TU1406
COST ACTION

Quality Specifications for Roadway Bridges, Standardization at a European Level (BridgeSpec)

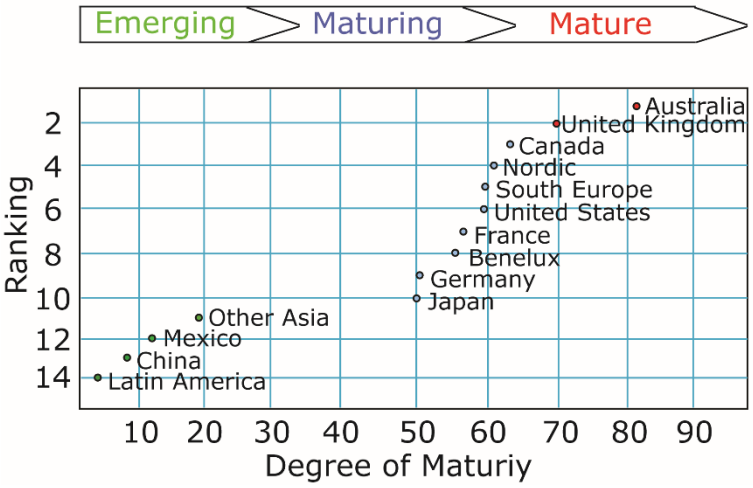
José Matos – Chair, University of Minho, Portugal
Joan R. Casas – Vice-Chair, UPC – BarcelonaTech, Spain

ESF provides the COST Office through a European Commission contract

COST is supported by the EU Framework Programme

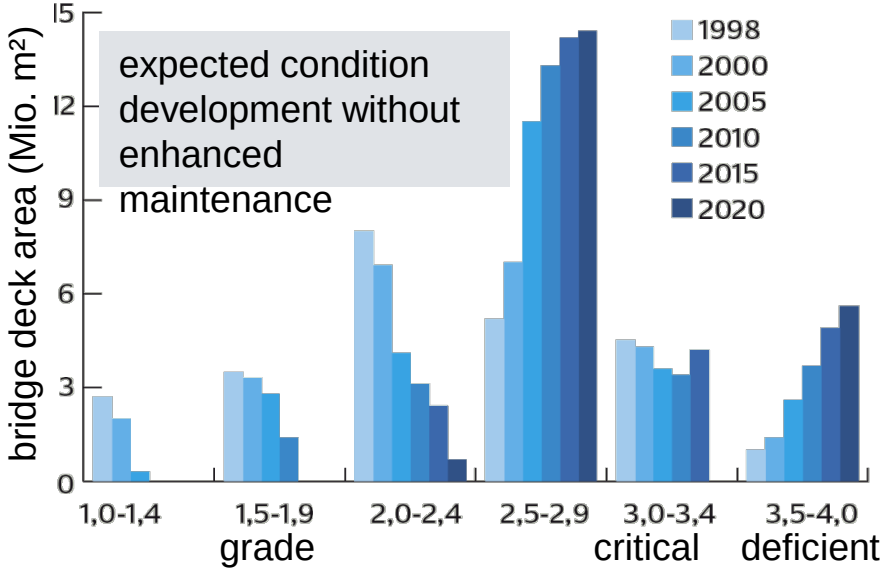
cost EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

1. BACKGROUND



"… *it is therefore extremely important for countries to prioritize their budget expenditures in this topic by improving the way infrastructures are being managed.*"

The OECD noted that by 2030 "... *a larger effort will need to be directed towards maintenance and upgrading of existing infrastructures and to getting infrastructures to work more efficiently*"



1. BACKGROUND

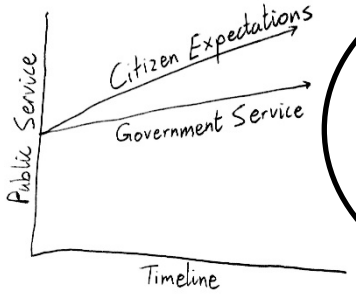
Decay Process

Public Demands

Efficient Management

Limited Resources

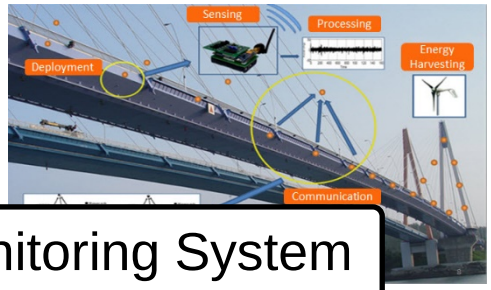
Public Expectations



1. BACKGROUND

Visual Inspection

NDT Testing



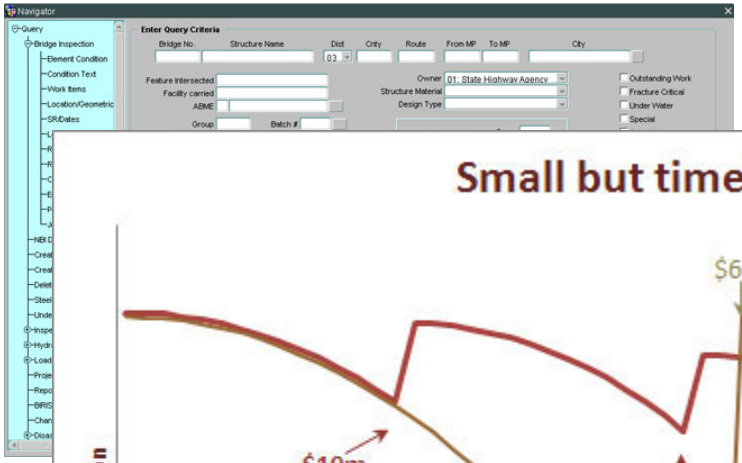
Monitoring System

Performance Indicator

Performance Goal

Quality Control Plan

1. BACKGROUND



A Bridge Management System is used to store the quality control plans of the bridge

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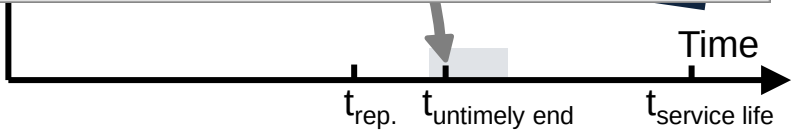
[Ministry of Ontario, 2014]



2. REASONS FOR THE ACTION

- **Denmark**
  - DANBRO (DANish Bridges and Roads)
- **Finland**
  - FinnRABMS (Finnish National Roads Administration Bridge Management System)
- **France**
  - Advitam
- **Italy**
  - SAMOA (Surveillance, Auscultation and Maintenance of Structures)
- **Netherlands**
  - DISC
- **Norway**
  - BRUTUS
- **Sweden**
  - BMS
- **Switzerland**
  - KUBA
- **United Kingdom**
  - STEG (Structures REGister);
  - HiSMIS (Highway Structures Management Information System)
  - SMIS (Structures Management Information System)
  - BRIDGEMAN (BRIDGE MANagement system)
  - COSMOS (Computerized System for the Management Of Structures)
- **United States America**
  - Pontis
  - BRIDGIT

2. REASONS FOR THE ACTION

Main Functions of BMS	D		E	F	UK	NO	FIN	SI	CA	NY (state
Name	S Bauw			Edouard and OA	NATS	Brutus				
Time of operation (years)	new				15	2	3	5		4
Number of bridges managed	34 600			22 000	9 500	17 000	15 000	1760	25 000	10 000
Inventory of existing stock	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes
Schedule of inspection	Yes	Yes		Yes	Yes	Yes	Yes		Yes	Yes
Condition of structures (rating, ...)	Yes	Y		es	Yes	Yes	Yes	Yes	Yes	Yes
Bid for maintenance funds	No	Yes			Yes	Yes	?		Yes	Yes
Prioritising of maintenance work	No	Yes			Yes	Yes	?	Yes	Yes	Yes
Budget planning (long term)	No	Yes			Yes	Yes	Yes			Yes
Registering detailed cost information for actions	Yes	Yes								Yes
Safety assessments	No				Yes					Yes
Taking into account alternative maintenance strategies	No				Yes					Yes
Application of whole-life costing	No			No						Yes
Road user delays	No			No						
Deterioration prediction	No	No	No	No	No	No	Yes	No	Yes	Yes

Other sources: IABMAS 2014 technical report

2. REASONS FOR THE ACTION

There is a **REAL NEED** to standardize the quality assessment of roadway bridges at an European Level

3. OBJECTIVES AND BENEFITS

Aim

The main objective of the Action is to

develop a guideline for the establishment of QC plans in roadway bridges

by integrating the most recent knowledge on performance assessment procedures with the adoption of specific goals. This guideline will focus on bridge maintenance and life-cycle performance at two levels:

(i) performance indicators;
(ii) performance goals.

3. OBJECTIVES AND BENEFITS

Objectives

(i) Systematize knowledge on QC plans for bridges, which will help to achieve a state-of-art report that includes performance indicators and respective goals;

(ii) Collect and contribute to up-to-date knowledge on performance indicators, including technical, environmental, economic and social indicators;

(iii) Establish a wide set of quality specifications through the definition of performance goals, aiming to assure an expected performance level;

(iv) Develop detailed examples for practicing engineers on the assessment of performance indicators as well as in the establishment of performance goals, to be integrated in the developed guideline;

(v) Create a database from COST countries with performance indicator values and respective goals, that can be useful for future purposes;

(vi) Support the development of technical/scientific committees;

(vii) Disseminate activities, such as Short-Term Scientific Missions (STSM), training schools and other teaching activities (e.g. e-lectures), for practicing engineers and researchers, regular workshops, a conference and special sessions at international conferences.

3. OBJECTIVES AND BENEFITS

Deliverables

WG1 : Performance indicators

- Report of Performance Indicators (incorporating new indicators)

WG2: Performance goals

- Report of Performance Goals (incorporating new indicators)

WG3: Establishment of a QC plan

- Recommendations for the Establishment of a QC plan (with detailed examples for practicing engineers)

WG4: Implementation in a Case Study

- Database from Benchmarking (from COST countries)

WG5: Drafting of guideline / recommendations

- Guideline for the Establishment of a QC plan

4. HORIZONTAL ROLES

Position	Name
WG1: Performance Indicators	Leader: Alfred Strauss (AT) Vice Leader: Ana Mandic (HR)
WG2: Performance Goals	Leader: Irina Stipanovic (NL) Vice Leader: Lojze Bevc (SL)
WG3: Quality Control Plan	Leader: Rade Hajdin (SB) Vice Leader: Matej Kusar (SL)
WG4: Case Study	Leader: Amir Kedar (IL) Vice Leader: Sander Sein (EE)
WG5: Standardization	Leader: Vikram Pakrashi (IR) Vice Leader: Helmut Wenzel (AT)
WG6: Dissemination	Leader: Gudmundur Gudmundsson (IS) Vice Leader: Stavroula Pantazopoulou (CY)
CHAIR:	Jose Matos
VICE-CHAIR:	Joan Casas
TECHNICAL SECRETARIAT:	Eleni Chatzi

4. HORIZONTAL ROLES

Management Committee

Including:
- MC Chair
- MC Vice-Chair
- WG's Leaders and Vice-Leaders
- General Secretariat
- STSM Leader and Vice-Leader
- M&E Leader and Vice-Leader
- Innovation Leader and Vice-Leader
- R&D Leader and Vice-Leader

Core Group

- MC Chair
- MC Vice-Chair
- WG's Leaders
- General Secretariat
- STSM Leader
- M&E Leader *
- Innovation Leader *
- R&D Leader *

Advisory Board

- Industry/Owners/ Operators
- External Advisors (MC Observers)

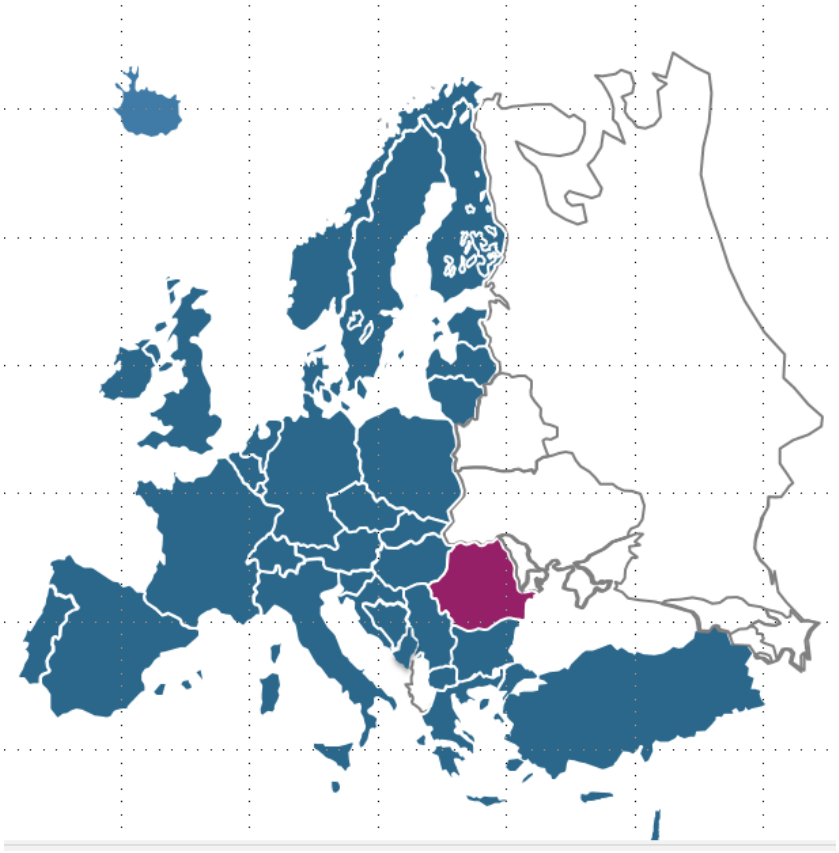
MC Observers

- Dan Frangopol (USA)
- Mitsuyoshi Akiyama (JP)
- Colin Caprani (AUS)
- Matias Valenzuela (CHL)
- Hans Beushausen (ZA)

An MC Observer per Continent

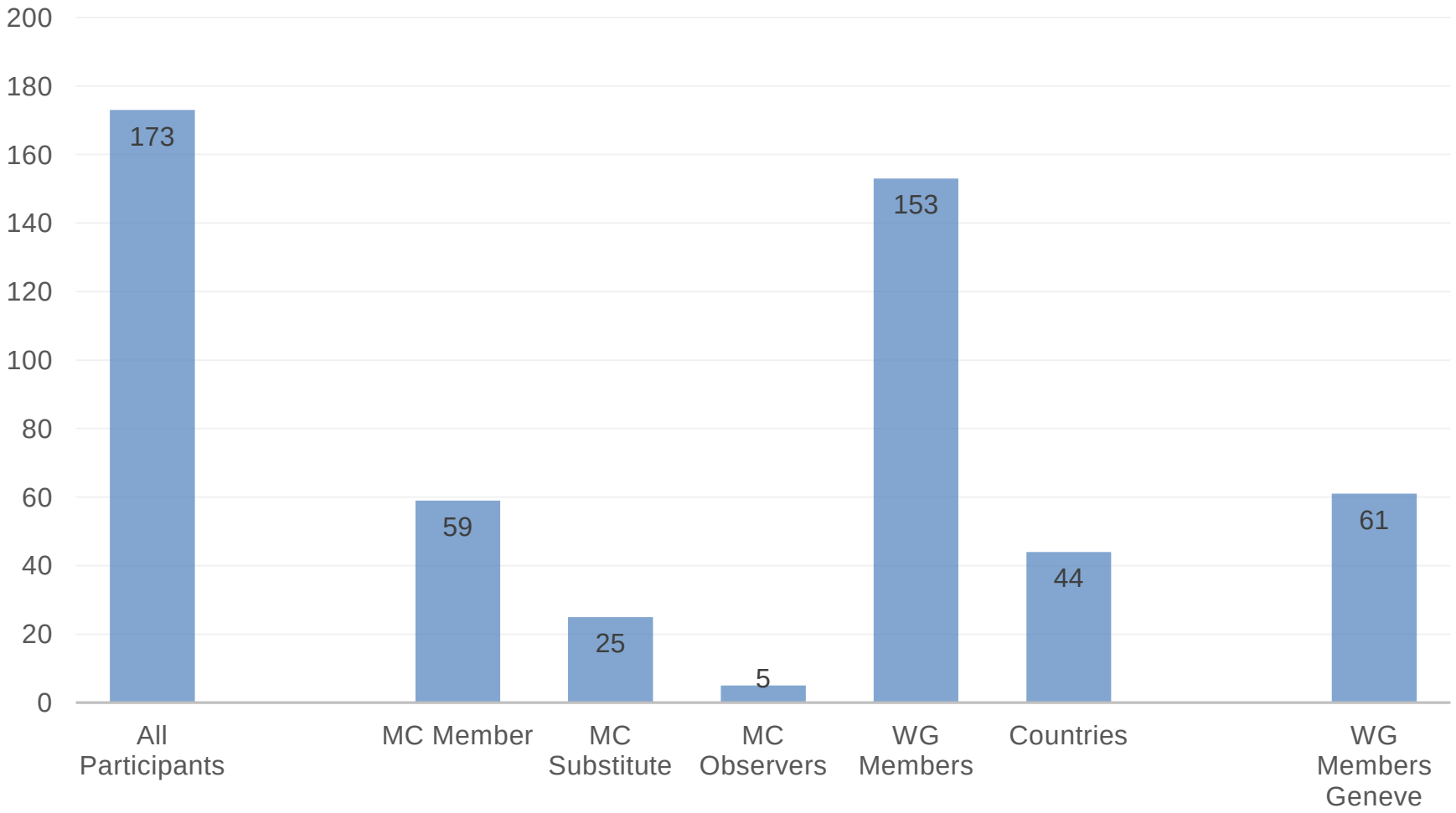
* under an "ad-hoc" basis

5. COST Countries



- **Action represented countries**
- **Missing Countries** **(only registered as WG member)**
  - Romania

5. COST Countries



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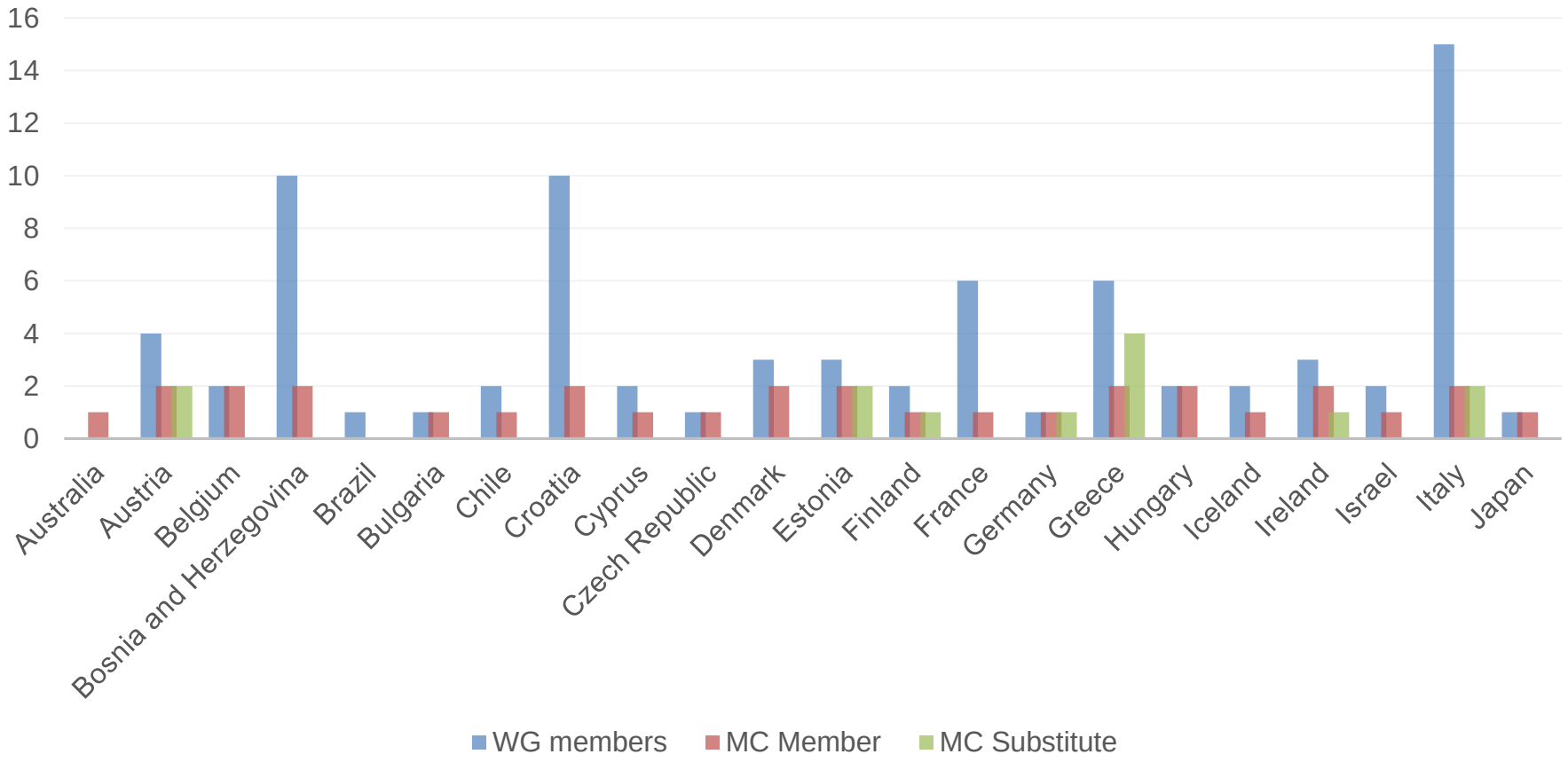

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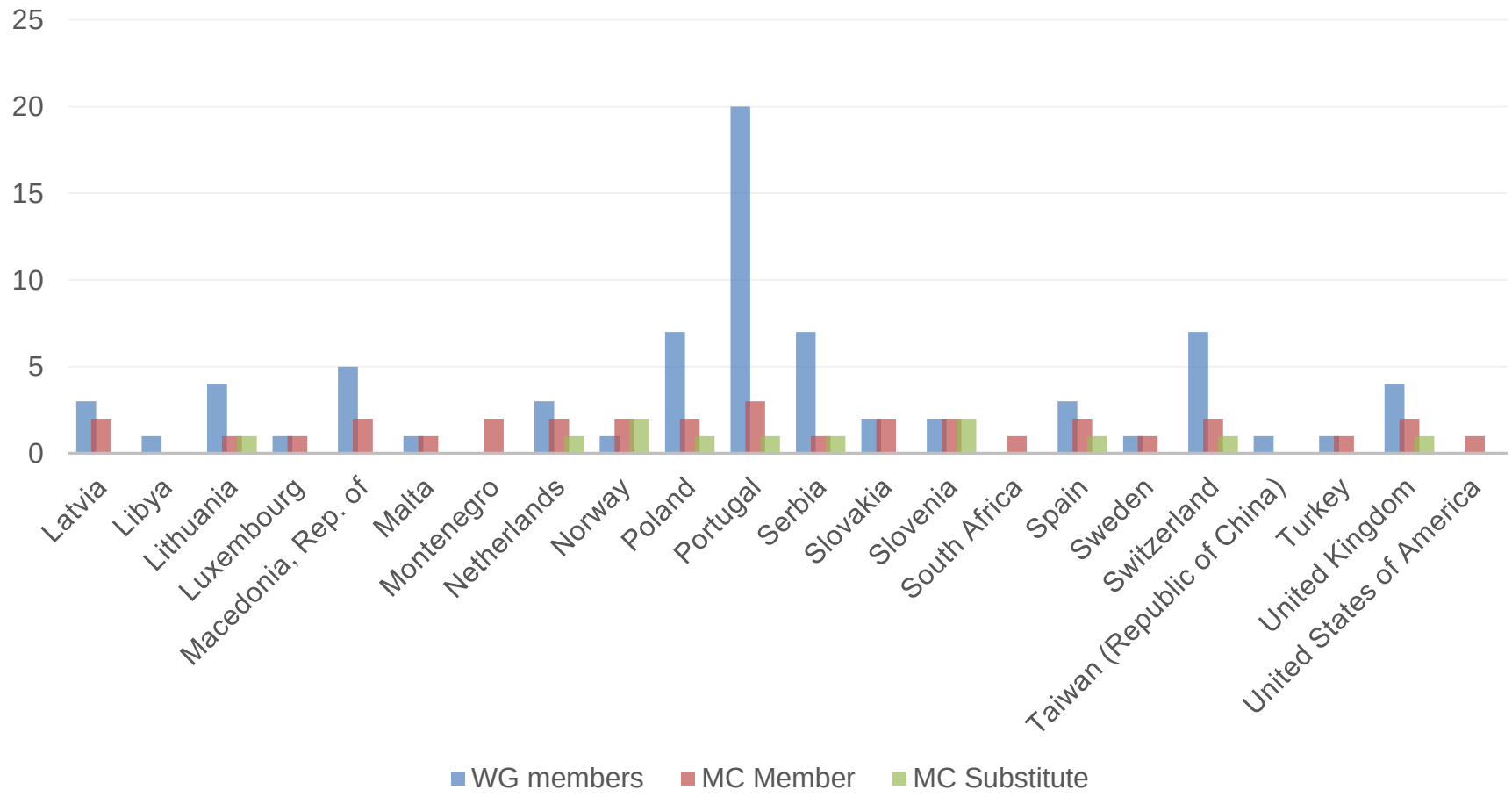
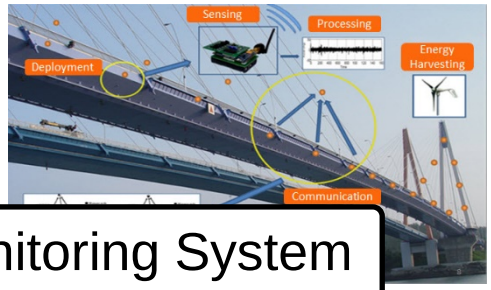


6. NON-RESEARCH PARTNERS

7. LIASION BETWEEN COST TU-1402 and COST TU-1406

Visual Inspection

NDT Testing



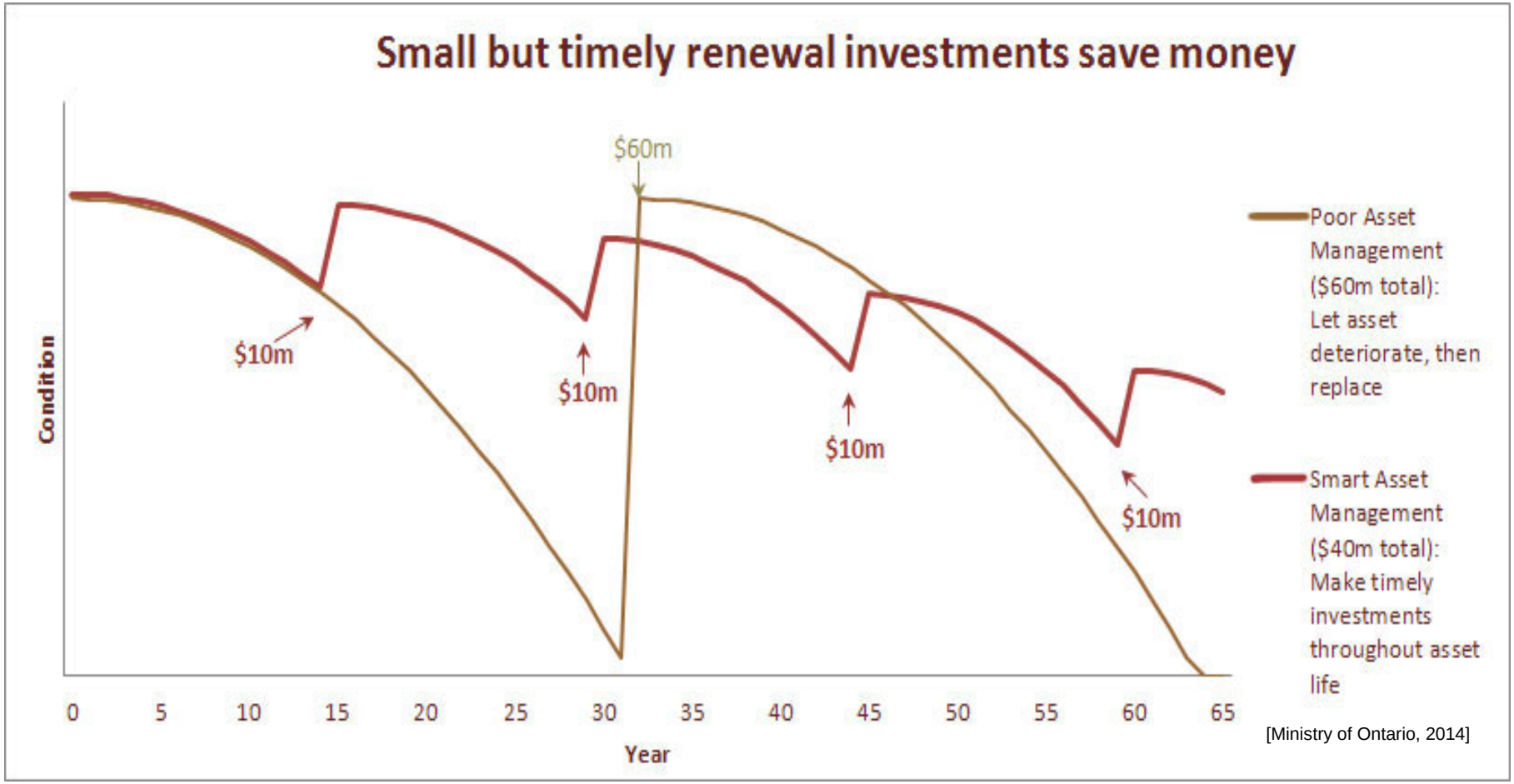
Monitoring System

Performance Indicator

Performance Goal

Quality Control Plan

7. LIASION BETWEEN COST TU-1402 and COST TU-1406



[Ministry of Ontario, 2014]

7. LIASION BETWEEN COST TU-1402 and COST TU-1406

WG2 OF TU-1402 (MoU)

- To look into any type of civil engineering infrastructure (roads, bridges, dams, power plants,…) and define the most relevant performance indicators to be monitored by the available SHM techniques

WG1 OF TU-1406 (MoU)

- The definition of performance indicators for highway bridges for the present and future structural conditions on deterministic and probabilistic level.

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Thank you for your attention

www.tu1406.eu


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