



Podnebne spremembe:
priložnost za trajnostno rast
Climate Change:
An Opportunity for Sustainable Growth



Integrated CDM best practice example(s)
from Macedonia

Ana Lazarevska
University of Sv. Kiril i Metodij, Macedonia



Climate Change: An Opportunity for Growth

Brdo Conference Centre 16 Nov, 2007

CDM best practice example(s) from Macedonia

Ana LAZAREVSKA



Univ. "Sv. Kiril i Metodij", Skopje, R. Macedonia
Faculty of Mechanical Engineering
e-mail: ana.lazarevska@gmail.com

Outline

- Macedonia: General information
- Milestones of the Kyoto Protocol (KP) ratification and implementation
- Stakeholders and Main Activities related to KP Implementation in Macedonia
- Carbon (most) intensive sectors in Macedonia and the CO₂ emission reductions (ERs) potential
- Short review of identified CDM PA in Macedonia
- Conclusions and Future Activities

Macedonia: General Information

- Geographic Data
- Demographic Data
- Economic Data



Photo: N. Stavreski



Photo: N. Stavreski



INFORMATOR
www.informator.com.au

Photo: N. Stavreski

INFORMATOR
www.informator.com.au

Geographic Data (1/2)

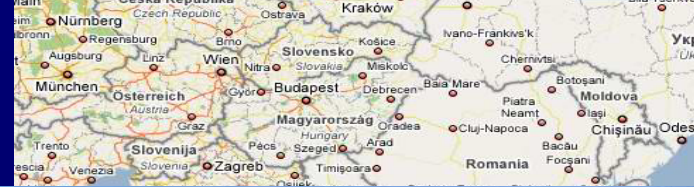


Photo: N. Stavreski



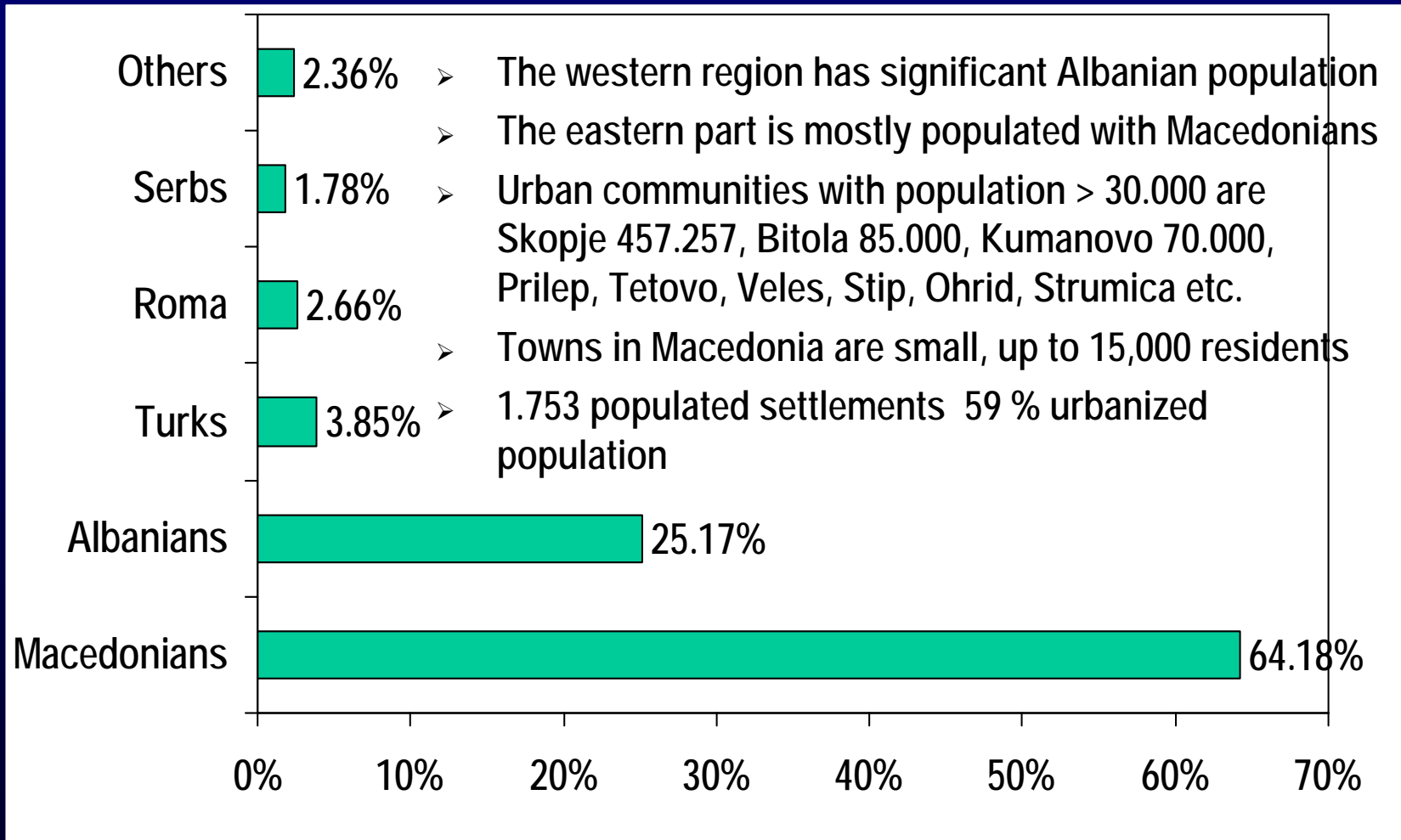
A., FME UKIM, Skopje



Geographic Data (2/2)

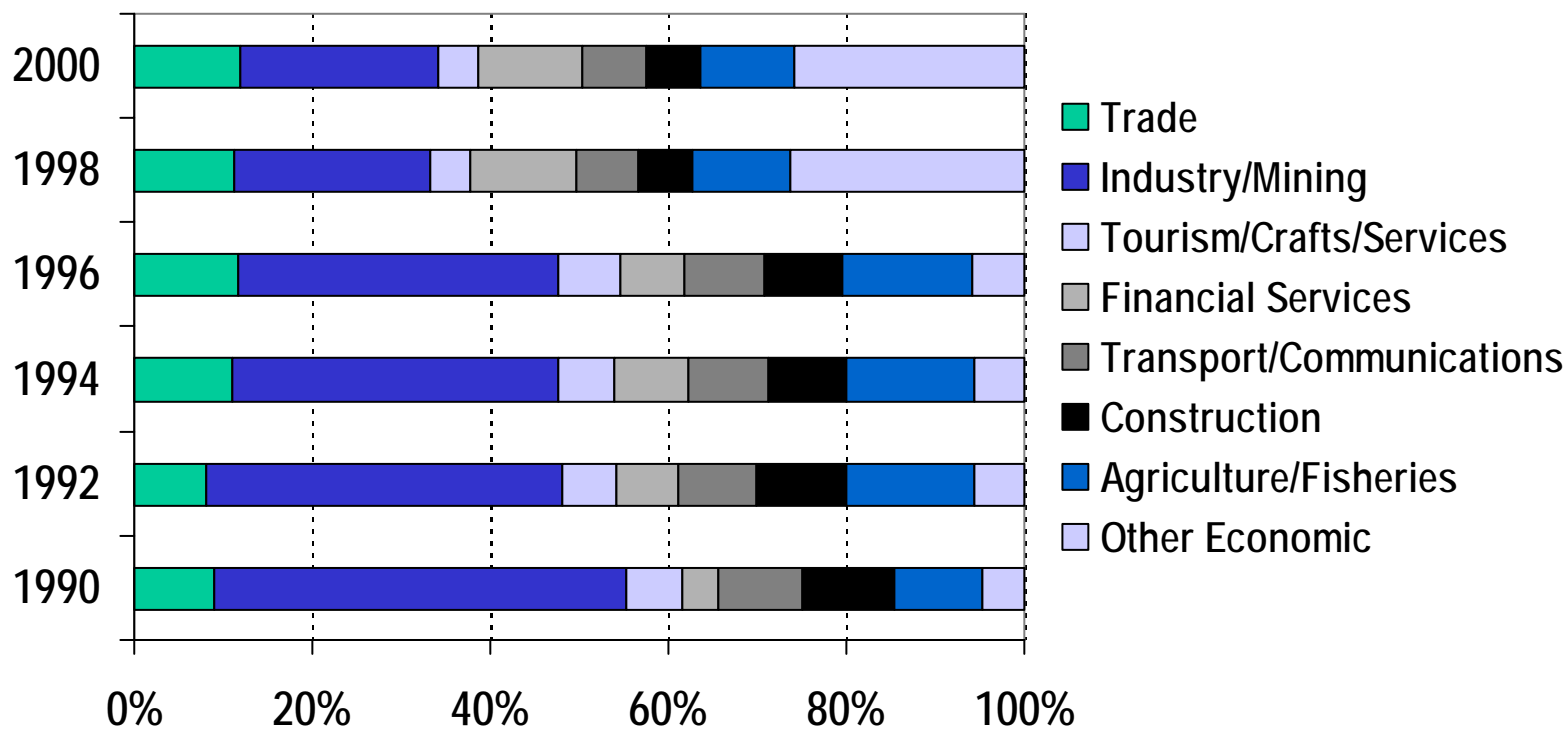


Demographic Structure (Census 2002)



Economic Data

Economic structure by sectors – Shares of GDP in %



Milestones: UNFCCC & KP in Macedonia (1/3)

1997 1998	Dec 4: R. Macedonia adopted the UNFCCC ratified Jan 28, 1998, entry into force as of Apr 28, 1998
2000 Jan	1. a Climate Change Project Unit is established (MOEPP&UNDP LO) 2. The RM Gov appointed the National Committee for Climate Change (NCCC) entitled to supervise and co-ordinate the implementation of the projects and climate change related issues
2003 Mar	Adopted the 1st National Communication to the UNFCCC supported by GEF, UNDP, presented at CoP9 http://unfccc.int/resource/docs/natc/macnc1.pdf http://www.unfccc.org.mk/resource/country/proj01.html .
2003	Capacity self-Assessment on Climate Change Report estimation of existing national capacity for UNFCCC implementation (REC)

Milestones: UNFCCC & KP in Macedonia (2/3)

2004	Jul 14: Ratification of KP adopted at Parliament Session (Gazette Off. No. 49/2004) effective as of Nov 18, 2004, entry into force Feb 16, 2005
2005	Mar: Enabling Activities for the Preparation of Macedonia's 2nd National Communication to the UNFCCC, (ongoing)
2006	Feb: National Strategy for Sustainable Development (NSSD) (financed by SIDA). (ongoing)
2006	International experience on KP implementation (MOEPP, UNDP, REC) Feb: 1st Workshop & Mar: 2nd Workshop on CDM capacity building
2006	In acc. with the Gov'l decision from Jun 1: Macedonian Designated National Authority (DNA) appointed & located in MoEPP authorized to issue Letter of Approvals (LoA)

Milestones: UNFCCC & KP in Macedonia (3/3)

2007	Feb: the National Strategy for Implementation of the Kyoto Protocol in Macedonia finalized, adopted by the Gov and presented to the public.
2007	Mar: Law on Environment amended with 3 new climate change and 1 CDM related articles, respectively
2007	Mar&Jun: World Bank: Carbon Finance Workshop Jul: Italian Gov: Survey on CDM Potential
2007 Oct:	Macedonian (DNA) made operational First LoA issued by the Macedonian DNA 3 additional PINs reviewed
2007	Energy Agency (MoE) established

CDM (related) Stakeholders & Main Activities (1/4)

Levels of Activities:

- Institutional
- Strategic
NEAP I&II, Strategies on CDM, SD (ongoing), Forestry,
Environmental investments (ongoing)
- Legislative
- Bilateral (MoU: Italy (2005), Slovenia (2006))
- Technical

CDM (related) Stakeholders & Main Activities (1/4)

Institutional (Gov'l):

- **MoEPP**: <http://www.moepp.gov.mk/default-en.asp>
& <http://www.moepp.gov.mk/default-MK.asp?ItemID=59253611461DAD46B020119AD986973F>
- **DNA (MoEPP)**: <http://www.moepp.gov.mk/default-mk.asp?ItemID=E1AE5D5AF284C9498FE91446F63D1F25>
- **NCCC**: <http://www.unfccc.org.mk/nccc.htm>
- **MoEPP SD**: <http://www.moe.gov.mk/sustainable> &
<http://www.moepp.gov.mk/default-MK.asp?ItemID=D7C2077437C5E24CAD84392CCCC2E883>

CDM (related) Stakeholders & Main Activities (2/4)

Other Stakeholders:

- **UNDP, Local Office:** <http://www.unfccc.org.mk/>
- **Macedonian Academy of Sciences & Arts**
- **Secretariat of Legislation**
- **CIRKO Climate Change & Energy Technologies**
<http://www.mf.ukim.edu.mk/default1.php?idJazik=2>
- **REC** <http://www.rec.org/>
- **MACEF** <http://www.mf.ukim.edu.mk/default1.php?idJazik=2>
- **other NGOs**

CDM (related) Stakeholders & Main Activities (3/4)

Legislative (further information with MoEPP)

- Constitution of Macedonia: Ch. 8, 43, 55 & 56
- Ratification of Kyoto Protocol (Gazette Off. No. 49/2004)
- Law on Air Quality
- Law on Energy
- Law on SWM
- Law on Water and Water Protection
- Law on Environment (Gazette Off. No. 24/2007: esp. Art.190a)

CDM (related) Stakeholders & Main Activities (4/4)

Technical Support:

- **Climate Change Mitigation and CDM related Capacity Building**
 - MoEPP, MoE, MoAFWE, GEF, UNDP, REC, Slovenian Gov, Italian Gov, JICA, Austrian Development Agency (ADA), WB, EBRD (TAM BAS), Academia, NGOs
- **SD related Capacity Building**
 - MoEPP, SIDA, UNDP, REC, Italian Gov, WB, ADA, Academia, NGOs
- **Cleaner Production related Capacity Building**
 - UNIDO (Cleaner Production Center), Academia, NGOs.

Carbon (most) intensive Sectors and the CO₂ ERs Potential

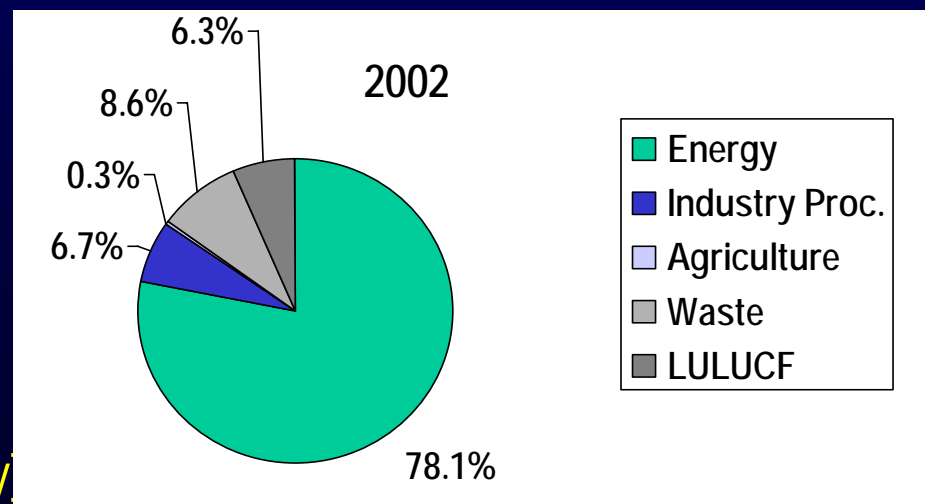
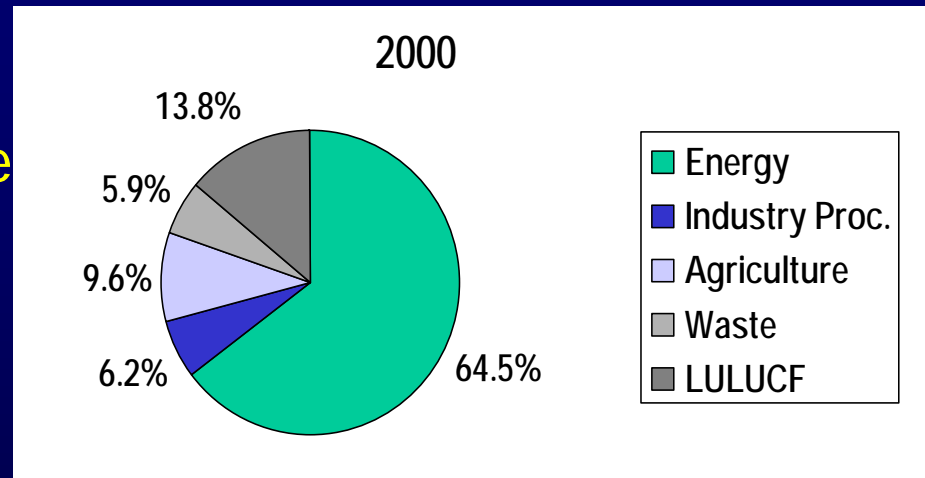
With its Carbon intensity of GDP:
705.9 tCO₂eq/mln\$GDPintl
Macedonia holds the 31st place
in the World [CDM Strategy]

➤ Energy sector: EE and RES
~10 MtCO₂e/yr

➤ Waste Sector
– Municipal and industrial waste
– Waste in Agricultural and Forestry Sector

➤ Forestry sector (sink)
~2,2 MtCO₂e/yr

[GHGs Inventory, 2006, CDM Strategy]



Identified CDM PA in Macedonia (1/4)

References:

- Evaluation of Technology Needs for GHG Abatement in the Energy Sector (Apr, 2004)
- National Strategy for Clean Development Mechanism for the first commitment period of the Kyoto Protocol 2008 – 2012 (Feb, 2007) (MoEPP, UNDP, REC)
 - CDM Potential of Macedonia (Mar 2006)
- Assessment of the Projects' Potential in the Fields of RES, EE and Forestry Management in the Framework of the CDM of the KP in the R. Macedonia (MoELS, Italian Gov)
- WB Carbon Finance Workshop (June 2007)

Identified CDM PA in Macedonia (2/4)

- Rehabilitation of 6 HPPs in R. Macedonia, AD ELEM
- Gas powered CHPP, TE-TO, AD Toplifikacija
- Drisla Landfill Gas (LFG) collection and flaring project, potential Project Developer “JP Komunalna Higiena”, Skopje and/or the Municipality of Skopje
- Rehabilitation of Boilers in the Clinical Center, Clinical Center and MACEF
- Other CDM PA (as per the previously listed references)

Rehabilitation of 6 major HPPs in R. Macedonia (1/3)

- **Project Developer: AD ELEM**
<http://www.elem.com.mk/index.php?id=192>
Ms. Jasna Ivanova-Davidovic & Mr. Igor Nikolov
- **Project Partner: Clean Energy Finance Committee, Mitsubishi UFJ Securities**
http://www.sc.mufg.jp/english/e_cefc/index.html, Mr. Vladislav Arnaoudov
- **Vrutok, Raven, Vrben, Spilje, Globocica, Tikves**
- **Crediting period: 7 years**
- **Expected starting date of the crediting period: Jan 1, 2008**



Macedonia

- Rehabilitation of Hydro Power Plants -

Project Name: Rehabilitation of six HPPs
in the Republic of Macedonia
CERs: 202,344 CERs / year
Methodology: ACM0002



The Project involves the rehabilitation of six hydropower plants (HPP) in the Republic of Macedonia and is a part of a larger project for improvement of the power system in Macedonia

Rehabilitation of 6 major HPPs in R. Macedonia (3/3)

Current Status

- Stakeholders Comments:
 - No negative comments received
 - Stakeholders' supported implementation of the project and ELEM's efforts towards environmental protection
- LoA issued by the MKD DNA
 - 1st LoA
 - DNA is fully operational and prepared for CDM implementation
- Validation Report finalized
- Request for Registration (expected)

Gas powered CHPP, TE-TO, AD Toplifikacija (1/2)

- Project Developer (PD): TE-TO AD-Skopje, Mr. Ivica Sekovanic
<http://toplif.com.mk/otherActivities.htm>
- Consultant:: AllPlan, Austria
- Project site: Skopje. Toplifikacija NG powered cogeneration project
- 6 mths/yr (summer) electricity production and
6 mths/yr (winter) thermal energy + electricity production.
- The plant will operate as an Independent Power Producer (IPP)
and sell electricity to the grid and thermal energy to the district
heating system
The plant will be owned by a Joint Stock Company:
TE-TO AD-Skopje:
ITERA (70% share) & Toplifikacija AD (30% share)

Gas powered CHPP, TE-TO, AD Toplifikacija (2/2)

- The Project will displace power production by more carbon intensive production plants and result in ERs
- Installed capacity approx.: 220MW_{el} , 160MW_{th}
- Expected ERs [CDM Strategy]: avg. 785,423 tCO₂e/yr, but explicitly NOT confirmed by the PD
- Starting date: NA
- Start of (1st) crediting period: Jan. 2009 (NOT confirmed)
- No confirmation of release of any additional quantitative information

Drisla LFG collection and flaring project (1/2)

- Project Developer “JP Komunalna Higijena”, Skopje and/or the Municipality of the City of Skopje
- Project Partner: NA
 - Japanese Company pre-FS (assessed unfeasible)
 - Italian MoELS
 - Slovenian MoESP
- The landfill is not completely in agreement with EU Regulations (problem: No layer preventing leachate entering into ground waters)

Drisla LFG collection and flaring project (2/2)

- The project will involve collection of LFG from the landfill and its destruction using flares [CDM Strategy].
- ERs will be claimed for the amount of CH₄ gas combusted in the flares.
- At this stage, it is not expected the collected CH₄ gas to be used as fuel for thermal/electric power generation [CDM Strategy]
- Expected ERs: avg. of 71,918tCO₂e/y [opt. 67,199tCO₂e/y]
- ERs = BL emissions (tCO₂/yr) – P emissions (tCO₂/yr)
- Estimated investment costs: 1milEUR + 0.3milEUR (3 FS)

Rehabilitation of Boilers in the Clinical Center

- Project Developer: Clinical Center and MACEF
- New Methodology: AM0056 (Sec. 1)
<http://cdm.unfccc.int/methodologies/DB/YB7UE3UB2II2INU9Y1CBJYRANZRRE/ER/view.html>
- Consultant [as per PDD]:
Perspectives Climate Change GmbH, Hamburg, Germany.
- Implementation of EE measures and Fuel switch in the Clinical Centre
- ERs 2008-2018: 260,000tCO₂e [initial estimate]
(!!!!6,650tCO₂e as per AM0056)
- Estimated Investment costs: 1.46mil EUR

Conclusions

- Macedonia has a high Carbon intensity of GDP 705.9 tCO₂eq/mln\$GDPintl ↔ holds the 31st place
- Energy Sector holds approx. 70% of the GHGs emissions ↔ potential for GHGS ERs
- Ambiguous data among various studies especially in the SWM & LFG projects and AWM
- EE & RES to be more explored
- Small EE projects as bundles
- Necessary and expected strong logistic support by the Gov and the Local Gov

Thank you for your attention!



Additional contacts/info:

Ana Lazarevska, Fac. Mech. Eng., Univ. "Sv. Kiril i Metodij", Skopje

E-mail: ana.lazarevska@gmail.com

T.: +389 (2) 3061 459,

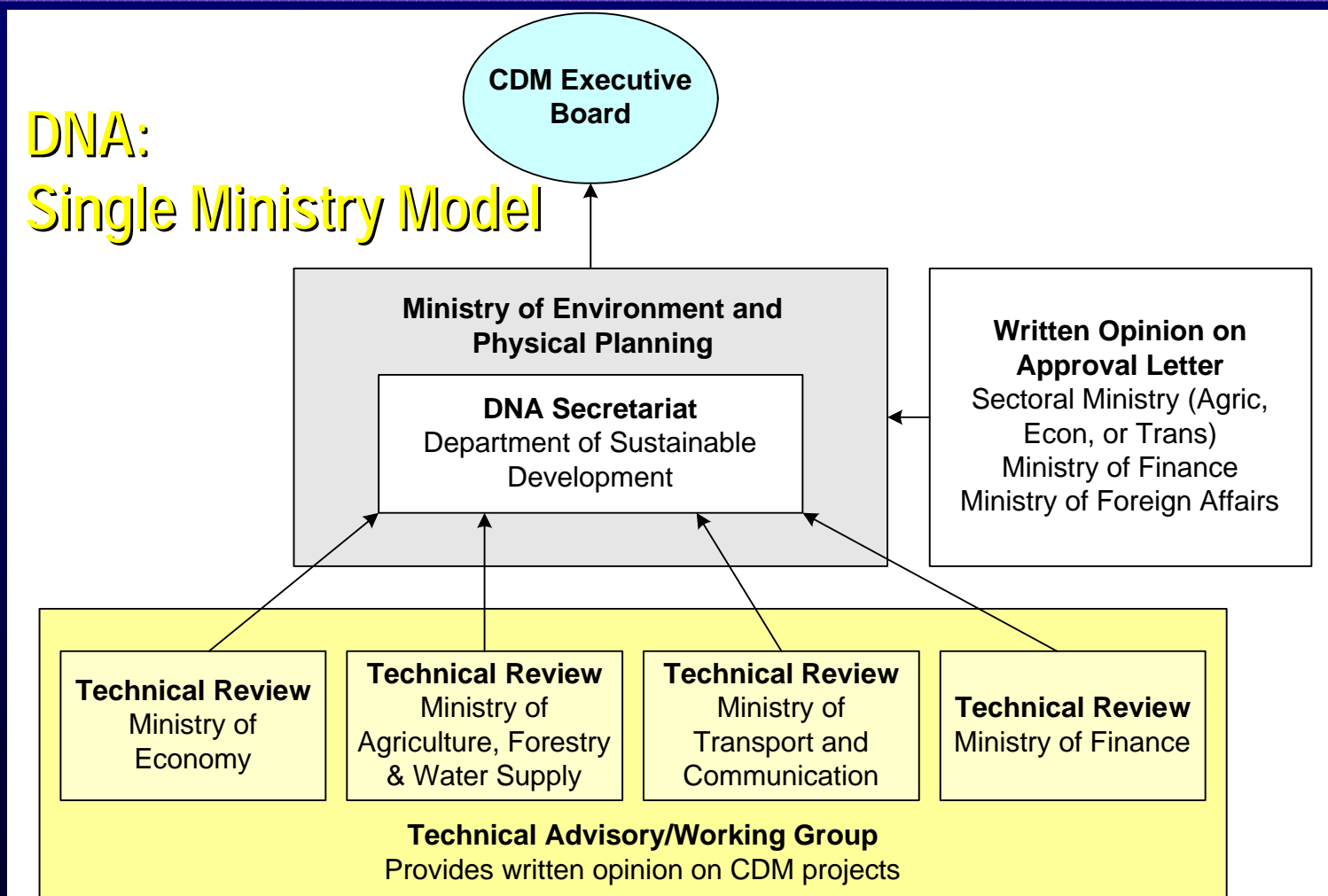
M.+389 71 33 55 57

Economic Data (1/2)

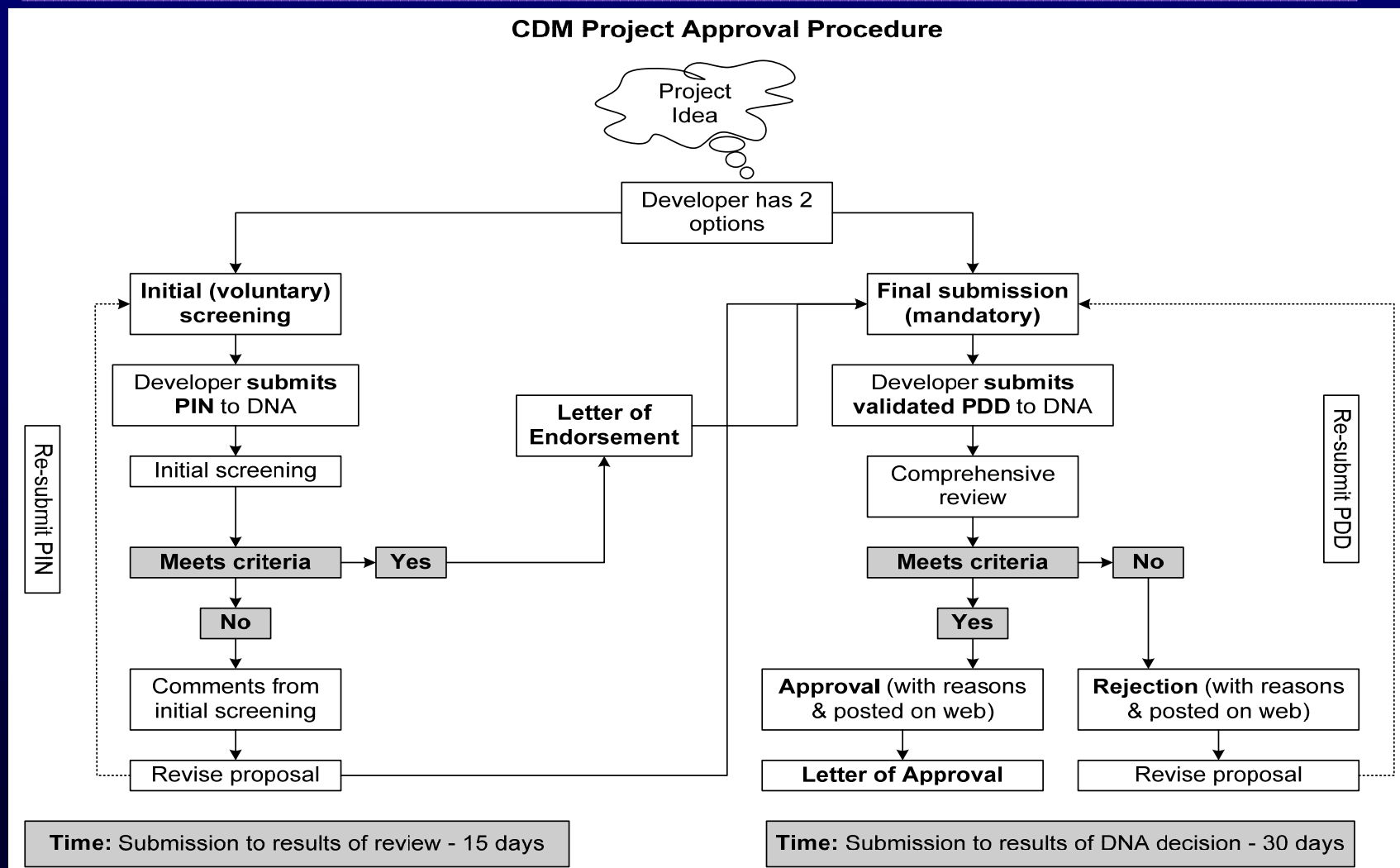
Year:	1990	1994	1998	2000
GDP x 10 ⁶ USD	4.252	3.389	3.575	
GDP/Capita USD	2.235	1.742	1.781	
Share of industry in GDP (%)	46.1	36.8	21.3	
Share of agriculture in GDP (%)	9.9	14.3	10.5	
Share of services in GDP (%)	44.0	48.9	68.2	
Agricultural land (x 1000 ha)	666	661	635	
Forest area	912	966	969	
Employed x 10 ⁴ persons	NA	35.6	31.0	31.3
Urban population (% of total population)	59	Source: 1 st National Communication under the UN FCCC		
Literacy (%)	94,6			

CDM (related) Stakeholders & Main Activities (2/4)

DNA: Single Ministry Model



CDM (related) Stakeholders & Main Activities (2/4)



CDM (related) Stakeholders & Main Activities (2/4)

DNA Approval Procedure – Timeframe Source: MoEPP

Step	Time-frame	Voluntarily/ Mandatory
Step I: Initial Screening and Endorsement of the Project Idea Note (PIN)	15 working days	Voluntarily
- Review of the PIN	10	
- Issuance of Letter of Endorsement	5	
Step II: Final Review and Approval/Rejection of the Project Design Document (PDD)	30 working days	Mandatory
- Initial Screening of PDD	2	
- Review by Technical Advisory Group	10	
- Technical Review Summary and Recommendation to the Minister of MoEPP	4	
- Decision by the Minister of the MoEPP	2	
- Draft Letter of Approval	3	
- Inter-ministerial Review of Approval/Rejection Letter	5	
- Final Approval/Rejection Letter	4	

CDM (related) Stakeholders & Main Activities (2/4)

Source: MoEPP

