in South Eastern Europe.

#### Sustainability through University Course

Additional sustainability was bestowed on the project through the appointment of a course on environmentally friendly and energy saving building at the newly founded faculty of architecture at the University of Montenegro. The building itself as well as the building phase, which will be observed by the course participants, affords the participants a concrete learning example. The project offers to facilitate further, sustainable, and environmentally conscious development in Montenegro, a considerable impetus, and holds the opportunity for further innovative and forward-looking programmes, projects and arrangements in a region that is earmarked for uninterrupted growth of energy requirements.

Special acknowledgement therefore goes to the above mentioned institutions that succeeded in setting exceptional project standards for the future.



## WITH "ECOLOGICAL" BUILDING, UN PROMOTES MONTENEGRO'S ECOLOGICAL STATE

Five years of multilateral efforts lead to the realization of the following project: the first eco-friendly UN building ever, to be completed by the end of 2008.

#### Written by: UNDP Office Podgorica

In 2002, following its own environmental commitments globally for decades, the UN System in Montenegro decided to convert its respect for Montenegro's Ecological State into concrete action by promoting an innovative way of running a self-sufficient, environmentally-friendly UN House.

Thanks to the personal and professional engagement and dedication of H.E. Florian Rauning, Austrian Ambassador in Montenegro and Austrian Development Agency, H.E. Milan Rocen, Montenegrin Minister of Foreign Affairs, H.E. Miomir Mugosa, Mayor of the Capital City-Podgorica and H.E. Garret Tankosic Kelly, UNDP Resident Representative and UN system inter-agency focal point for Montenegro, this project has been fully supported, both politically and financially.

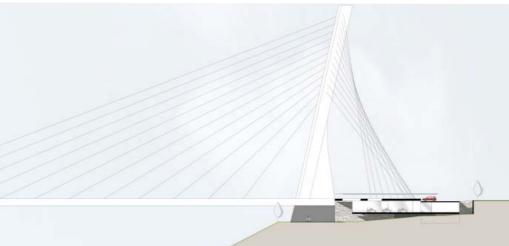
This initiative also had an important impetus on UN policies, as Secretary General H.E. Ban Ki-moon pointed out, when addressing the public on World Environmental Day in 2007. His Excellency announced that there will be a selected number of UN Houses as candidates for Green Building and Green Office certification, and that this idea has been inspired by the first eco-friendly UN House which will be built in Montenegro. In addition they will work with UN colleagues to ensure that there will be many more green UN Houses in the near future.



#### United Nations: Delivering as One

Montenegro is one of the first ten countries in the world that is piloting the UN 'Delivering as One' reform, where one of the 4 pillars is the provision of joint UN premises.

The building, which will assist UN agencies in Montenegro (UNDP, WHO, UNICEF, UNHCR, and IOM) in implementing the One UN reform and in operating jointly under a single roof, will be built in the capital Podgorica, according to the draft design by Daniel Fügenschuh, an up-coming Austrian architect. For this purpose, the Municipality of Podgorica has donated a very attractive site. The equipment for the ecological technology and architectural services are being financed by the Austrian Development Agency



and implemented by World University Service Austria. The building itself is being financed by the Montenegrin government.

In addition to the office space, the building will also have a library, a cafeteria, large conference facilities, parking spaces for 15 vehicles and a bicycle park under the photovoltaic roof. Total cost of the project should be approximately 5 million Euros. The project has so far (September 2007) developed to the phase of construction and engineering design. Construction is expected to begin in early 2008 and be finished in the course of one year.

#### Architectural Design – A Symbol of Equality

The draft design, which won the architectural competition held in 2005, intends the building to open itself up

to the river-bank promenade. It is embedded within the landscape and presents itself as the horizontal counterpart to the adjoining Millennium Bridge, the new landmark of the city.

The UN house is designed to be a horizontal-ground level structure. As its architect said: "It is also a symbolic gesture: the horizontal structure represents equality of all UN agencies and their staff [...] so everyone will share the space at the same level". Although Montenegro defines itself as an ecological state due to its untouched natural beauty, there is an enormous need for environment protection. This project is recognised as a welcome chance to put important environmental standards into practice in the field of architecture and construction. This building should serve as a prime example of ecological construction in Montenegro.

The new UN building will become part of the Capital city's new landscape, a symbolic hope for the young Republic.

http://www.un-ecobuilding.info http://www2.undp.org.yu/montenegro/ home/unb.html

THE MONTENEGRIN UN HOUSE HAS

ALSO EMANATED POSITIVE IMPULS-

ES SUCH AS: (1) THE PROMOTION

OF SUSTAINABLE BUILDING PRINCI-

PLES BY THE NGO EXPEDITIO AND

(2) FINANCIAL AND ACADEMIC SUP-

PORT OF THE FACULTY OF ARCHI-

TECTURE IN PODGORICA FROM THE

AUSTRIAN DEVELOPMENT AGENCY

FOR THE FOUNDING OF A COURSE

ECOLOGICAL CONSTRUCTION.

0N

## SUSTAINABLE DEVELOPMENT OF MONTENEGRO AS AN ECOLOGICAL STATE

SINCE WE ARE DEEPLY AWARE OF THE FACT THAT NATURE IS THE SOURCE AND PRECONDITION OF LIFE, MONTENEGRO IS ESTABLISHED BY ITS CONSTITUTION AS AN ECOLOGICAL STATE. EVEN IN THE PERIOD OF GREAT CHALLENGES AND ECONOMIC RECESSION, WHEN PURE SURVIVAL WAS THE MOST IMPORTANT ISSUE,

THIS DETERMINATION STILL PREVAILED.

Written by: Jelena Knezevic, Ministry of Tourism and Environmental Protection

Special ties between man and nature have characterized Montenegro for centuries, bringing about the most diverse forms of cultural and historical values that represent unique natural and cultural heritage today. Inseparability of man and environment is integrated through the connection of man, nature and tradition in relation to the environment.

In the world raising awareness about the significance of environmental protection started as early as the 1950s. Over the next decades, environmental protection took a more specific form, and was fully recognised during the 1970s and 1980s. In the second half of the 20th century, there was an intensive development of international diplomacy in the environmental field, as a constituent part of environmental policy, formally established at the UN Conference on the Human Environment, held in Stockholm in June 1972. Today, as before, international environmental policy sets ground and establishes directions for effective national actions.

The significance and uniqueness of certain natural and cultural heritage sites in Montenegro were also recognised by the international organisations dealing with preservation of natural and cultural heritage. The river Tara basin (Man and Biosphere Programme-MAB-since 1977), the Bay of Kotor and Risan and Durmitor national park (World Natural and Cultural Heritage Programme since 1979, e.i. 1980), are UNESCO heritage sites. Since 1995, the lake of Skadar has been listed as an internationally important wetland site and water birds habitat, in accordance with the Ramsar Convention.



#### Strategy for Sustainable Development

The adoption of the National Strategy for Sustainable Development of Montenegro (NSSD MN) in 2007, represents continuation and finalisation of strategic decisions made in the previous period:

• "Ecological state of Montenegro" was proclaimed in 1991;

The Government of Montenegro confirmed its commitment to the concept of sustainable development by adopting «Development of Montenegro as an ecological state» document in 2001
After the World Sustainable Development Summit in Johannesburg in 2002, the Government of Montenegro adopted the decision on intensifying activities related to the implementation of sustainable development of Montenegro as an ecological state

• the Council for Sustainable Development of Montenegro was established in September 2002, with the aim to provide support to the Government in developing legislation, policies, measures and indicators of sustainable development, and in 2006, the Council was reorganised into the National Council for the



Sustainable Development and the Office for Sustainable Development was also established, in order to ensure efficient operation of the National Council and coordination of implementation of the NSSD MN • By adopting the Constitution in 2007, the Montenegro confirmed its commitment to be an ecological state, as an internationally recognised and independent state.

#### The Vision

With the National Strategy for Sustainable Development, in Montenegro, as an ecological state, we committed ourselves to the sustainability concept as one of the major principles of economic thought, governance and implementation of policies at the global, EU and regional level. Our commitment focuses on the achievement of national sustainable development that

will bring most benefit to the society as a whole, taking into account the future generations as well. The NSSD MN as a strategic document, sets out vision and guidelines, defines general objectives, priority tasks and measures for the sustainability path in dealing with major challenges that Montenegrin society is facing: European integrations, globalisation and regional cooperation, implementation and advancement of economic reforms, ensuring balanced economic development, improving the standard of living and poverty reduction, integration of sustainability principles into development policies, changes in governing system: improving cooperation and coordination between different sectors.

#### The Challenges

Growing economic development brings about a number of challenges to the Montenegrin society. Sustainable spatial planning, preservation of old urban settlements, natural beauty and landscapes, which constitute the heritage of Montenegro and its unique feature as an ecological state and tourist destination, preservation of coastal and marine ecosystems, increase in the number of protected areas and improvement in protected areas management. These represent some of the priorities within the process of integration of Montenegro into the EU and implementation of the NSSD MN.

Coordinated and cooperative action of all relevant actors at all levels is a precondition for achieving results that will improve quality of life in Montenegro. The objective being to make Montenegro an attractive destination not only for tourists from all over the world, but also to create a conducive environment for future generations by investing their knowledge and energy into development of their country,

which will be open to all well-intentioned people and progressive ideas.

#### Connecting local and global developments

Implementation of the NSSD MN by sustainable creation and implementation of policies, strategies and plans, drafting and implementation of functional regulations also requires an effective implementation of the international environmental policy principles, taking into consideration specific national needs. Environmental policy guidelines in Montenegro are created according to the fact that environment is a linking element in strengthening understanding and cooperation between countries, regions and continents. Neither environment, nor problems caused by disturbing natural balances, recognise the national borders and accept isolated action. Coordinated action is necessary not only in dealing with global threats and challenges, but also in the regional and cross-border context.



On the path to sustainability, economic and social development, through the implementation of the EU integration process, environmental protection and sustainable use of natural resources, represent political obligation and priority of the Government and all relevant actors in Montenegro. In these processes, cooperation with the international community, EU institutions, developed countries and countries in the region represents a constituent part and precondition for overall integrations at both the national and international level.

## CHALLENGES OF ECOLOGICAL BUILDING IN MONTENEGRO

Considering that building is responsible for 40-50% of the world's consumption of energy and the same percentage of pollution, it is increasingly important that ecological building becomes a dominant model of construction to be applied in Montenegro and elsewhere.

#### Written by: EXPEDITIO



The 21st century leaves us with no choice – the only possible form of social and economic development is the one compatible with the environment. Aware of the devastating influence that the last century and its industrial revolution have had on the environment, great responsibility rests with designers, architects, planners, etc.

So far, several important documents have been adopted or are being prepared in Montenegro that treat the topic of sustainable building, either the concept of sustainable development or in terms of increasing energy efficiency. The first one was a Decoration of the Ecological State of Montenegro (1991) that expressed the commitment of our state to sustainable development. The Poverty Reduction Strategy Paper (PRSP) lists the increase of energy efficiency as one of the necessary actions. The topic of energy conservation in the building sector has been treated more extensively in the recently adopted Strategy of Energy Efficiency of the Republic of Montenegro and, currently, a more comprehensive National Energy Strategy is being drawn up.

#### Montenegro Must Save Energy

In addition, Montenegro has to improve its energy efficiency which is one of the obligations to be fulfilled in order to become a member of the European Union.

It can be concluded that advances in the field of sustainable building in Montenegro, which will be reflected most in energy saving, are just beginning. In Montenegro, energy consump-

tion per domestic product unit is 3.3 times higher than that of the EU. Furthermore, current trends suggest an increase in energy consumption in the residential sector of Montenegro (especially in electricity for heating, which is quite irrational). All this points to the need of energy-use rationalization. This topic is becoming more and more urgent in Montenegro and so is the interest in the principles of ecological building. Several realized projects in the north of Montenegro give evidence of this, as well as the project of the first UN building that will be built in accordance to ecological construction principles.

#### **Creating Conditions for Energy Efficiency**

Our primary task is to create a legal framework for the reconstruction of existing buildings and the construction of new ones according to the principles of energy efficiency, as well as introduce incentive measures. Raising the level of education on the principles of energy efficiency in construction and furnishing of buildings and encouraging practical application of these principles are some of the most important challenges that Montenegro faces today. At the same time, it is necessary to work on raising public awareness of the necessity and possibilities of saving energy, i.e.: to provide constant education on this topic. Furthermore, one of the important steps towards ecological building is to create a network of individual-experts, non-governmental organizations and institutions, as well as business and banking sectors that will be able to respond to the various needs of citizens and the society as a whole, in order to create conditions that increase energy efficiency in the near future. Moreover, establishing connections and cooperation with the countries in the region and the EU is of great importance.

EXPEDITIO Centar za odrzivi prostorni razvoj-Center for sustainable spatial development

Post. fah. 85/85330 Kotor, Crna Gora t + 382 (0)82 302520/f + 382 (0)82 302521/www.expeditio.org



## THE ARCHITECTURE OF THE UN HEADQUARTERS

THE THREE DEFINING ELEMENTS OF THE UN SHARED ECO-PREMISES ARE THE DIFFERENT UN-AGENCIES, THE COMMONLY SHARED FACILITIES AND THE SEMI-PUBLIC AREAS ALL OF WHICH ARE SITUATED ON ONE SINGLE LEVEL.

#### Written by: Daniel Fügenschuh



In December 2005, büro fügenschuh received an invitation to take part in an architect's competition entitled: UN shared eco-premises in the Republic of Montenegro.

The very first contact came through a polite voice on the telephone asking if we were interested in taking part. With the fact in mind how rarely a competition project proceeds from the competition stage to actually being built in the end nobody thought that this would really happen. The site being in the Balkans, at the time a troubled region, further fuelled this expectation. The competition had been designed by the Austrian Development Agency in cooperation with the Architects' chamber in Innsbruck (Kammer der Architekten und Ingenieurkonsulenten) and was meant to become a showcase project for eco-friendly buildings in the region as well as within the UN. The UN is promoting the idea of sustainability as well as the Montenegrin state that added an eco-amendment to its constitution some ten years ago calling itself the Eco-State. The project turned out to be a real chance

for both partners to clearly state where they were coming from and what they wanted.

#### **Urban Context**

The site is situated adjacent to the river Moraca with its picturesque and park like river landscape. To the north it is neighbouring the new millennium bridge, a landmark suspension bridge with a span of 140 metres and a 57 metre-high pylon. Our proposal for the new UN-headquarters in Montenegro is to lower the landscape to the level of a proposed promenade walkway for pedestrians and cyclists connecting the city centre with its surrounding hinterland along the river. The new building is set into the landscape to further extend its west facing riverbank to profit from both the river climate and the spectacular view of the

new landmark bridge. The negative impact of a major traffic route in and out of the city can hereby be reduced. When crossing the river the building is perceived as a horizontal pendant to the vertical pylon and the bridge's suspension cables.

#### Spatial Concept

The three defining elements of the UN Shared Eco-Premises are the different UNagencies, the commonly shared facilities and the semi-public areas all of which are situated on one single level. The six offices are expressed as differently shaped volumes and are unified by one shared roof slab that is perforated with large openings for natural ventilation and lighting.

A screen of photovoltaic cells floating above the roof slab works as a shading device and is supposed to provide sufficient energy for the building's entire demand of electricity.

#### **Passive Conditioning**

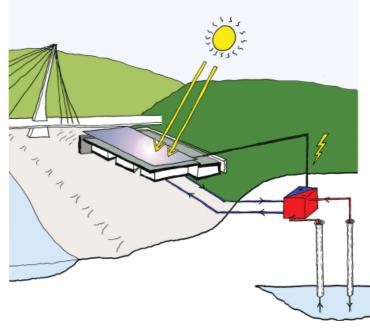
The building is designed to respond to the climate with a similar approach as is found in vernacular architecture in Mediterranean and Adriatic regions. The building is heavily shaded against the heat of the summer with a high degree of exposed thermal mass to regulate the temperature inside. The ventilation system works on the displacement principal, using the heat generated in the office spaces to drive the air movement and allowing natural ventilation to work effectively for much of the year.

#### Heating & Cooling

The river flowing by the site provides a great source of environmental energy. In the summer the river is cooler than the air and can be used to cool the building. In the winter the flowing water is slower to chill down and can be used to heat the building using a heat pump. The energy that runs the heat pump is derived from solar electricity, generated by the photovoltaic roof. The energy generated from the photovoltaic system is greatest in the summer when cooling down is needed the most.

#### Solar Energy

The photovoltaic roof with an area of up to 1400 square metres is to be large enough to meet the entire annual energy demand of the building. It is envisaged to only use electric energy from the regional energy supplier when the solar energy supply is not sufficient to cover the building's demand. Thus it will feed energy back into the local grid when there is more solar power available than needed. In this way the new UN headquarters building will become self-sufficient in energy terms over time and not impose a burden on the regional energy economy, allowing



THE RIVER FLOWING BY THE SITE PROVIDES A GREAT SOURCE OF ENVIRONMENTAL ENERGY. IN THE SUMMER THE RIVER IS COOLER THAN THE AIR AND CAN BE USED TO COOL THE BUILDING. IN THE WINTER THE FLOWING WATER IS SLOWER TO CHILL DOWN AND CAN BE USED TO HEAT THE BUILDING USING A HEAT PUMP.

## PROJECTING IN ACCORDANCE WITH PRINCIPLES OF SUSTAINABLE ARCHITECTURE

"THE EXPERIENCES I MADE DURING MY STAY IN AUSTRIA SHOWED ME THAT THIS COUNTRY IS VERY AWARE OF BOTH PERSONAL AND GENERAL RESPONSIBILITY FOR FUTURE GENERATIONS, WHOSE RIGHT TO ENJOY LIVING ON EARTH AND HAVING THEIR NEEDS TAKEN CARE OF SHOULD NOT BE JEOPARDISED BY OUR CURRENT LEVEL OF CONSUMPTION."

Written by: Nebojsa Adzic, Faculty of Architecture, University of Montenegro



With the support of WUS Austria/ Austrian Development Cooperation a new course on sustainable architecture was introduced at the recently founded Faculty of Architecture in Montenegro.

The Faculty of Architecture at the University of Montenegro was just founded six years ago. However, in such a short period, it has managed to become a well-known and respected part of the University. From the very beginning the Faculty of Architecture has respected the Bologna Declaration on the one hand, and Montenegro's decision to be an ecological state, focused on using and preserving its national resources, on the other hand.

#### **Global Trends Applied Locally**

In accordance with these decisions, as well as with global trends concerning architectural design, the idea of a new course emerged, which would enable students to gain extensive insight into the concept of sustainable architecture, develop a positive attitude towards their surroundings and qualify and empower them to promote an ecological way of thinking in all architectural fields.

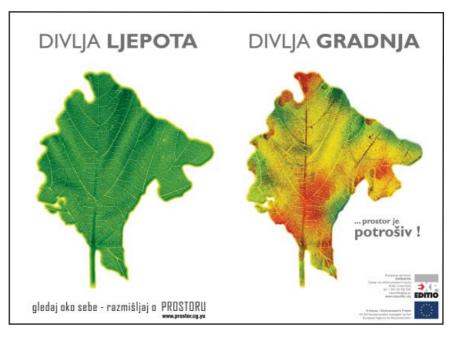
Thanks to cooperation of the University of Montenegro with World University Service (WUS) Austria within the project Eco Building which was financed by the Austrian Development Cooperation, a new course – "Projecting in Accordance with the Principles of Sustainable Architecture" - was founded at the Faculty of Architecture at the University of Montenegro.

The course focuses on studying projecting and building objects in a way which is adapted to the local climate, studying principles of rational energy-usage in architecture, and using renewable energy sources with a focus on passive solar systems and environmental protection in general.

The target group of the course are students in their 8th semester, who have already gained knowledge about architectural construction, architectural physics, projecting of family and multi-family houses, and thus have already obtained knowledge that is a precondition for introducing them to projecting in accordance with the principles of sustainable architecture.

#### Knowledge Transfer Austria-Montenegro

Due to cooperation with WUS Austria and the project CDP+, a study visit to Austria was also organised which enabled me, as the representative of the Faculty of Architecture from Podgorica, to spend ten days in Graz and Vienna and to participate in a number of very useful but also very friendly meetings with different institutions and companies and to discuss the topics energy efficiency in architecture and affirmation of the idea of sustainability.



The province of Styria, as well as the whole of Austria, dedicates special attention to overcoming the problems caused by the energy crisis and global warming. These efforts are not only connected with huge financial investments made by Austria, but also with the efforts put in by a large number of people – those working for state institutions, at faculties and institutes, but also by private companies and private households.

Cooperation continued at the Faculty of Architecture in Podgorica which, within the project, invited four renown Austrian architects to hold respective lectures based on their experience and to hold workshops with students. The knowledge transfer enabled Montenegrin students to gain new experiences, respectively, the lectures received excellent feedback.

"THANKS TO THE SUPPORT AND EFFORTS OF ADC AND WUS AUS-TRIA, A NEW LEAF WAS TURNED AT THE FACULTY OF ARCHITECTURE IN PODGORICA. THE PROJECT CON-TRIBUTED TO PROVIDING CON-DITIONS TO EDUCATE YOUNG MONTENEGRIN ARCHITECTS IN AC-CORDANCE WITH WELL-PROMOTED PRINCIPLES OF SUSTAINABILITY TO PROTECT AND PRESERVE OUR PLANET EARTH AS THE ONE AND ONLY HUMAN HOME."

### **IMPRESUM:**

PUBLISHED BY: WUS AUSTRIA

PUBLICATION WAS FINANCED BY AUSTRIAN DEVELOPMENT COOPERATION

EDITOR: NINA TASO, WUS AUSTRIA

LAYOUT: EDIN PRNJAVORAC, WUS AUSTRIA

PHOTOS: ALL PHOTOS, ARCHIVE PHOTOS BY EXPEDITIO EXCEPT PHOTO ON THE PAGE 11 (STEVAN KORDIC),

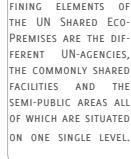
ANIMATION AND DRAWINGS: BÜRO FÜGENSCHUH

Print: Druckerei Khil Neutorgasse 26 A-8010 , Graz Graz, September 2007

"...THE FIRST "ECO-LOGICAL" HEADQUARTERS OF THE UN...NOT JUST A MODEL FOR THE REGION, THIS WILL ALSO SET AN EXAMPLE WITHIN THE UNITED NATIONS AS IT WAS CONFERRED BY THE UNITED NATIONS...." Florian Raunig, Austrian Ambassador in Montenegro



DIVLJA LJEPOTA



THE THREE DE-

#### Daniel Fügenschuh



## ECO BUILDING IN MONTENEGRO



CONSIDERING THAT BUILDING IS RESPON-SIBLE FOR 40-50% OF THE WORLD'S CONSUMP-TION OF ENERGY AND THE SAME PERCENTAGE OF POLLUTION, IT IS INCREASINGLY IMPOR-TANT THAT ECOLOGICAL BUILDING BECOMES A DOMINANT MODEL OF CONSTRUCTION TO BE APPLIED IN MONTENE-GRO AND ELSEWHERE. EXPEDITIO



FIVE YEARS OF MUL-TILATERAL EFFORTS LEAD TO THE REALIZATION OF THE FOLLOWING PROJECT: THE FIRST ECO-FRIENDLY UN BUILDING EVER, TO BE COMPLETED BY THE END OF 2008. UNDP

Office Podgorica



"THANKS TO THE SUPPORT AND EFFORTS OF ADC AND WUS AUS TRIA, A NEW LEAF WAS TURNED AT THE FACULTY OF ARCHITECTURE IN PODGORICA. ..."

Nebojsa Adzic Univ.of Montenegro



THE PROJECT CONTRIB-UTED то PROVIDING CONDITIONS TO EDUCATE YOUNG Montenegrin ARCHITECTS IN ACCORD ANCE WITH WELL-PRO-MOTED PRINCIPLES OF SUSTAINABILITY TO PRO-TECT AND PRESERVE OUR PLANET EARTH AS THE ONE AND ONLY HUMAN номе." Nebojsa Adzic Univ.of Montenegro



"....SINCE WE ARE DEEPLY AWARE OF THE FACT THAT NATURE IS THE SOURCE AND PRECONDI TION OF LIFE, MONTENE GRO IS ESTABLISHED BY ITS CONSTITUTION AS AN ECOLOGICAL STATE."

Jelena Knezevic, Ministry of Tourism and Environmental Protection



Implemented by



This Project was financed by

Austrian Development Cooperation