International Federation for Structural Concrete
Fédération internationale du béton

The *fib*, achievements, innovations and ambitions for sustainable concrete structures

Photo ©Loic Gardiol

David Fernández-Ordóñez
fib Secretary General
January 2020

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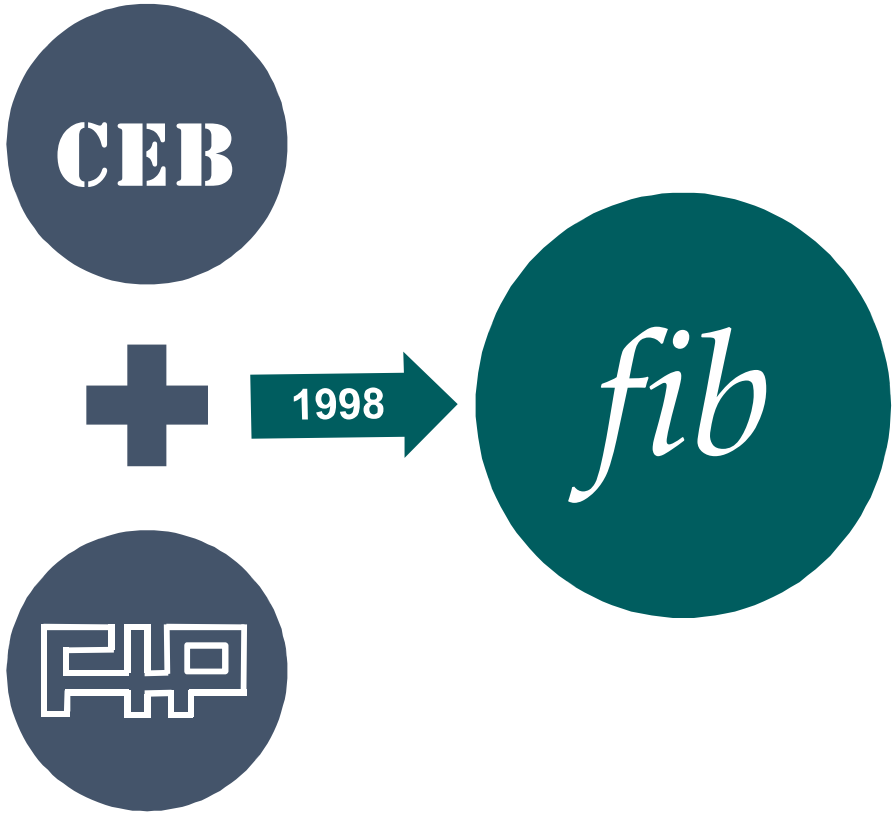
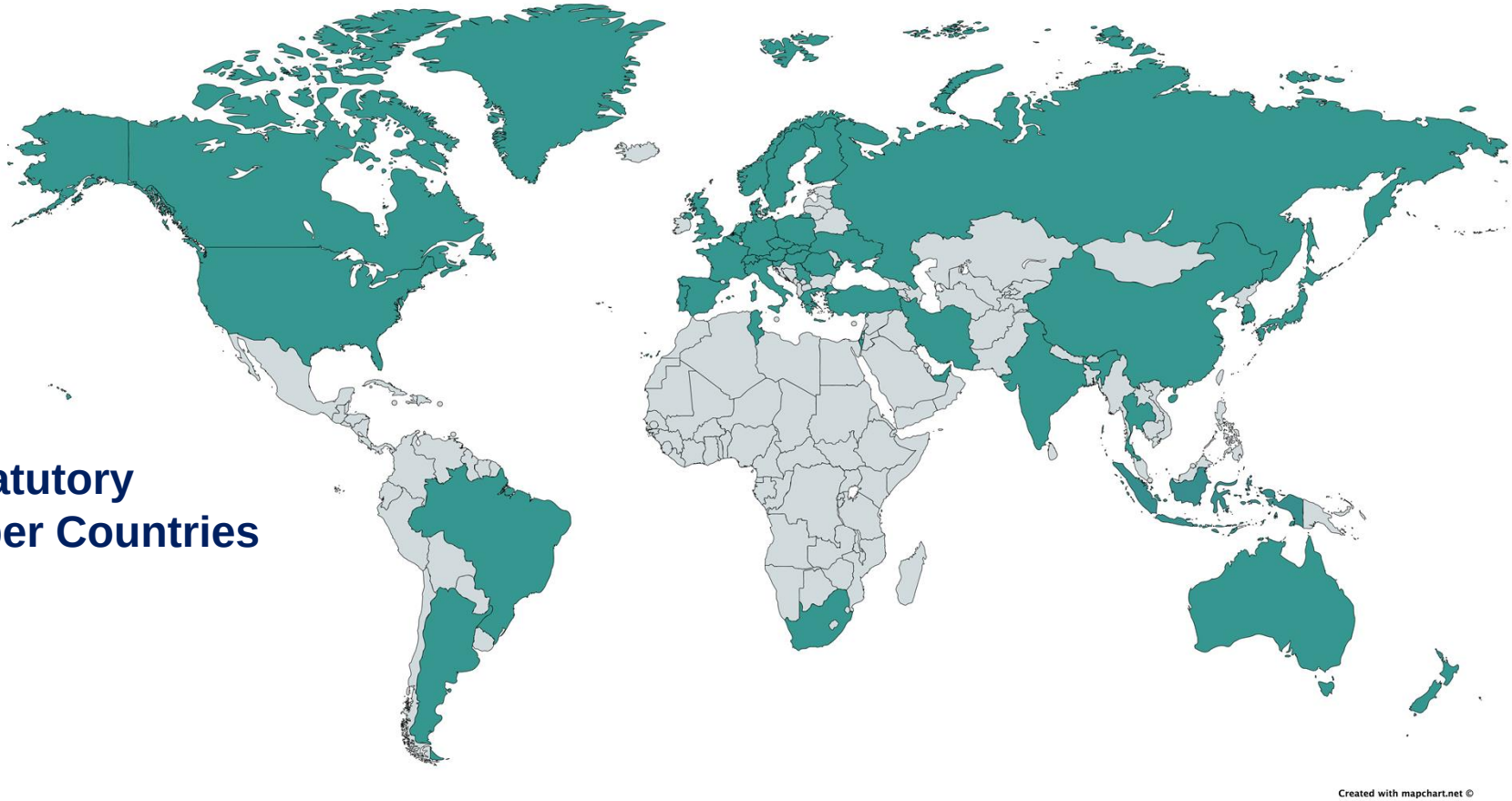
Creation of the *fib*

Euro-International
Committee for Concrete
Comité euro-internationale du béton
1953

International Federation
for Pre-stressing
Fédération internationale
de la précontrainte
1952



2019 Statutory member countries



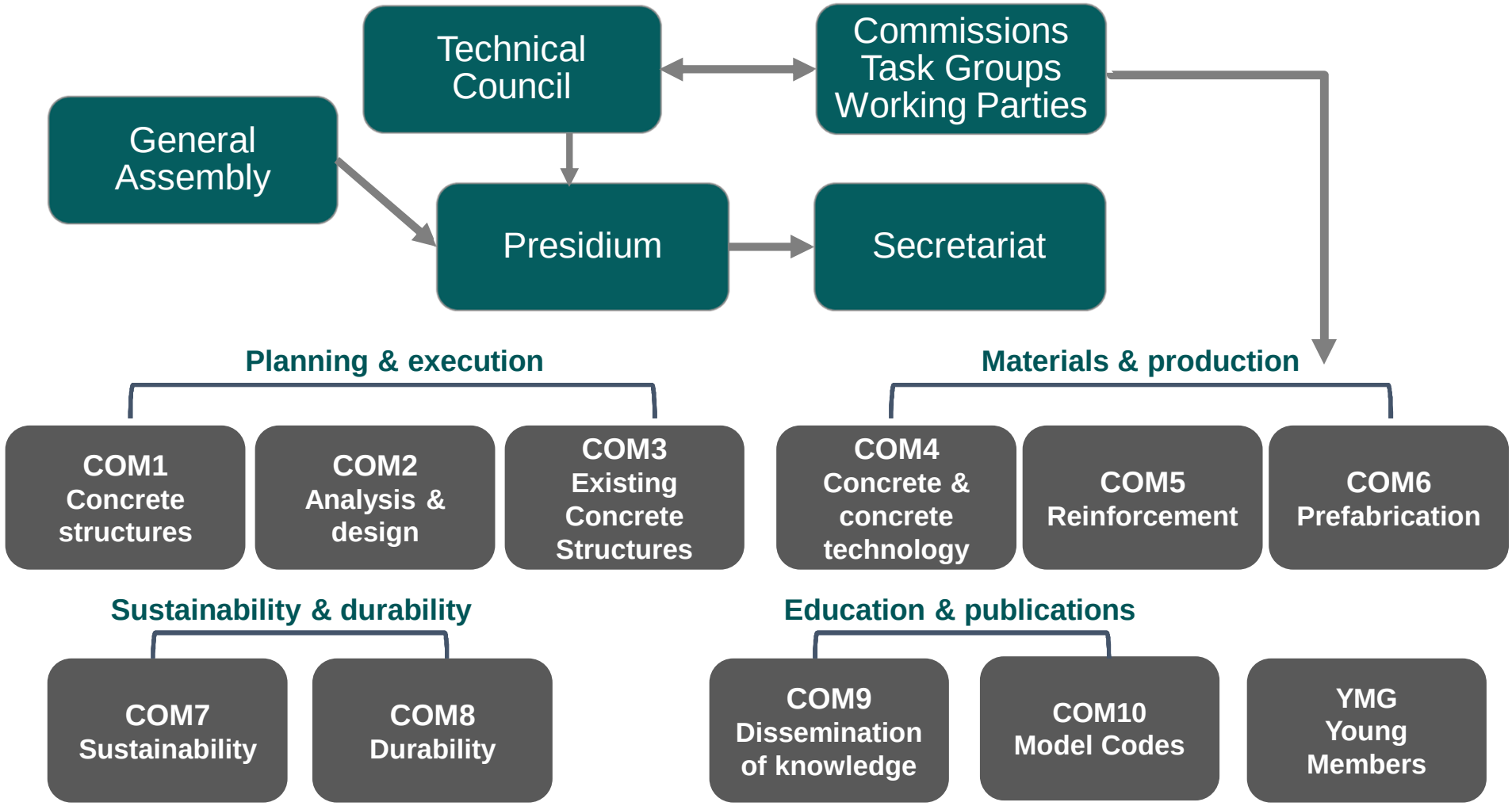
42 *fib* Statutory Member Countries

Argentina ï Australia ï Austria ï Belgium ï Brazil ï Canada ï China ï Cyprus ï Czech Republicï Denmark ï Finland ï France ï Germany ï Greece ï Hungary ï India ï Indonesia ï Iran ï Israel ï Italy ï Japan ï Luxembourg ï Netherlands ï New Zealand ï Norway ï Poland ï Portugal ï Romania ï Russia ï Slovakia ï Slovenia ï South Africa ï South Korea ï Spain ï Sweden ï Switzerland ï Thailand ï Turkey ï UAE ï Ukraine ï United Kingdom ï United States

Mission and Objectives of the *fib*

ñTo develop at an international level the study of scientific and practical matters capable of advancing the technical, economic, aesthetic and environmental performance of concrete construction.ò *Statutes of the fib*

The *fib* structure

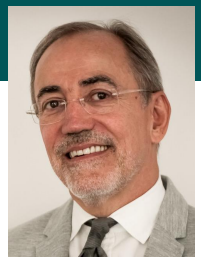


2019-20 *fib* Presidium members

Tor Ole Olsen
Norway
President

Akio Kasuga
Japan
Dep. President

Hugo Corres
Spain
Past President

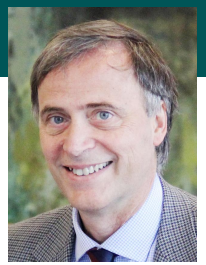


Josée Bastien
Canada

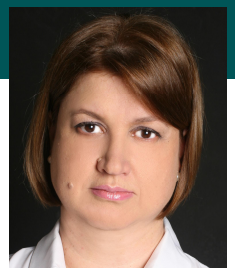
Agnieszka Bigaj
Netherlands

Frank Dehn
Germany

Marco di Prisco
Italy



Iria Doniak
Brazil

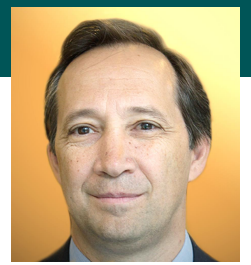


Stephen Foster
Australia

Aurelio Muttoni
Switzerland

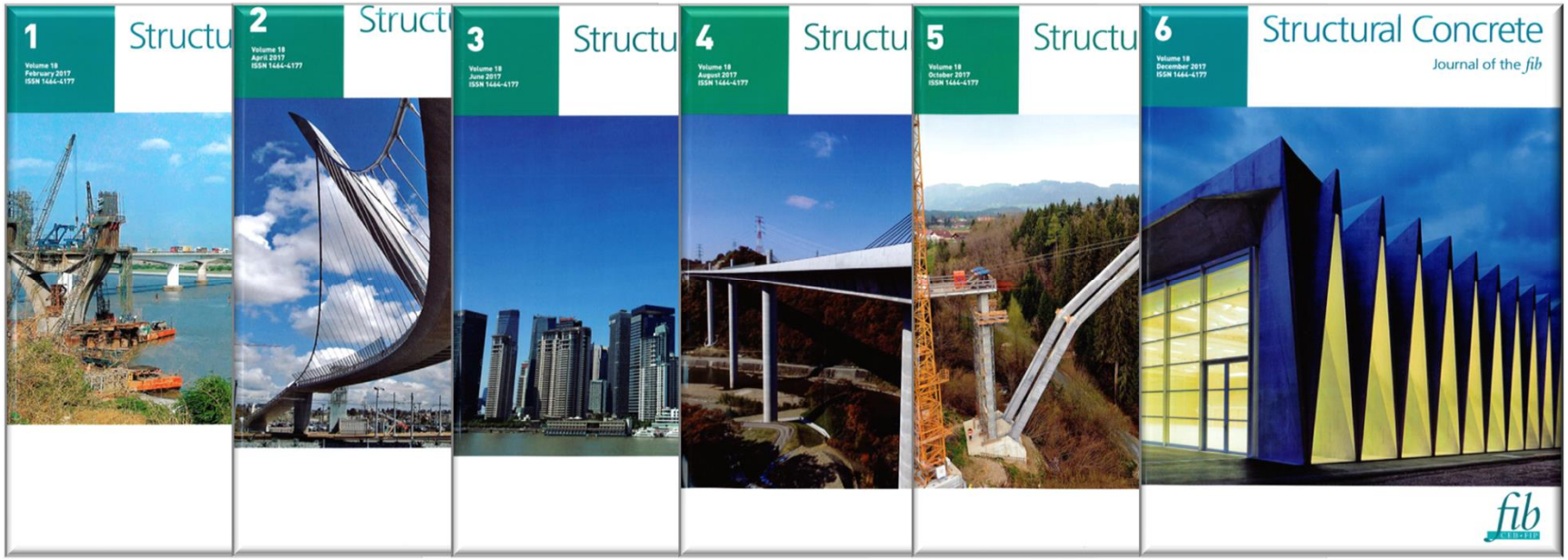
Larbi Sennour
USA

David Fernández-Ordóñez
Secretary General



The *fib* Structural Concrete journal

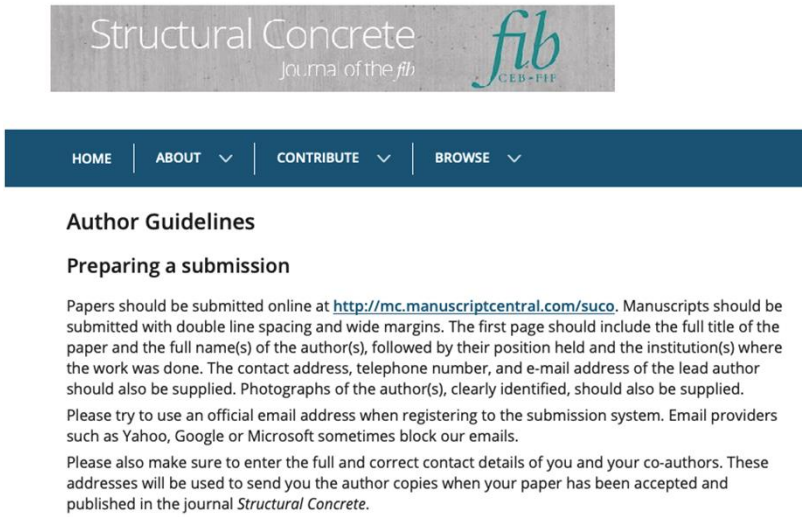
Impact factor 2018: 1.885
6 issues starting from 2016
More than 2.200 pages and 200 papers in 2019



The *fib* Structural Concrete journal

Short Project Notes

Short Project Notes are intended to provide a description of a relevant project that has been built or is in the process of execution. The original or novel aspects in design or execution should be clearly indicated.
Short Project Notes should be submitted online at:
https://mc.manuscriptcentral.com/suco
The guidelines for authors here:
https://onlinelibrary.wiley.com/page/journal/17517648/homepage/forauthors.html



The *fib* Structural Concrete journal

Short Project Notes

DOI: 10.1002/suco.20180001

SHORT PROJECT NOTE

Takubogawa Bridge

The Tokugawa Bridge (Figure 1) is a 10-span continuous butterfly web box girder highway bridge, whose longest span is 87.5 m. "Butterfly Web Bridge" is a new type of bridge structure and this bridge is the world first application

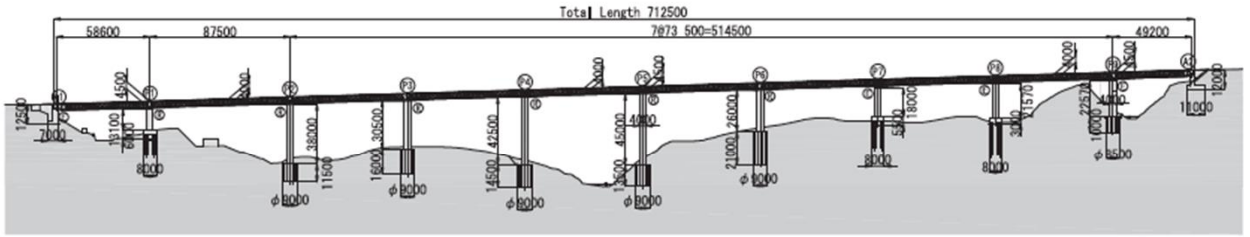
bridge axis direction. Moreover, this is a simple structure in which the panels are connected to the upper and lower deck slabs linearly using dowels with no need to connect adjacent panels, thus facilitating a rapid construction.

The *fib* Structural Concrete journal

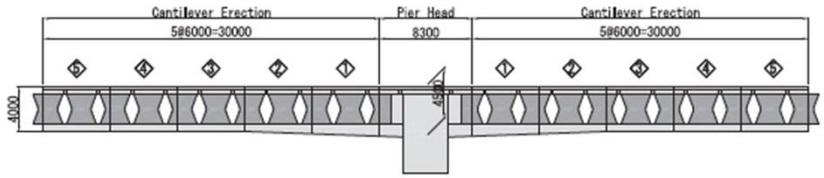
Short Project Notes

Takubogawa Bridge

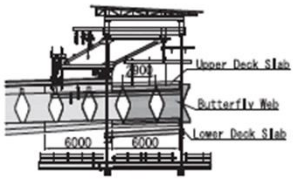
Side View



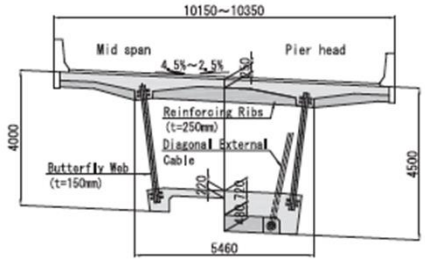
Segment Arrangement



Cantilevering Erection



Cross Section



Butterfly Web Panel

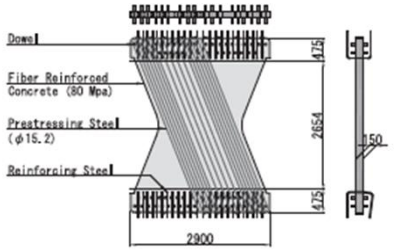
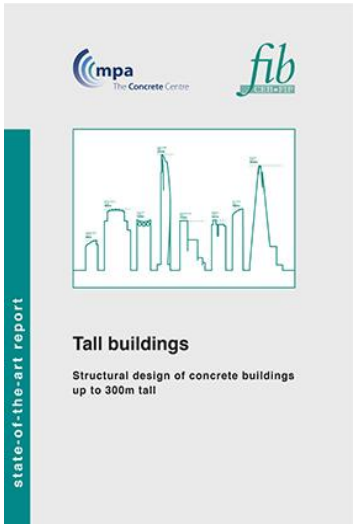
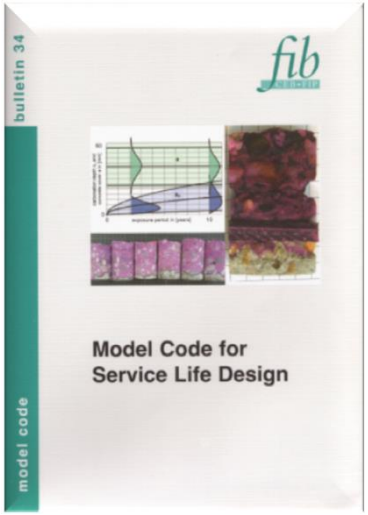


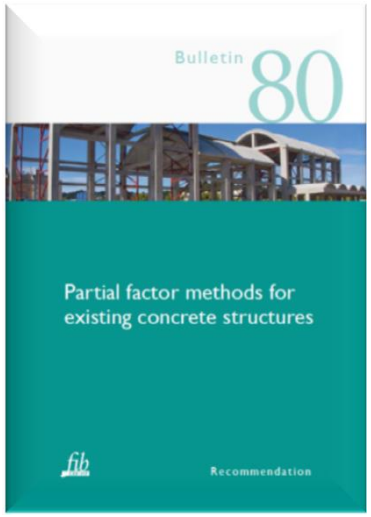
FIGURE 2 Drawings

Results of commissions and task groups are published as fib bulletins

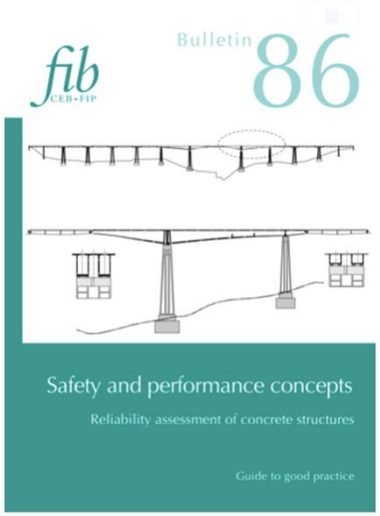
- Technical reports
- State-of-the-art reports
- Textbooks
- Manuals or guides
- Recommendations
- Model Codes

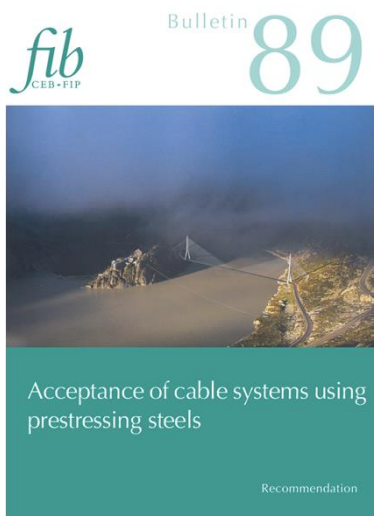


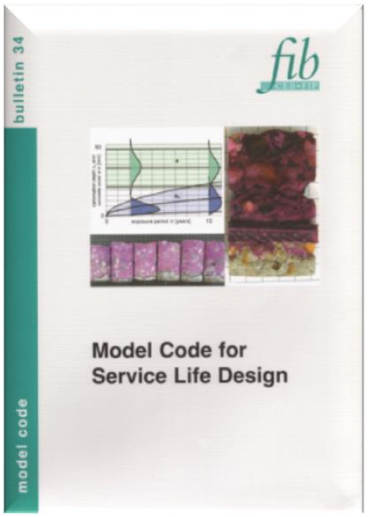


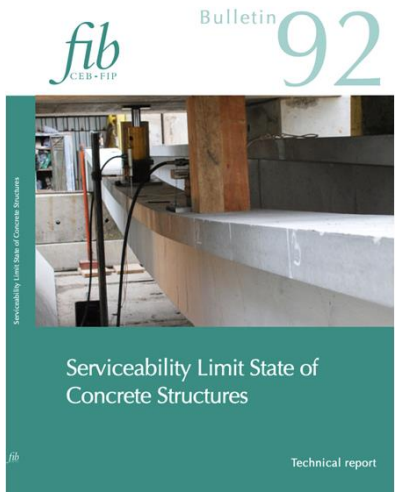


Results of commissions and task groups are published as fib bulletins









Results of commissions and task groups are published as fib bulletins

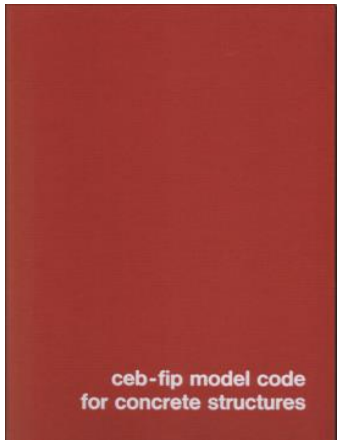
News about Bulletins:

- All bulletins included in Google Books
- Possibility to buy hardcopy and pdf in the *fib* webstore
- DOI per bulletin and per chapter when there are main Authors
- In the process for the indexing of Bulletins in data bases

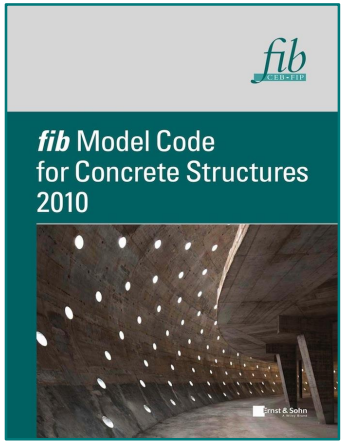
Authors by chapter

Chapters	Main Authors	DOI
1	Vítek	doi.org/10.35789/fib.BULL.0092.Ch01
2	Vítek	doi.org/10.35789/fib.BULL.0092.Ch02
3	Vítek	doi.org/10.35789/fib.BULL.0092.Ch03
4	Bisch, Caldentey, Duarte, Debernardi, Fehling, Guiglia, Mari Bernat, Taliano , Torres, Vítek and Vrablik	doi.org/10.35789/fib.BULL.0092.Ch04
5	Burns, Caldentey, Duarte, Fehling, Mari Bernat, Torres, Vítek and Vrablik	doi.org/10.35789/fib.BULL.0092.Ch05
6	Borosnyoi , Caldentey, Debernardi, Guiglia, Taliano, and Windisch	doi.org/10.35789/fib.BULL.0092.Ch06
7	Červenka	doi.org/10.35789/fib.BULL.0092.Ch07
8	Vítek	doi.org/10.35789/fib.BULL.0092.Ch08

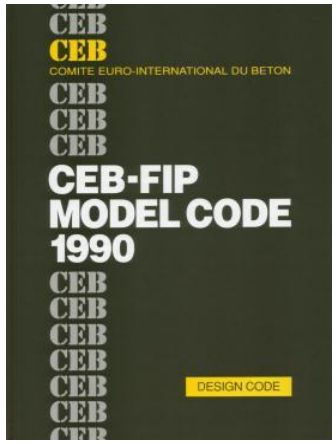
Evolution of Model Codes



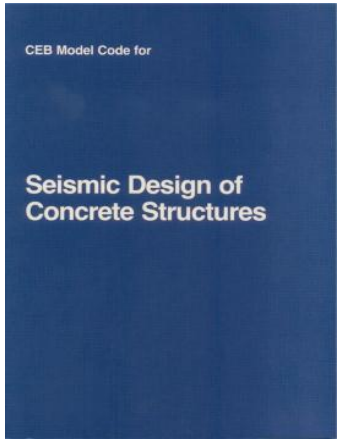
Model Code 1978



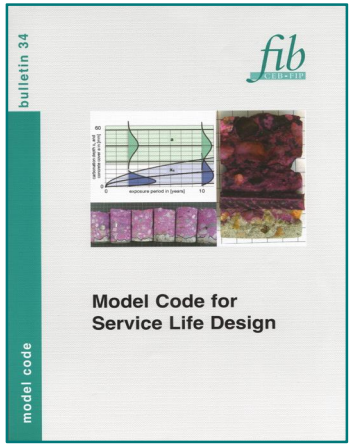
Model Code 2010



Model Code 1990



CEB Bull. 165 Seismic Design



fib Bull. 34 Service Life Design

Upcoming symposia, congresses and supported events

2019 Symposium
Concrete: Innovations in materials, design and structures
27-29 May - Krakow, Poland

2019 Symposium. Conceptual design of structures
26-28 September Madrid, Spain

2020 Symposium
26-28 April- Shanghai, China

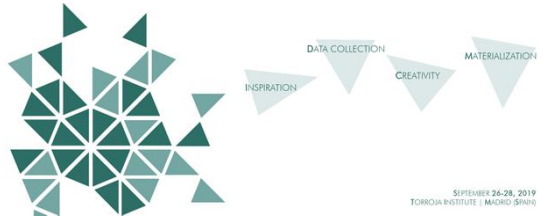
2020 PhD Symposium
26-28 August Paris, France

2020 ICCS20 Symposium
16-18 September Prague, Czech Republic.

2021 Symposium
14-16 June Lisbon, Portugal

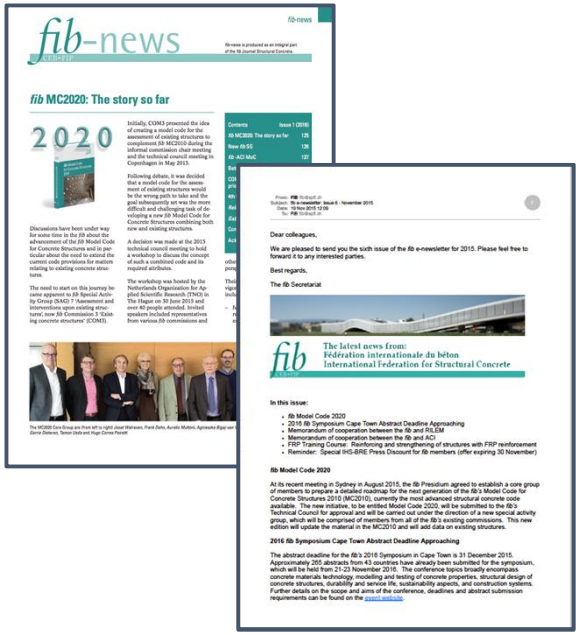
2022 Congress
5-9 June, Oslo, Norway

2024 ICCS24 Symposium



Staying informed about the *fib*

- *fib*-news
  - Quarterly newsletter published in the *fib* *Structural Concrete* journal
- e-newsletter
  - Sent by e-mail every 6 weeks
- Follow-us on social media
  - Facebook
  - LinkedIn
  - Twitter @fib_intl
  - Instagram fib_international

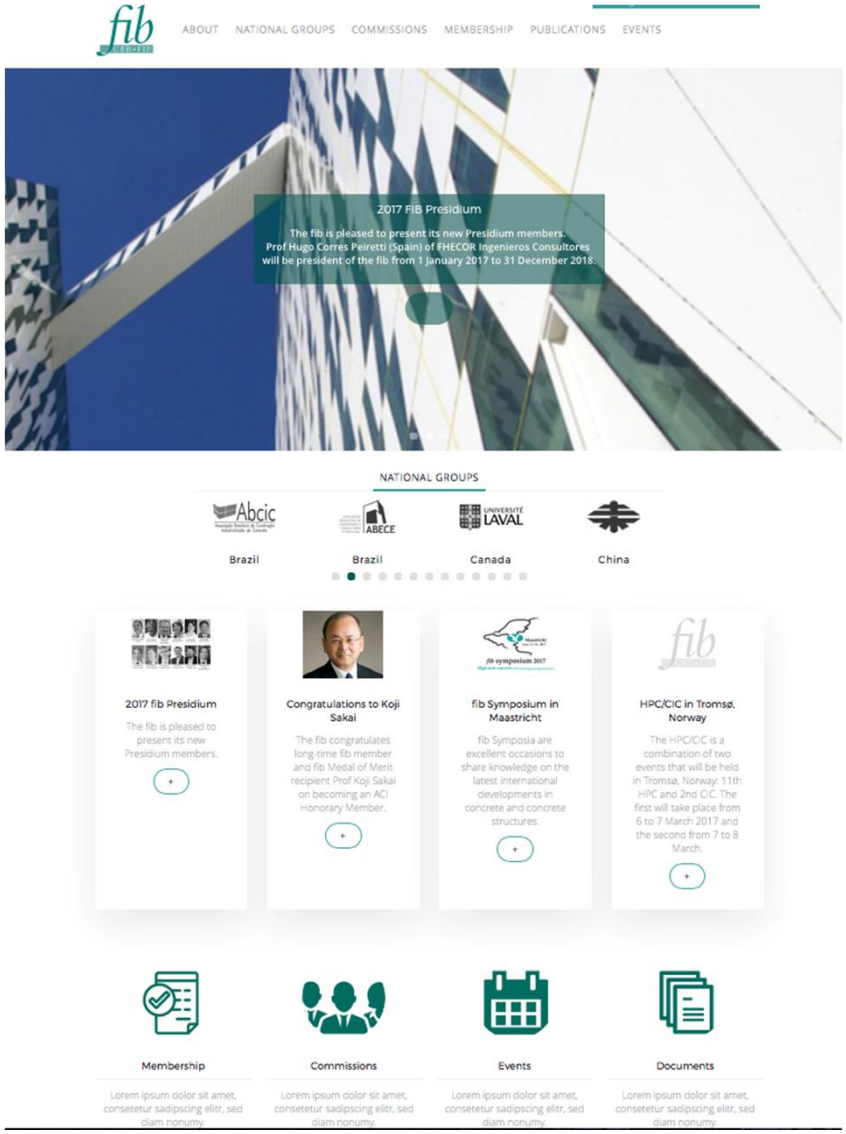


Website: www.fib-international.org
e-mail: info@fib-international.org

Staying informed about the *fib*

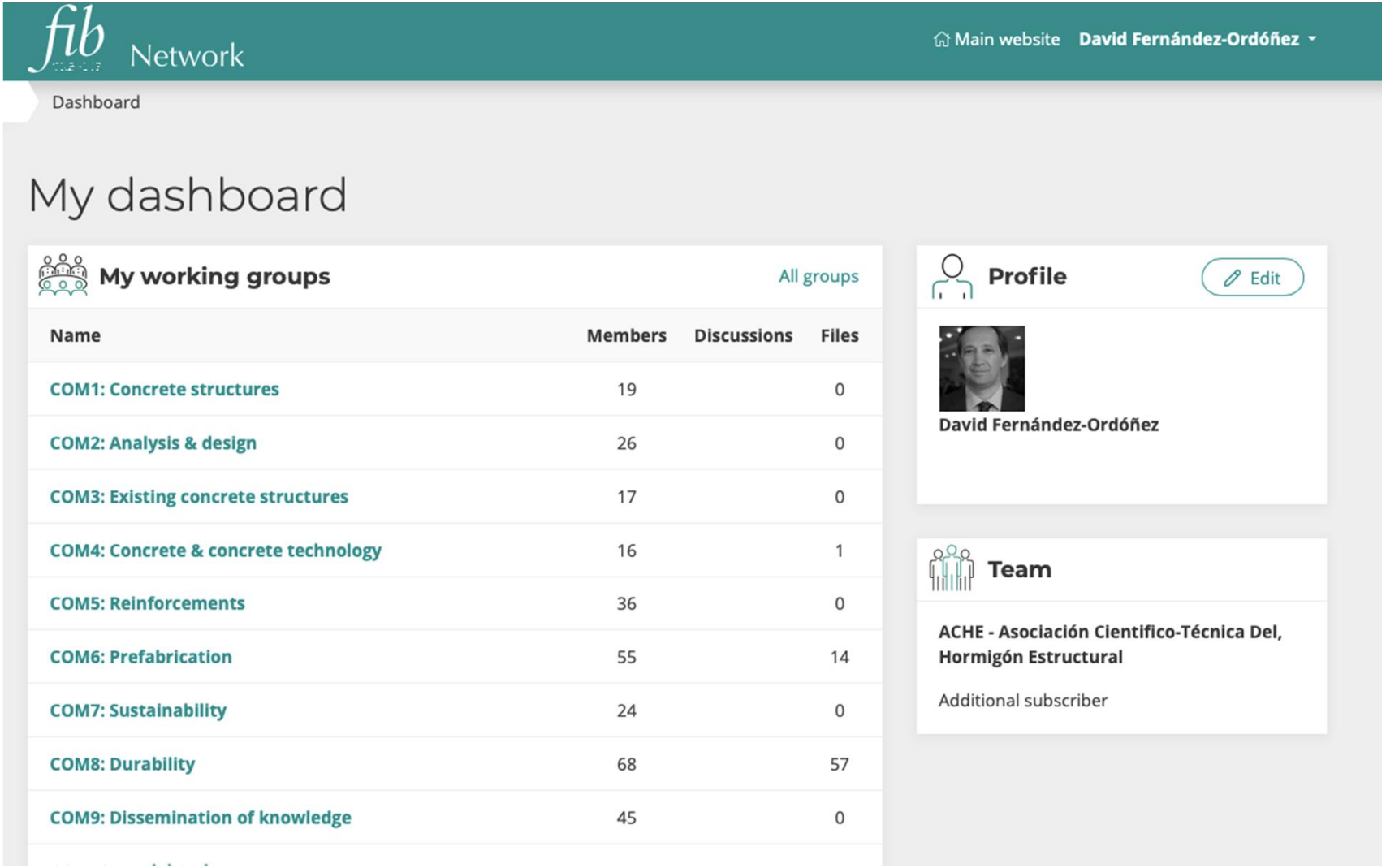
Website:
www.fib-international.org

e-mail: info@fib-international.org



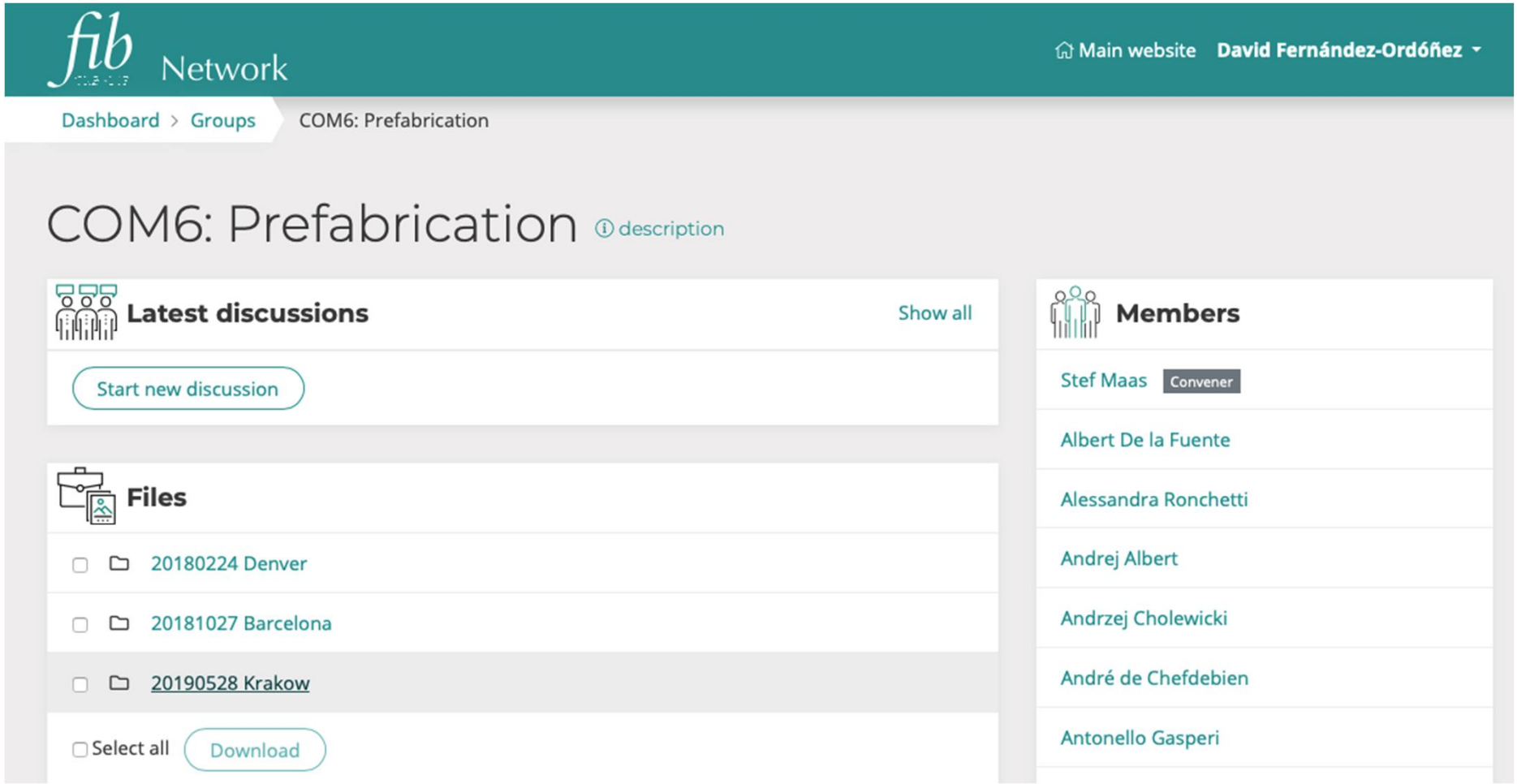
Staying informed about the *fib*

Website: *fib* Network



Staying informed about the *fib*

Website: *fib* Network



Staying informed about the *fib*

Linkedin:

fib – International Federation for Structural Concrete – Fédéra...
4.830 seguidores
1 día •

About two weeks left to submit your full paper for the fib Symposium in Shanghai! The keynote speakers include Prof Luc Taerwe, Dr Akio Kasuga, Prof Jean-Michel Torrenti, and Prof Xianglin Gu. http://fibshanghai2020.cn/

Ver traducción

Welcome

fibshanghai2020.cn

Staying informed about the *fib*

Twitter:

@fib_Intl

Young Members Group

Home - Commissions - YMG - Young Members Group

Motivation

The *fib* Presidium has approved the creation of an *fib* Young Members Group. All members of the Presidium have high expectations for the development of this group.

The *fib* thinks that it is crucial that young professionals are given the opportunity to fully participate in the activities of the organisation. They are welcome to participate in commissions and task groups and to become part of the decision bodies. However, young members do not actively participate in the development of documents and in the decisions of the *fib*.

The Young Members Group aims to build a framework that will allow young engineers to participate in the activities of the association and to bring their ideas to the working groups and the decision bodies.

Young engineers can bring new ideas and new ways of working to the *fib*.

Commission Chair
Andreas Sjaastad

Deputy Chair
Motohiro, Ohno

Young Members Group: Events

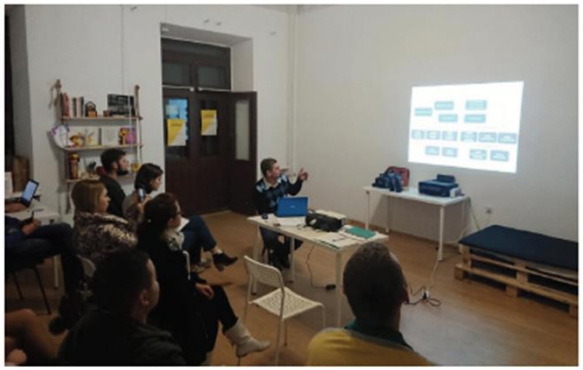
fib YMG Serbia Workshop

fib YMG Serbia Workshop

fib YMG Indonesia

fib YMG Russia

fib YMG Ukraine



fib YMG Ukraine meeting

International cooperation

- Memoranda of cooperation signed in since 2015 with:
  - ACI
  - RILEM
  - ACF
  - Alconpat
- Promote coordination between the organizations
- Arrange relevant joint activities
- Ensure effective coverage of fields of interest
- Find suitable solutions for joint publications

fib Awards and honours

Freyssinet Medal	**Recognizes outstanding technical contributions in the field of structural concrete**
Medal of Merit	**Recognizes outstanding contributions to structural concrete and to the *fib***
Honorary Life Members	**Recognizes significant personal contributions to the work of the *fib***
Awards for Outstanding Concrete Structures	**International recognition for concrete structures which demonstrate the versatility of concrete as a structural medium**
Achievement Award for Young Engineers	**Recognizes engineers younger than 40 years old**

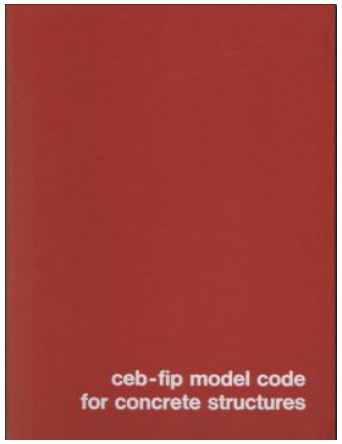
2018 Award-winning concrete structures


Butterffly web brigde. Japan

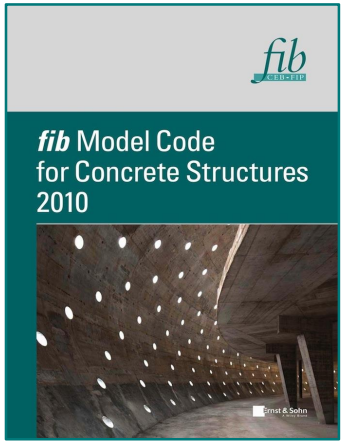

Roof Structure. La Laguna Cathedra. Spain


Micro House Tokyo Japan

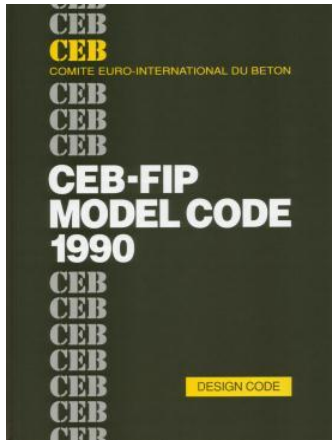
Evolution of Model Codes



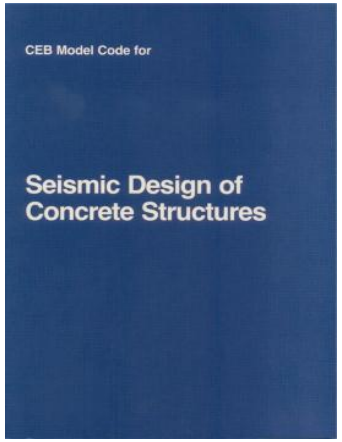
Model Code 1978



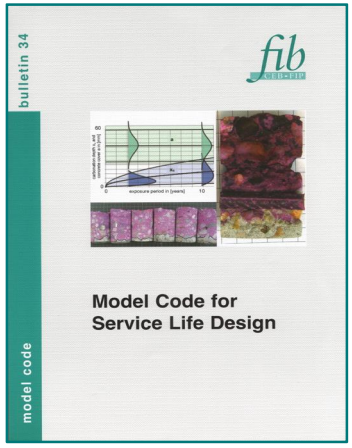
Model Code 2010



Model Code 1990



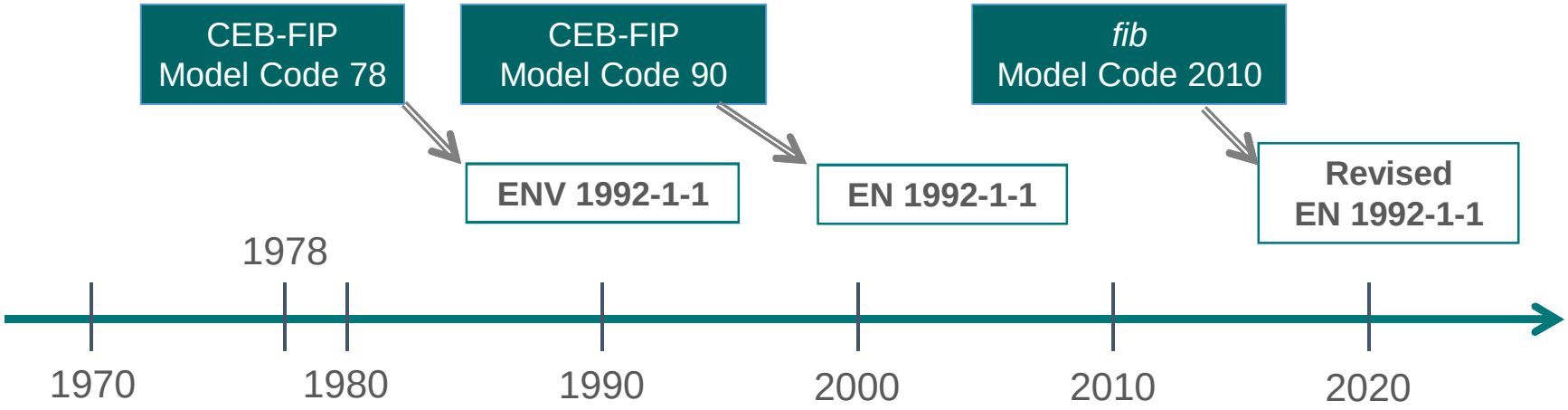
CEB Bull. 165 Seismic Design



fib Bull. 34 Service Life Design

Impact of *fib* (CEB-FIP) Model Codes

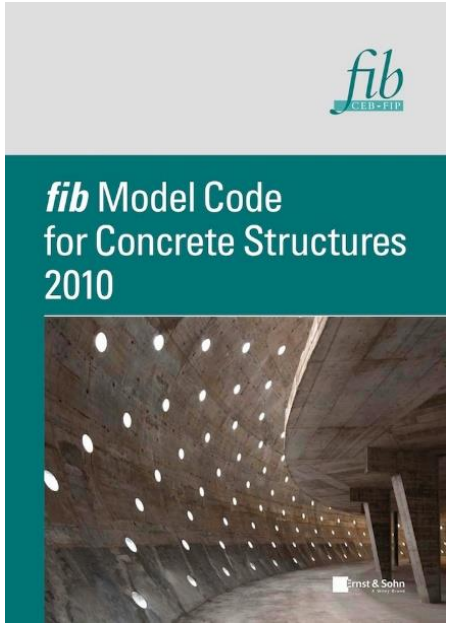
Strong influence on Eurocodes



Pronounced influence on Asian and African Model Codes

Model Codes are used as reference documents both in research and in design

fib Model Code 2010 *fib* Model Code 2020



Greatly extended technical scope and coverage

MC2010

5Nr Parts

10Nr Chapters

MC2020

9Nr Parts

35Nr Chapters

MC2020 Roadmap
specific aspects of Sustainability

- Verification of Sustainability
  - Include effect of avoiding replacement or reduction of interventions
  - Show concept to seek for best scenario for sustainability (saving resources and energy) through-life maintenance management.
- Performance criteria for Sustainability
  - Performance requirements for environmental impacts
  - Performance requirements for impacts on society
  - Performance requirements for economic impacts

MC2020 Roadmap
specific aspects of Sustainability

Chapters on Sustainability in the MC2020

- Chapter 3. Sustainability perspective.
- Chapter 24. Conceptual design.
- Chapter 27. Evaluation of structural performance.
- Chapter 27b. Evaluation of other social performance.
- Chapter 28. Evaluation of environmental performance.
- Chapter 29. Evaluation of economic performance.
- Chapter 30. Sustainability evaluation.

Commissions and Task Groups
Commission 7. Sustainability

Chair: Petr Hajek (Czech Republic)

Scope:

The main scope of Commission 7 (COM7) is to develop a strategy as to how to incorporate sustainability issues into the design, construction, operation and demolition of concrete structures. Design concepts of concrete structures should be based on a sustainability framework considering environmental, economic and social aspects.

The main focus should be on: the reduction of CO_2 emissions from concrete production, the reduction of energy use for construction and the operation of buildings (incl. thermal mass effect), improving the performance quality of the internal environment (acoustics, thermal well-being, etc.), the reduction of waste to landfill, the development of sustainability metrics and data requirements needed for Environmental Product Declarations and other quality assessment, recycling and use of recycled materials (incl. recycled concrete), resiliency of structures, etc.

The goal is to prepare a framework and data for the sustainable design of concrete structures to be implemented in the new *fib* Model Code MC2020.

Commissions and Task Groups
Commission 7. Sustainability

Task Groups:

TG 7.1 Sustainable concrete structures ï general framework

Convener: Hájek (Czech Republic)

TG 7.3 Concrete made with recycled materials ï Life cycle perspective

Convener: Noguchi (Japan)

TG 7.4 Sustainable civil structures

Convener: Kohoutková (Czech Republic)

Commissions and Task Groups
Commission 7. Sustainability

Task Groups:

TG 7.5 Environmental product declarations (EPD) and equivalent performance of concrete

Convener: Menna (Italy)

TG 7.6 Resilient structures

Convener: Asprone (Italy)

TG 7.7 Sustainable Concrete Masonry Components and Structures

Convener: Parisi (Italy)

The *fib* structure
COM7 Scope of Technical Work

- Main focus of technical work
  - Reduction of:
    - CO2 emissions
    - Energy use for construction and operation of buildings
    - Waste going to landfill
  - Improvement in the performance quality of the internal environment (acoustics, thermal)
  - Development of sustainability metrics and data requirements for EPDs
  - Recycling and use of recycled materials
  - Resiliency of structures

Main goal:
To prepare a framework and data for the sustainable design of concrete structures to be implemented in a new Model Code.

The *fib*'s structure

Other groups in the *fib* addressing Sustainability

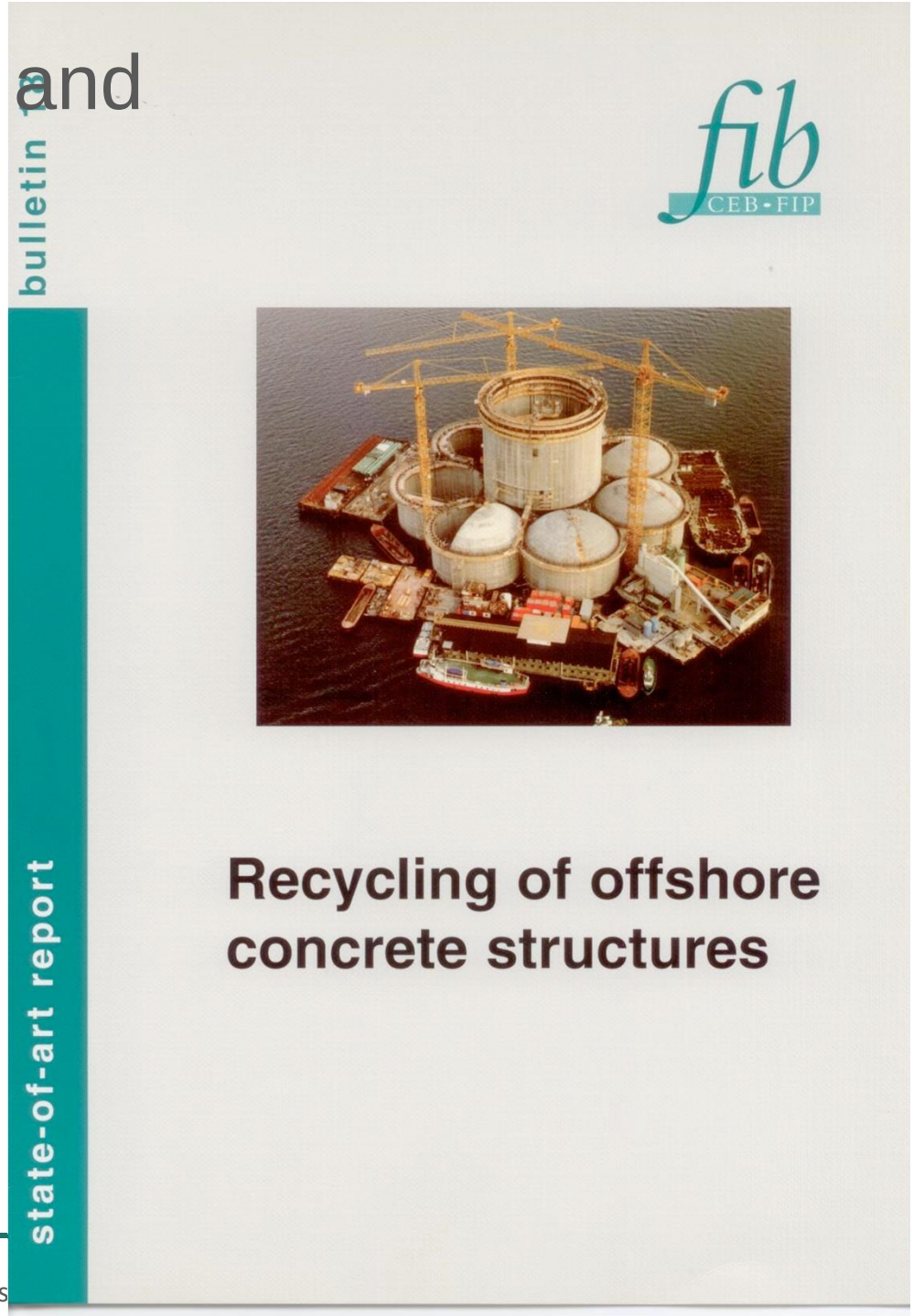
- **Commission 1 Structures. Chair Moussard**
  - T1.5 Structural sustainability. Chair Kasuga
- **Commission 6 Prefabrication. Chair Maas**
  - T6.3 Sustainability of structures with precast elements. Chair Fernández-Ordóñez
- **Commission 8 Durability. Chair Pielstick**
  - T8.3 Operational document to support Service Life Design. Chair Andrade
  - T8.4 Life cycle cost (LCC) - Design life and/or replacement cycle. Chair Campos e Matos

Environmental aspects and Sustainability

Bulletins, published

Bulletin 18

Recycling of offshore concrete structures



Environmental aspects and Sustainability

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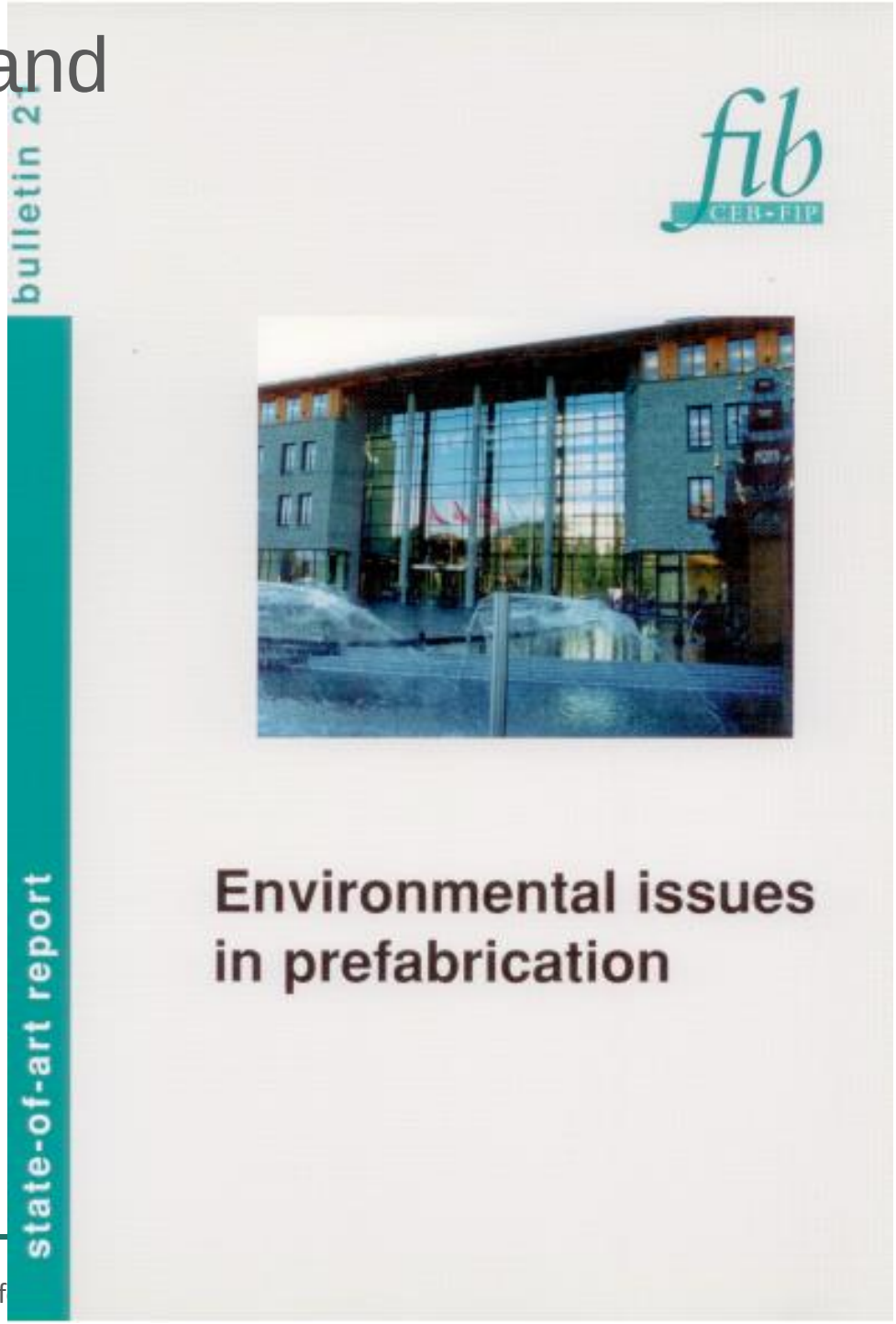
Environmental issues in prefabrication



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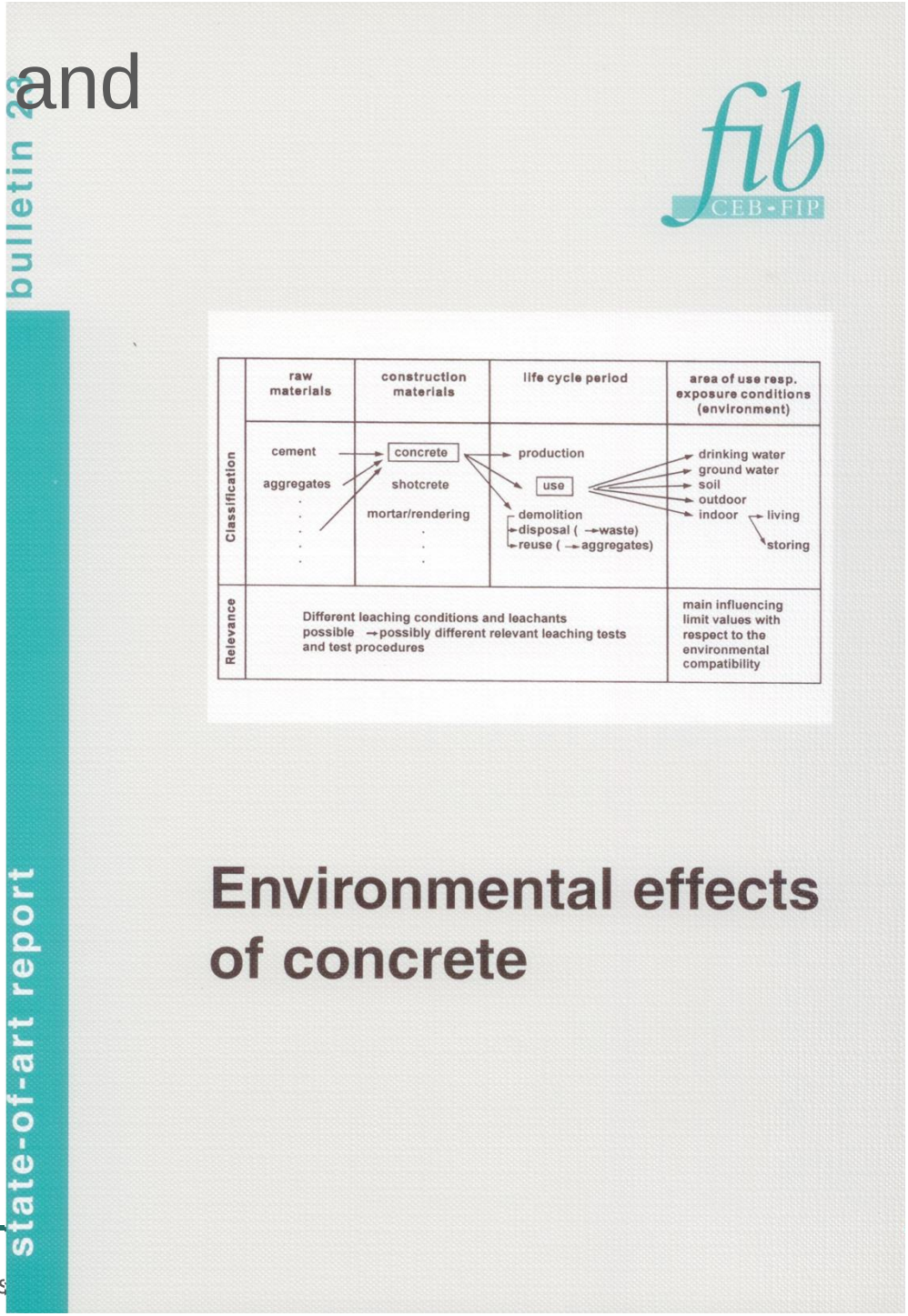
Environmental effects of concrete



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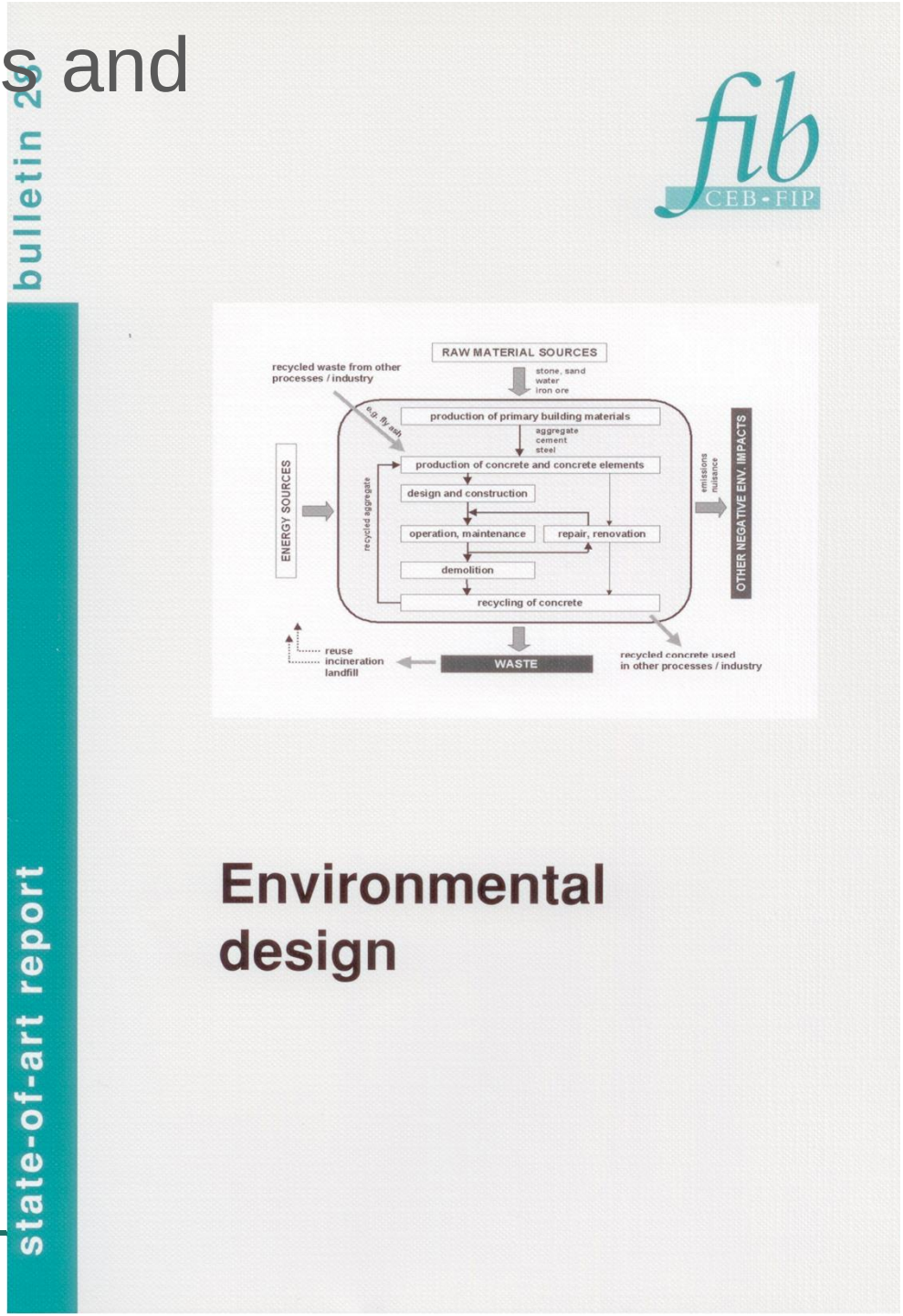
Environmental design



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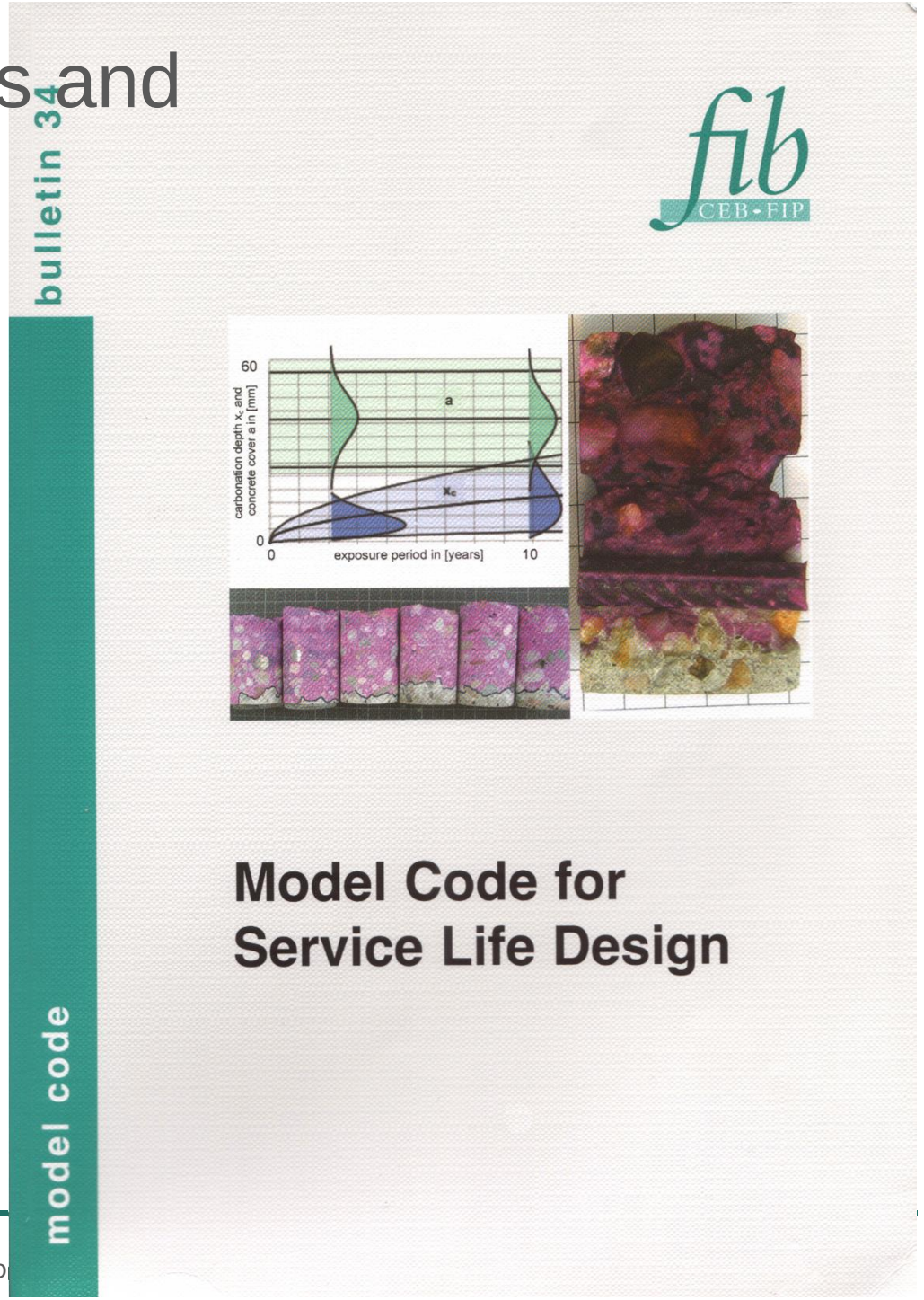
Model Code for Service Life Design



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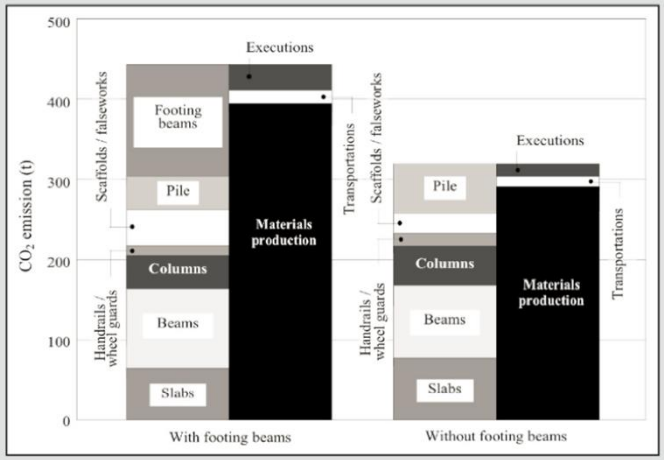
Environmental design of concrete structures ï general principles

bulletin 47

technical report



Environmental design of concrete structures – general principles

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Guidelines for green concrete structures

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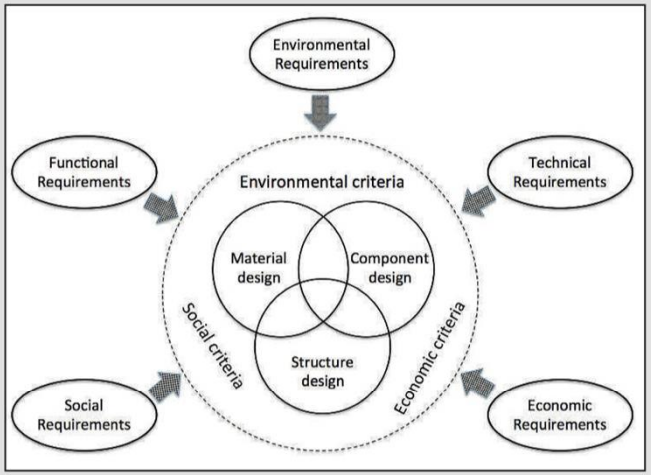
Integrated life cycle assessment of concrete structures

bulletin 71

state-of-art report



Integrated life cycle assessment of concrete structures

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Bulletin 88

Sustainability of precast structures

Environmental aspects and Sustainability

Bulletin 88: Sustainability of precast structures

Proposed Tree, Criteria and Indicators

Requirement	Criteria	Indicator	Units	Value Function
R_1 Economic (λ_{R1} = 35%)	C_1 Total Costs (λ_{C1} = 42%)	I_1 Direct and indirect costs (λ_{11} = 100%)	€	DS
	C_2 Quality (λ_{C2} = 19%)	I_2 Non quality costs (λ_{12} = 100%)	Attrib.	
	C_3 Dismantling (λ_{C3} = 9%)	I_3 Dismantling costs (λ_{13} = 100%)	€	DS
	C_4 Service Life (λ_{C4} = 30%)	I_4 Service costs (λ_{14} = 61%)		DS
		I_5 Resilience (λ_{15} = 39%)		IS
R_2 Environmental (λ_{R2} = 38%)	C_5 Consumption (λ_{C5} = 44%)	I_6 Cement (λ_{16} = 22%)	Ton	DS
		I_7 Aggregates (λ_{17} = 21%)		
		I_8 Steel (λ_{18} = 21%)		
		I_9 Water (λ_{19} = 12%)		
		I_{10} Plastics and others (λ_{110} = 10%)		
		I_{11} Reused materials (λ_{111} = 14%)		IS
	C_6 Emissions (λ_{C6} = 32%)	I_{12} CO_2 emissions (λ_{112} = 62%)	$TnCO_2$-eq	DS
		I_{13} Total waste (λ_{113} = 38%)	Ton	
	C_7 Energy (λ_{C7} = 24%)	I_{14} Materials (λ_{114} = 37%)	MWh	
		I_{15} Construction (λ_{115} = 26%)		
		I_{16} Service (λ_{116} = 37%)		
R_3 Social (λ_{R3} = 26%)	C_8 Third parties (λ_{C8} = 37%)	I_{17} Comfort (λ_{117} = 52%)	Attrib.	
		I_{18} Noise pollution (λ_{118} =15%)	Db.	
		I_{19} Particles pollution (λ_{119} = 20%)	Ton	
		I_{20} Traffic disturbances (λ_{120} = 13%)	Attrib.	
	C_9 Health and Safety (λ_{C9} = 63%)	I_{21} Risks. Production (λ_{121} = 23%)		
		I_{22} Risks. Construction (λ_{122} = 23%)		
		I_{23} Risks. Service life (λ_{123} = 55%)		

International Federation for Structural Concrete
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