

Climate-Friendly Urban Design Process in Old Towns Alongside the Persian Gulf, Case Study: Bushehr

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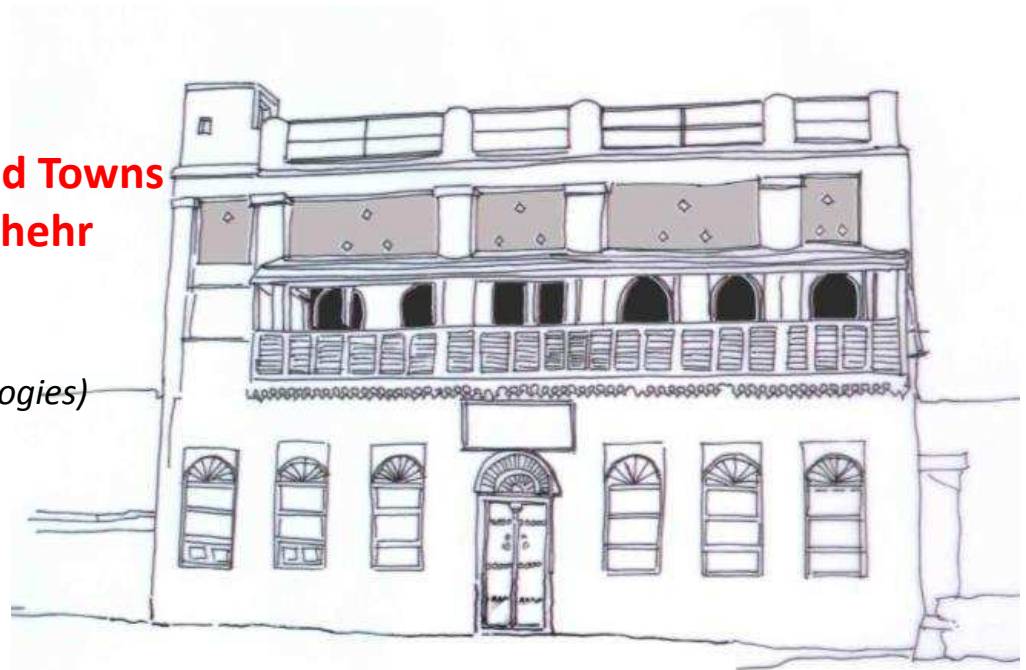
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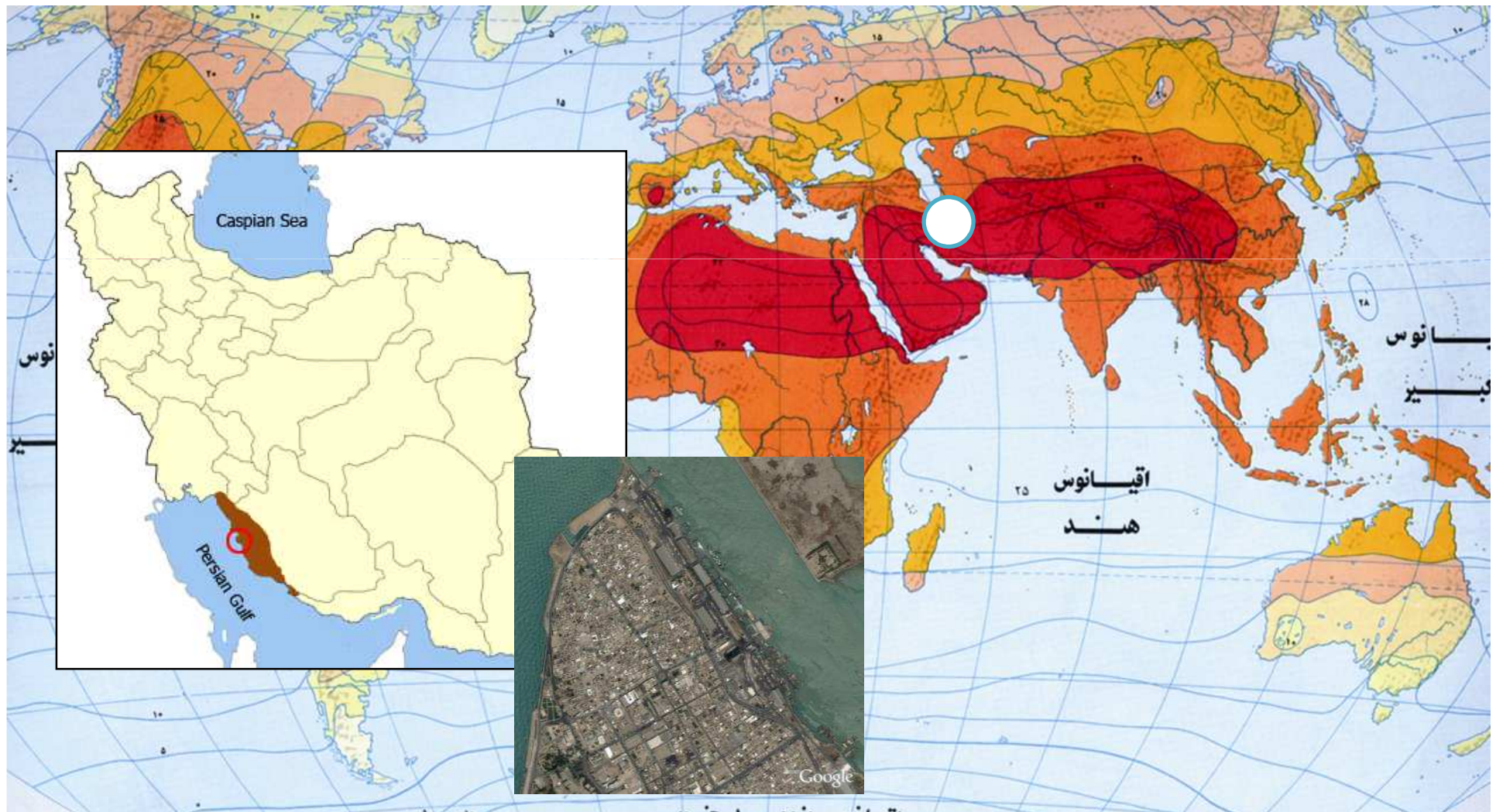
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The northern side of Persian Gulf in Iran with hot and humid climate has a rich treasure of urban development during history.

Bushehr is one of big cities in the region that a context for learning traditional urban design according to climate consideration. Especially in Bushehr old town a hierarchy of climatic design can be seen from site selection to building details.





Problems

During these two decades, urban design projects have been started in the old town to provide a better context for urban life.

In most of these projects, climate consideration of urban development has not been emphasized as a key factor.

So, climatic function of urban spaces in the old town has changed and climatic comfort has decreased in urban spaces.

This conflict between new projects and old context design with climate consideration brings up a big question:

that should be a specific urban design process in sensitive climate?



Methodology

This research tries to introduce a climate friendly process for urban design projects in Bushehr old town.

Thus, as a first step traditional climatic design principals in the old town has been discovered and analyzed base on scientific literature review.

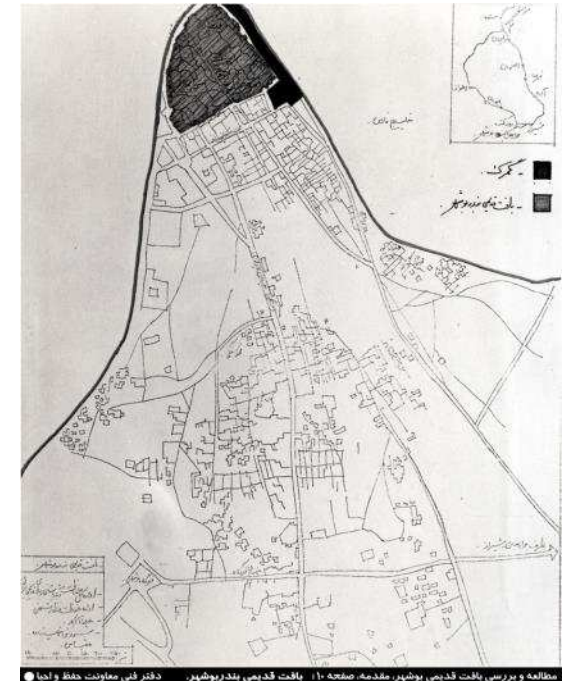
Then, main urban design projects have been evaluated based on climatic consideration.

Finally, a climatic friendly process has been suggested to enhance the environmental quality of the old town in urban regeneration projects.



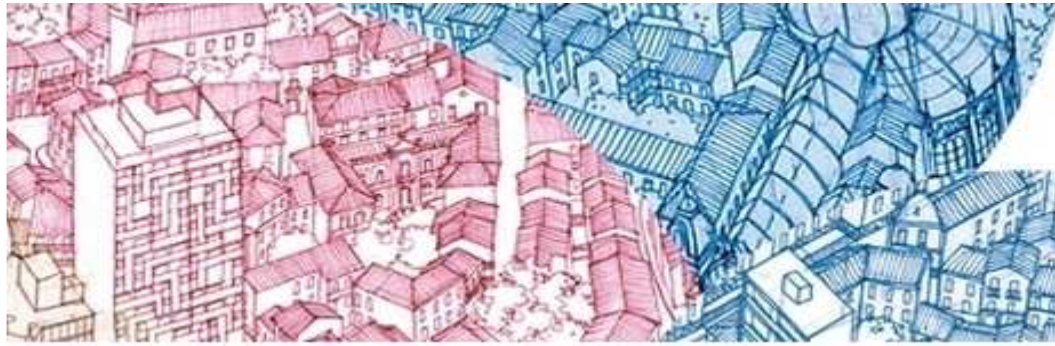
Learning from traditional design in old Bushehr

Site selection and direction



One of the characteristics of Bushehr location in comparison with other cities alongside Persian Gulf is its peninsula composition

One of the consequences of Bushehr position is forming and directing main streets to sea to conduct maximum wind.



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Streets

The H/W of streets produces maximum shadow in more hours of day. Minimum enclosure ratio (w/h) is 1/2. In some streets we can see 1/6 ratio

A lot of junctions with open spaces provide a context for wind distribution and maximum exchange of wind and buildings

Main streets have oriented to the sea for catching the wind of sea





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Streets in Bushehr have a special profile. The street width has decreased from down to up. This special profile increases air circulation

Buildings try to catch maximum wind of streets. So there is a projection in first floor of buildings

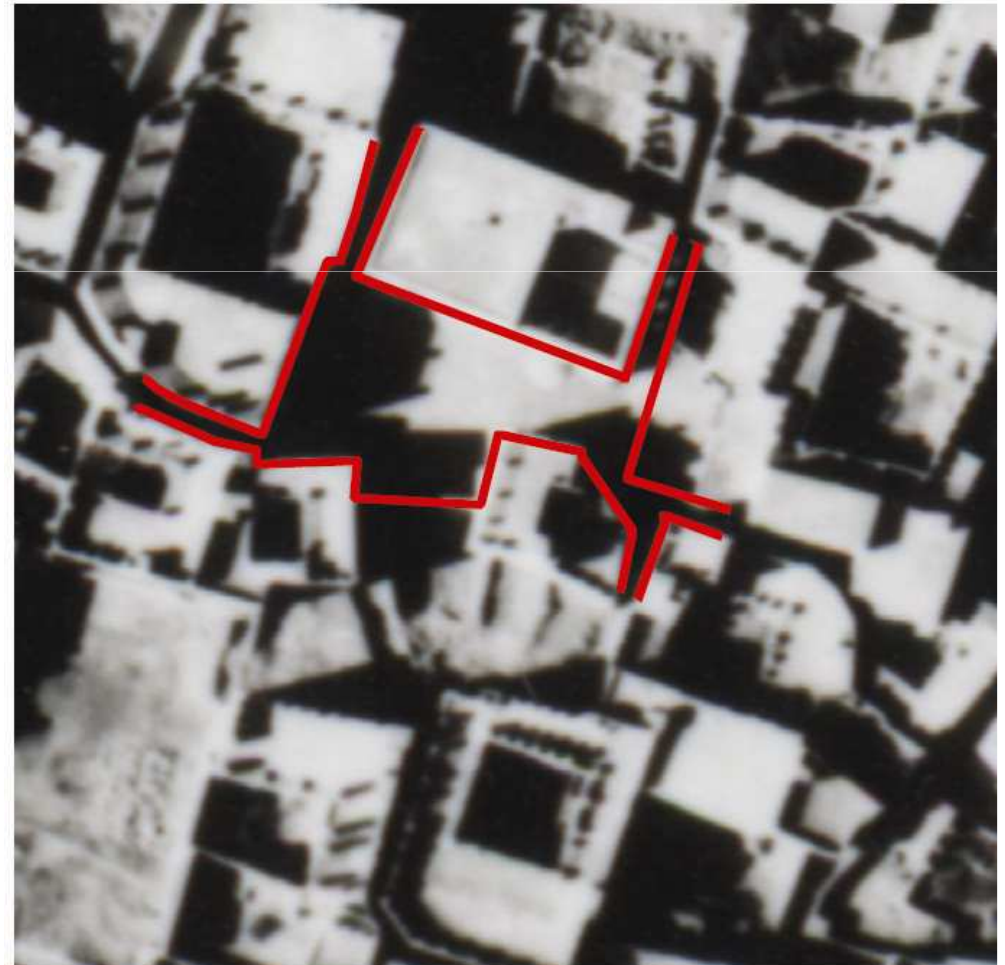




Plazas

One of climatic initiatives in these plazas of old Bushehr is high building located at the edge of these spaces among lower buildings.

This location has led to disturb wind and conducted it to ground surface and also shade on other buildings and plaza

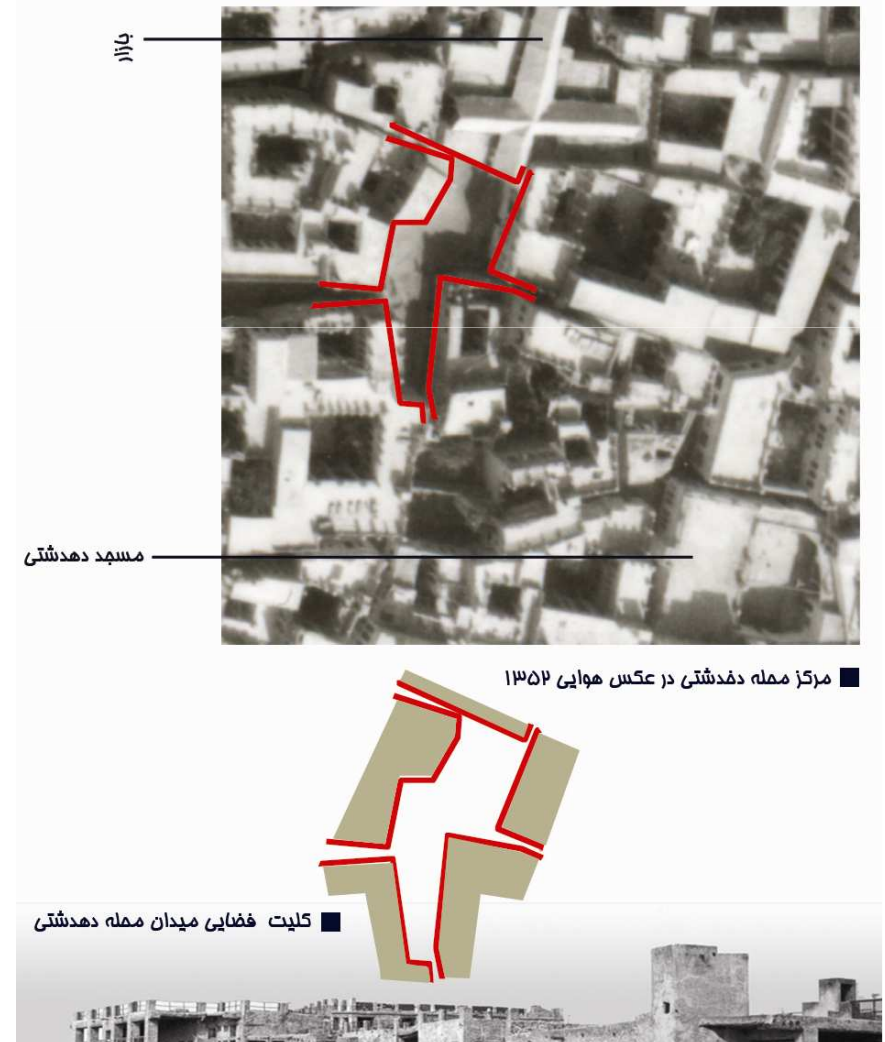




Form of plazas also have affected from wind and sun.

These spaces have created with irregular and broken form that a lot of streets opened to them.

This form has affected on wind disturbance and distribution and also creating shadow in all times of day





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Architectural elements

Shenashir

Shenashir is a unique indicator of old Bushehr that diversity in its construction style has provided diversity in urban escape







It's a place for using pleasant wind with shadow that provide a close access from private space of room to public space of city

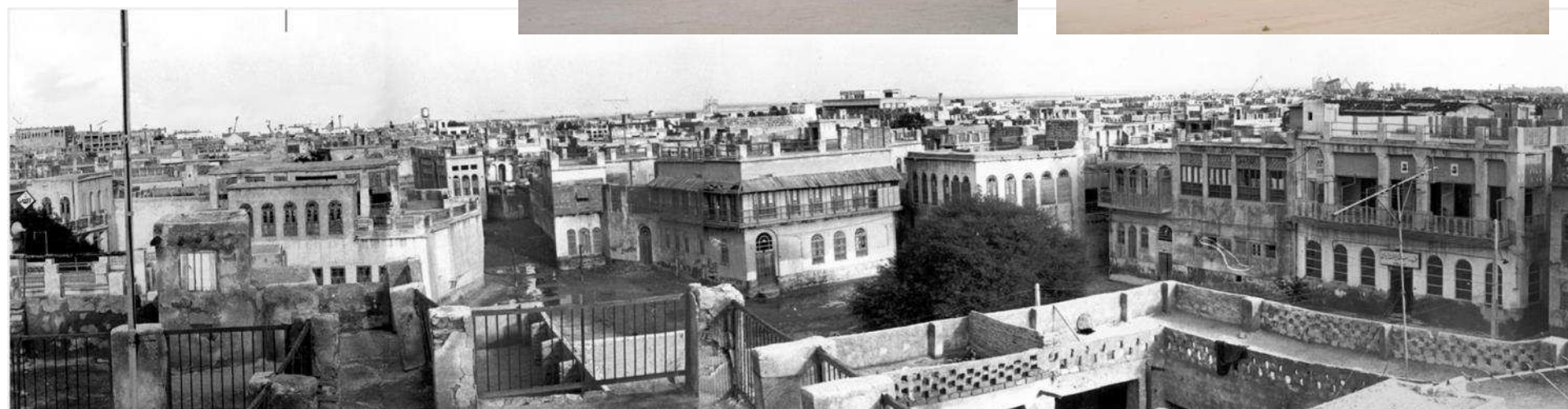
Shenashir can be imaged as private spaces efforts to use much flow of wind



What happened in new project in Old Bushehr?



Change in the form of streets, plazas and buildings





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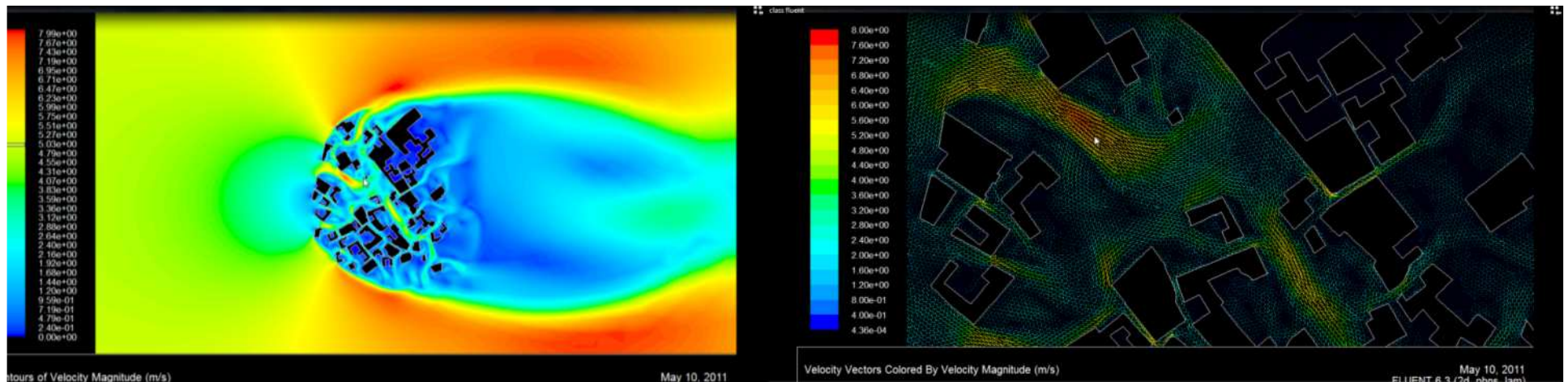
3 projects have analyzed in Kuti quarters:

- Plaza
- Organic streets that conduct maximum wind
- direct streets at the edge of quarter

The whole quarter has been modeled in Fluent software.



Kuti quarter CFD analysis shows maximum change in climatic function of streets, plazas and buildings



What can we do in urban design process in Old Bushehr?

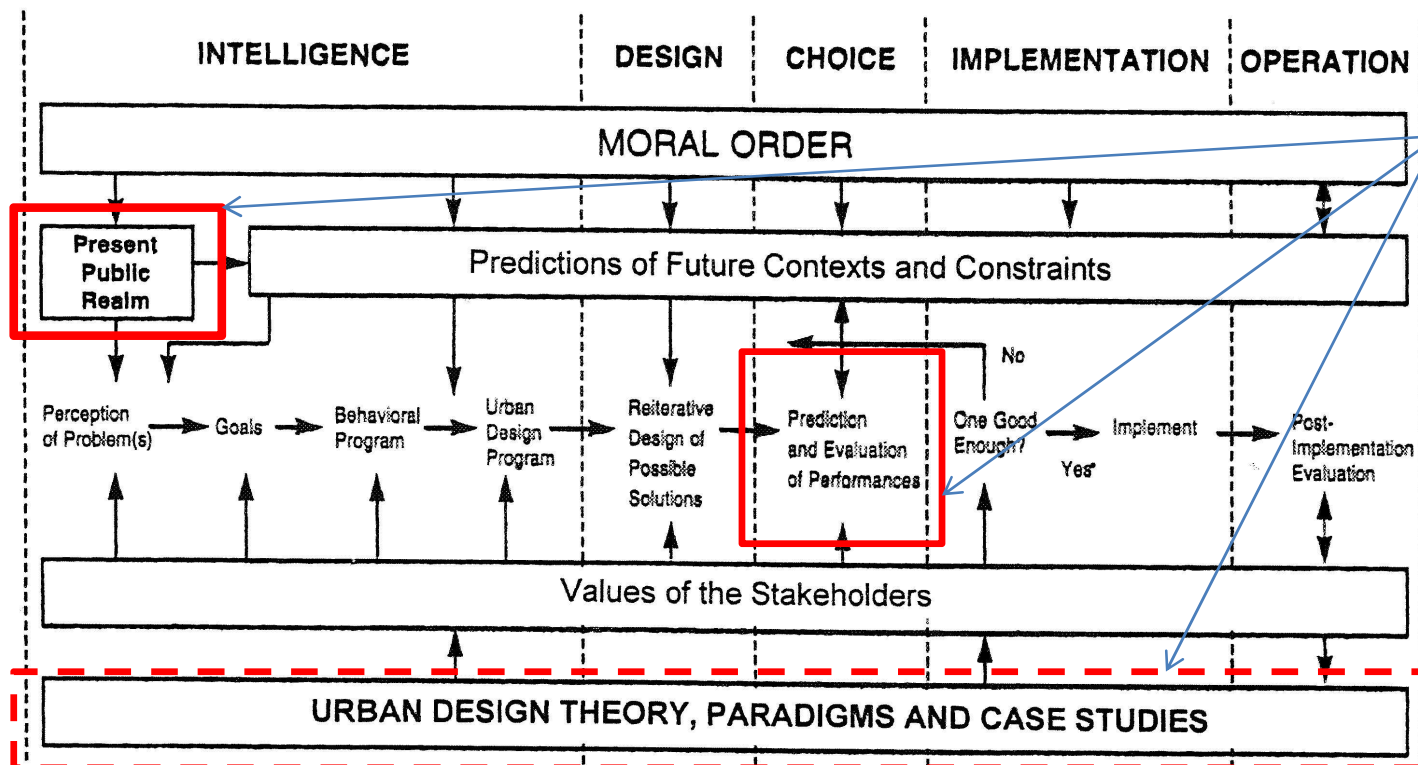


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A model of rational urban design process by Jan Lang in
Urban Design: Typology of Procedure and Products(2005)



Key stages to adapt
the process in
A climate sensitive
context



It's needed to use the circle in the whole process of urban design process in old Bushehr

Thank you

