

# Building Production Systems

## Selection of Building Construction Technology by

Alaattin Kanoglu

Assoc.Prof.Dr.

### Questions

Is there any construction technology that is absolutely preferable for any kind of projects?

What are the basic parameters to be considered in selection of construction technology for a certain project?

### Basic parameters of projects to be considered in technology selection

- Type of building(s) in project
- Size of project (total m<sup>2</sup>, number of storeys etc.,)
- Number of the buildings in project
- Repetitive character of project
- Durational limits or targets of project
- Cost limitations of project
- Cash flow pattern of project
- Environmental conditions of project (climate, topographic conditions, etc.)

### Basic Parameters for Technology in Technology Selection

- Speed of technology (cycle period)
- Dimensional flexibility (limits for spans)
- Typological flexibility
- Cost of technology
  - Investment Cost
  - Production Cost
  - Storage Cost
  - Transportation Cost
  - Assembly Cost
- Distance between factories and site (in prefabrication)

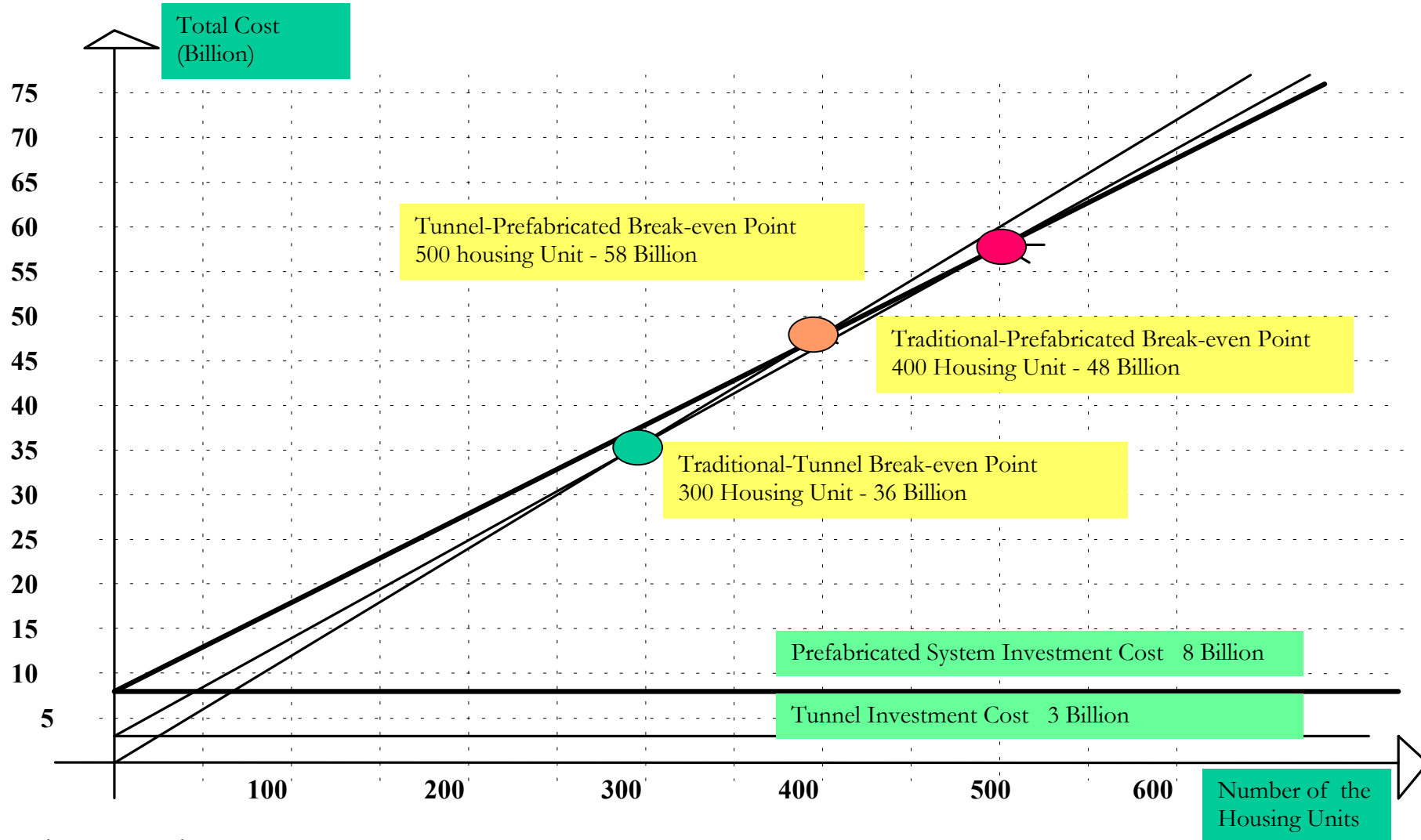
### Break-Even Point Analysis

	<i>Investment Cost</i> (Billion)	<i>Unit Cost</i> (Million)
<i>Traditional System</i>	<b>0</b>	<b>120</b>
<i>Tunnel Formwork System</i>	<b>3</b>	<b>110</b>
<i>Prefabricated System</i>	<b>8</b>	<b>100</b>

## Break-Even Point Analysis (Table)

	Investment Cost (Billion)	Unit Cost (Million)	100 Housing Unit	200 Housing Unit	300 Housing Unit	400 Housing Unit	500 Housing Unit	600 Housing Unit
Traditional	-----	120	12	24	36	48	60	72
Tunnel Formwork	3	110	14	25	36	47	58	69
Prefabricated	8	100	18	28	38	48	58	68

## Break-Even Point Analysis (Graph)



## Determining formwork capacity for Tunnel Formwork System

### Data:

- Number of housing units: 1000 units
- Project duration for structural system: 1 year (365 days)
- Cycle of tunnel formwork system: 3 days

### Question:

- How many set of formwork is needed to complete the structural system in time?

### Solution:

Number of work days (assumption)

$$365-65=300 \text{ days}$$

$$\text{Number of cycles in a year} = 300/3=100 \text{ cycles}$$

$$\text{Number of housing units that must be produced in each cycle} \\ = 1000/100=10 \text{ housing units must be produced in each cycle}$$