

Infrastructure Project

“Infrastructure Economics and Feasibility Study”

Prof. Dr.-Ing., Dipl.-Wirtsch.-Ing. H.W. Alfen

Dr.-Ing., Dr. (AM) N. Badasyan

Marienstraße 7a, 99423, Weimar

Contact Details:

Tel: +49 (0) 3643- 58 45 49

Email: norayrbadasyan@uni-weimar.de

Contents

Project Description	3
Project Objectives	3
Assessment/Grading 12 ECTS	4
Structure of the Project.....	5
Literature to Read.....	7

Project Description

High quality infrastructure has a crucial role in economic development and growth of the country, increasing the life quality of the society and the competitiveness of the countries in the international markets. The lack of the financial resources and underdeveloped infrastructure assets can lead to sub-optimal economic performance, slow or no economic development and low quality of life.

This means that the public sector has to find relevant financial resources to develop and maintain appropriate infrastructure assets in order to provide the society with the needed social welfare and relevant macroeconomic value.

Nevertheless, the public sector does not always have relevant financial resources and often tries to enter into new partnership models with the private partners aiming to cover the existing gap. In other words, the public sector tries to attract private investors for the public provision of different sectors that used to be known as the monopoly of the state.

The question is what kind of business and organizational models to choose in order to provide the economic results for the country and to set relevant attractive financial environment aiming to attract the private investors.

The goal of the students in this class will be to develop a relevant infrastructure project with private investments that will meet the interests of both public and private partners. From this perspective the students will be divided into two teams. **The first team** (1-5 students) will introduce the public partner (Government) aiming to develop the project in a way that it can generate required social and macroeconomic benefits. On the other hand **the second team** (1-5 students) will introduce the private company aiming to get maximal return of investments from the project. During the class the teams have **to prepare presentations** (every second week) and **enter into negotiations with each other** (every second week) in order to find optimal solutions for the project. Each team have to be prepared to understand the suggestions of the other team in order to be able to prepare own strategy. In the end of the project both teams will submit the developed model for the project in a written form and will present it for the final day of presentation.

Project Objectives¹

The objective of this project for the students is to understand the essence of various public infrastructure provision models as **policy making and financially viable project development tool**. The aim for the students is **to develop a practical based infrastructure project** during which the following models and evaluation methods will be exercised:

1. Public Infrastructure Provision Organizational Models

- Privatization Models
- Partnership Models
- Contractual Models

¹ The whole project will be conducted in English (class materials, presentations, exercises, written papers)

- Financial Models
- Business Models
- 2. Methods for Economic and Financial Analyses**
- Cost-Benefit Analyses
- Multi-Criteria Analyses
- Cost-Effectiveness Analyses
- 3. Tasks/Development Methods**
- Economic Cash Flow Analyses
- Financial Cash Flow Analyses
- Due Diligence Analyses
- 4. Software**
- E.g. HDM-4

Assessment/Grading 12 ECTS

Active Participation and Attendance (10%)

The active participation during the classes and presentations will take a central role for the grading. Each member of the team will have unique tasks which have to be presented and discussed with the members of the other team members and members of the opponent team.

Presentations (30%)

The grade will be based on the implication and usage of the methods and ideas derived from the class. The used methods have to be based on the economic and financial evaluation methods. The presentations have to be clear using similar format for the whole team clearly highlighting the ideas and used methods of the team.

Submission of a Written Form of the Developed Project (30%)

Each team has to submit a clear text clarifying the solutions made by the team in a written form. The assessment will be based on:

- You typed the names of all the team members on the front page
- You saved your project and sent to me as a Word File (so I can give a feedback before the final presentations using the Track changes method)
- You used page numbering
- You used 11-point font size
- You used Arial font type
- Analyses are based on the derived methodologies from the class and are clearly explained **in English**
- There is a clear logic and connection between different chapters of the paper
- The paper includes introduction, objectives, methodologies and summary sections
- The sentences clearly introduce to the reader the topic that you have touched
- All the necessary methods for your analyses are used

- Appropriate citations are used (e.g. Wikipedia citation will not be counted)
- You used Harvard in-text citation style (preferably Citavi)

Final Presentation (30%)

Your team presents a well-justified presentation clarifying why the solutions should be acceptable by both teams.

Structure of the Project

Meeting and Date	Name	Description	Lecturer
Class 1	Introduction to the Course	During the first meeting the students are introduced to the description of the project, objectives, methodologies to be used and tasks to be completed. At the same time the final teams will be set during the first meeting. The teams will receive the description of the projects they intend to develop.	NB
Class 2	Public Infrastructure Provision Toolbox: Privatization, Partnership, Contractual, Financial and Business Models	The essence of the public infrastructure provision organizational models is introduced to the students.	NB
Class 3	First presentations of the teams	The team "Public" will focus mainly on the possible benefits that can be assured from the realization of the project. At the same time the team will consider the organizational models and explain on the privatization path the differences of the latter and justify the chosen models. The team "Private" will mainly focus on the options of organizational models from the CF perspective and clarify	NB

		the main differences and possible results. Discussions and negotiations between the teams are required.	
Class 4	Financially and Economically Viable Projects: Introduction to the main financial and economic components and evaluation methods.	During this class the students will learn the main criteria to be considered during the project development phase in order to find economically and financially viable projects. HDM-4 software will be introduced to show how the economic results are considered in practice and relevant gaps will be discussed.	NB
Class 5	Second mid-term presentation of the teams	The team "Public" will present the main factors that will lay as a fundament for the calculations of the economic internal rate of return (EIRR). Possible combinations and calculation of relevant level of EIRR is expected from the team. The team "Private" will focus on the exploration of different scenarios and combinations together with the calculations of financial internal rate of return (FIRR)	NB
Class 6	The Link between the Business Models and Economic and Financial Results	The main techniques for sensitivity analyses will be introduced to the students. The possible impacts of the business models on economic and financial results will be considered within case study examples.	NB
Class 7	Third mid-term presentation	The team "Public" presents how different business models will impact the economic	NB

		results of the projects. The team "Private" presents how the different business models impact on the level of FIRR.	
Class 8	Negotiations and Structure of the Written Papers	Student teams meet each other to discuss and negotiate the models for the project and work on the structure of the written papers. Lecturer moderates the meeting.	NB
Class 9	Submission of the Written Papers	Both teams submit the written papers which will be the fundament for the final day presentations.	AL, NB
Class 10	Final Defense	Both teams present their final projects	AL, NB

Literature to Read

Books from the Chair of Construction Economics (Management), Bauhaus-Universität Weimar

Barbara Weber, Mirjam Staub-Bisang, Hans Wilhelm Alfen (2016), "Infrastructure as an Asset Class: Investment Strategy, Sustainability, Project Finance and PPP", 2nd edition, ISBN: 978-1-119-22654-3;

Bernd Buschmeier, Hans Wilhelm Alfen (2014), "Projektentwicklungsmodell für die Optionen der Beschaffung von Bundesfernstraßen : Ökonomisches Entscheidungsmodell begründet auf einer optimierten institutionellen Lösung und einer vervollständigten Nutzerfinanzierung", ISBN: 978-3-95773-165-4;

Norayr Badasyan, Hans Wilhelm Alfen (2017), "Public Infrastructure Project Development Framework: Identifying an Optimized Organizational Model for the Transport Sector of the Republic of Armenia", ISBN: 978-3-95773-229-3;

Books

Asian Development Bank (2013), "Cost-Benefit Analyses for Development: A Practical Guide", ISBN 978-92-9092-957-4;

Edward Yescombe (2007), "Public-Private Partnerships: Principles of Policy and Finance", 1st Edition, ISBN: 978-0750680547;

Guides

European Commission (2014), "Guide to Cost-Benefit Analyses of Investment Projects: Economic Appraisal Tool for Cohesion Policy 2014-2020";

OECD (2002), "Impact of Transport Infrastructure Investment on Regional Development";

Transport and Main Roads (2011), "Cost-Benefit Analyses: Theoretical Guide", 1st Edition;

Case Studies

European Commission (2004), "Resource Book on PPP Case Studies".