



**ACHEIVING THE HIGHEST SAFETY AND
TECHNICAL QUALITY OF CONSTRUCTION
CONSTRUCTION FAIR, BUDVA
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Tariq Nawaz, Resident Twinning Adviser



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Background to project

- No desire to see repetition of 1979 earthquake
- Candidate country status in 2010, negotiations 2012
- Obligation to adopt European legislation *acquis communautaire* in all areas (35 chapters)
- For Single/Internal Market meet obligations for:
 - Free movement of services
 - Free movement of goods without customs and tariffs
- Technical legislation underpinned by European standards
- Opportunity to update to Eurocodes



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Project Partners

- **EU Funded under Instrument for Pre-Accession (IPA)**
- **Delivery**
 - Austrian Standards Institute, ASI (Lead Partner)
 - Association Française de Normalisation, AFNOR (Junior Partner)
- **Beneficiary**
 - Ministry of Sustainable Development and Tourism



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Key Players

- Ministry of Sustainable Development and Tourism
- ISME
- Chamber of Engineers
- Civil Engineering Faculty, Montenegro University
- Chamber of Economy/Commerce
- Seismological Observatory
- Hydrometeorological Institute
- Geological Institute
- Zigma Laboratory



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Other Players

- Public procurers
 - Public Procurement Administration, Ministry of Finance
 - Public works for buildings
 - Traffic for roads
 - Railways
- Construction products/materials producers
- Ministry of Education for accreditation of courses
- High school for vocational studies



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Component 1

1. Timeline for priority structures
2. Safety Factors: Nationally Determined Parameters
3. Define IT equipment for elaboration of NDPs
4. Establish regional network for translation
5. Establish regional network for climatic data
6. Adaptation of legislation to permit Eurocodes usage
7. Procurement of equipment identified in 3 above



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Component 2

1. Define training material for continuing professional development
2. Define university teaching notes
3. Training of trainers
4. Elaboration of plan for intensive training



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Component 3

1. Determination of NDPS for Eurocode 8
2. Incorporation of seismic data from NATO project
3. Translation of national annex into Montenegrin



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Establishing priorities: understanding Montenegro

- A country with a population of 650 000
- 560 civil engineers in the Chamber of Engineers
- ISME established Technical Committee for Eurocodes 7/2011
- Human resources finite
- Professionals perform multi-functions



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Act 1.1 Establishing standardisation priorities

- Eurocodes cover buildings and civil engineering works
- Identifying most widespread structures
 - Concrete buildings identified as first priority
 - Masonry buildings identified as next priority
- All will require seismic resistance
- Eurocodes package 2/1 (concrete buildings) has 15 parts – prioritising within this set



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Act 1.2 Nationally Determined Parameters 1/2

- Safety factors to be set by NSBs in consultation with their governments
- Guidance Paper L recognises this right of Member States
- EC Recommendation encourages recommended values
- In alternative methods, choose recommended method
- Ensure consistency across all Eurocode parts



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Nationally Determined Parameters 2/2

- Should reflect climatic, geographical or geological differences
- Reflect design cultures or structural analyses
- Reflect experiences of materials and building practices
- Implications from risk of failure
- Progress made contact with :
 - EC to access database of NDPs from EU states
 - As well as some regional countries



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IT Equipment: for NDP

- No specific equipment identified
- Funds to purchase specialist equipment for data gathering and processing recommended
- Improve quality of information in standards and also for designers and construction industry



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Translation

- CEN languages: English French and German
- Some EU countries have adopted English version
- Need text in Montenegrin, or near working language
- 58 Eurocodes parts are expensive to translate single-handedly
- Few standards have been translated by Serbia
- MOU being established with FYR to share translation costs
- For concrete buildings, package 2/1, needs 15 standards



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Technical Data

- FYR Macedoni and Albania approached to share climatic, geological and seismic data
- Preparing national data including seismic data from NATO Science for Peace project
- MOU for regional network being prepared for sharing snow, wind and thermal data
- Work in progress



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Legal Adaptation

- Laws on Spatial Development and Construction Products being examined
- Meetings being held with legal experts to check if Eurocodes can be used
- Meeting Public Procurement Administration and clients: Traffic, Railways and Buildings
- Checking if designs acceptable based on Eurocodes
- Output: Produce roadmap for implementation of EU construction legislation into Montenegro



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Define professional engineering needs

Assess needs of practising engineers (CPD):

- Implementation of Eurocodes
- Worked examples of common structures
- Design manuals and handbooks
- Availability of design software
- Materials sector guides
- Training
- Establish national helpdesk
- Work in Progress



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Define university teaching needs

- Updating teaching notes for students
- Textbooks
- Training software
- Guidelines
- Worked examples
- Information leaflets



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Training

- Define training material
- Training of trainers across all the Eurocodes to provide sustainability
- Training for professional engineers



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Outputs

- Action plan for adoption of Eurocodes
- Action plan for implementation of Eurocodes
- National Annex for Eurocode EN 1998-1 in Montenegrin



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Thank you for your attention

Tariq Nawaz

RTA

tariq.nawaz@mrt.gov.uk



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