

The background of the slide is a composite image. The top half shows a hazy cityscape with several tall, modern skyscrapers. The bottom half shows a lush green park with manicured trees and a wooden deck area with some furniture. A large white rectangle with a blue border is centered on the slide, containing the main title and project supervisors' names.

Maintenance planning for hydropower plants

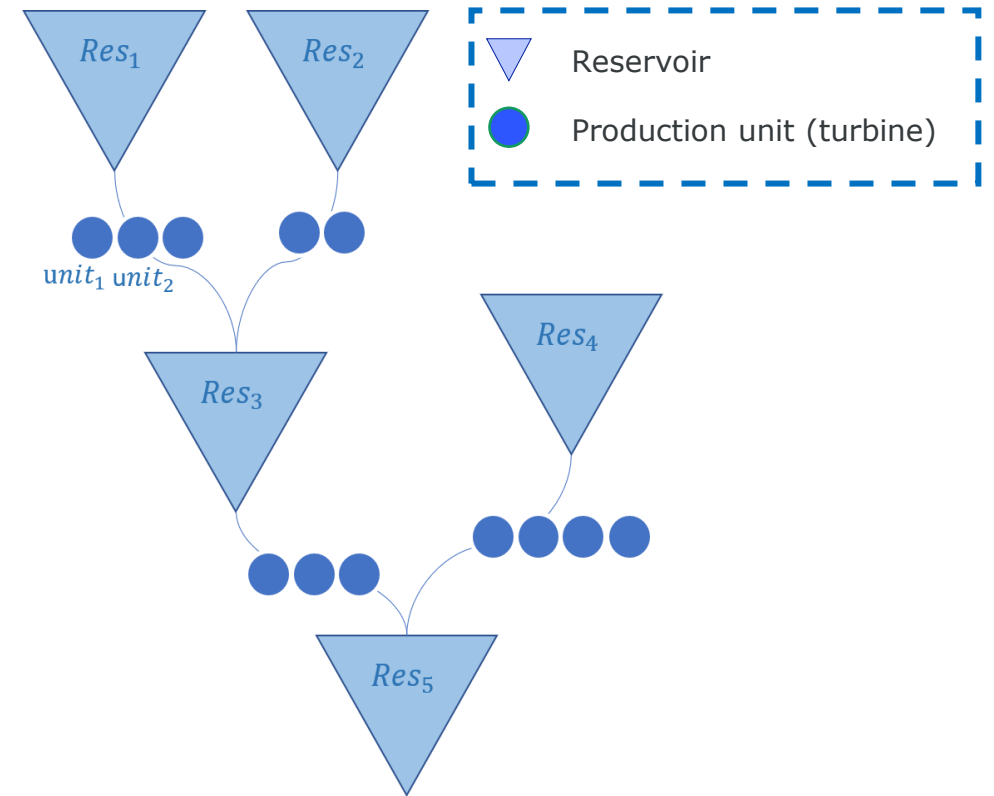
Project supervisors: Wim Van Ackooij, Claudia d'Ambrosio, MiguelAnjos



What does a hydro valley look like ?



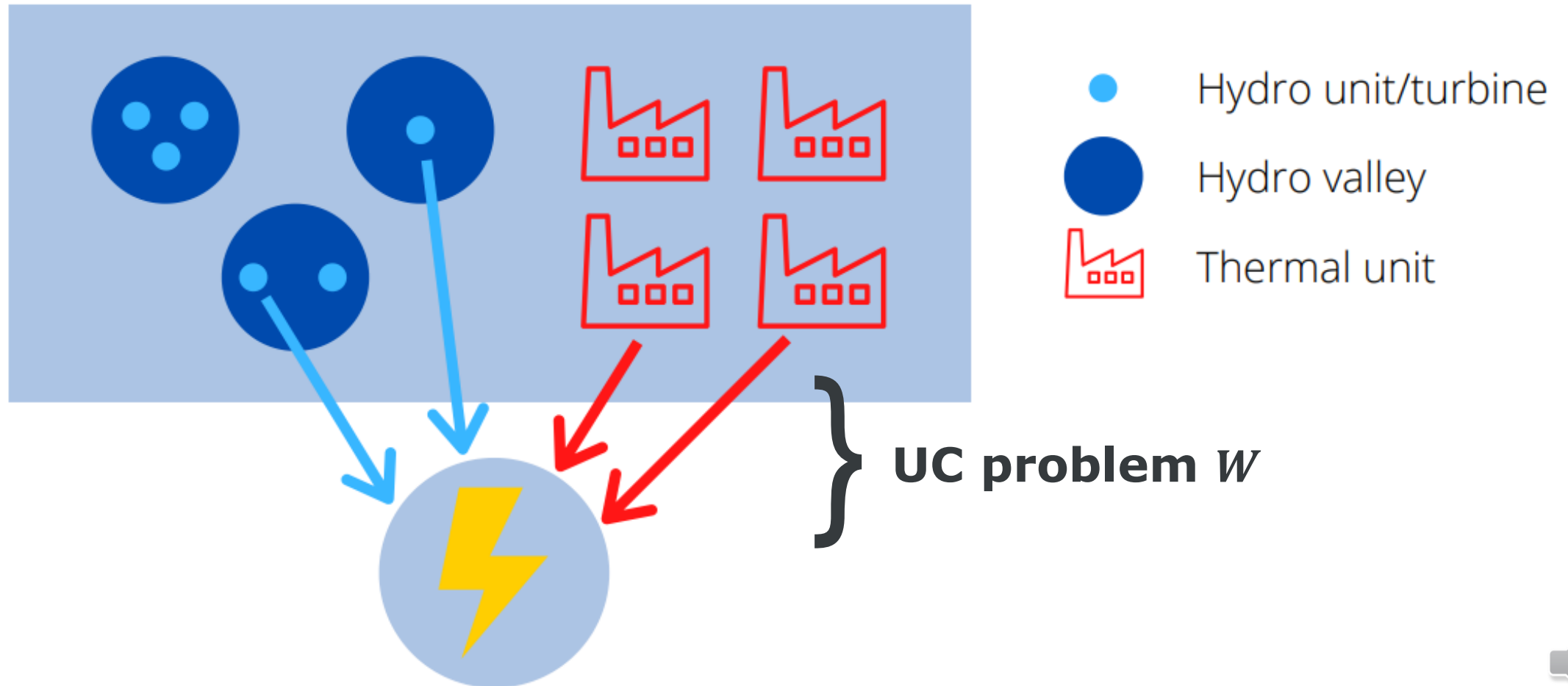
Laúca Hydropower Plant, Angola



Scheme of a full hydraulic valley

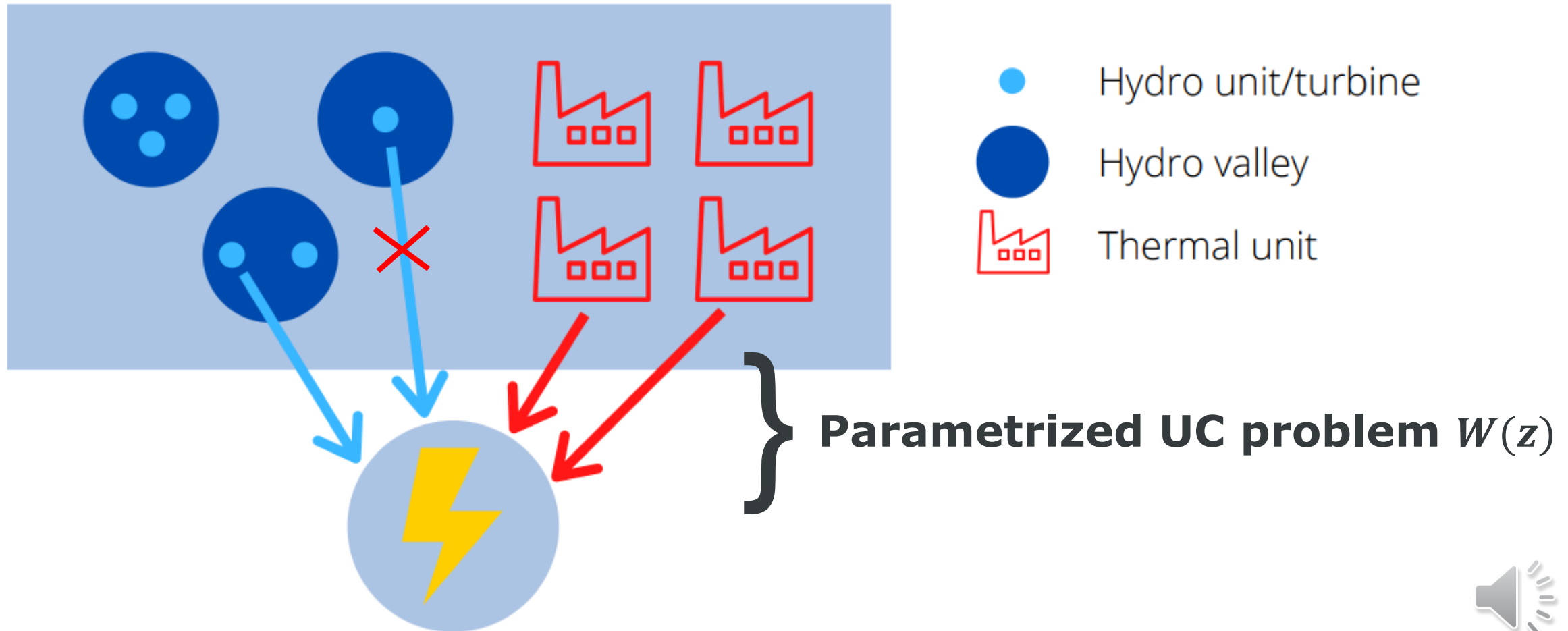


How does a hydropower plant work ?

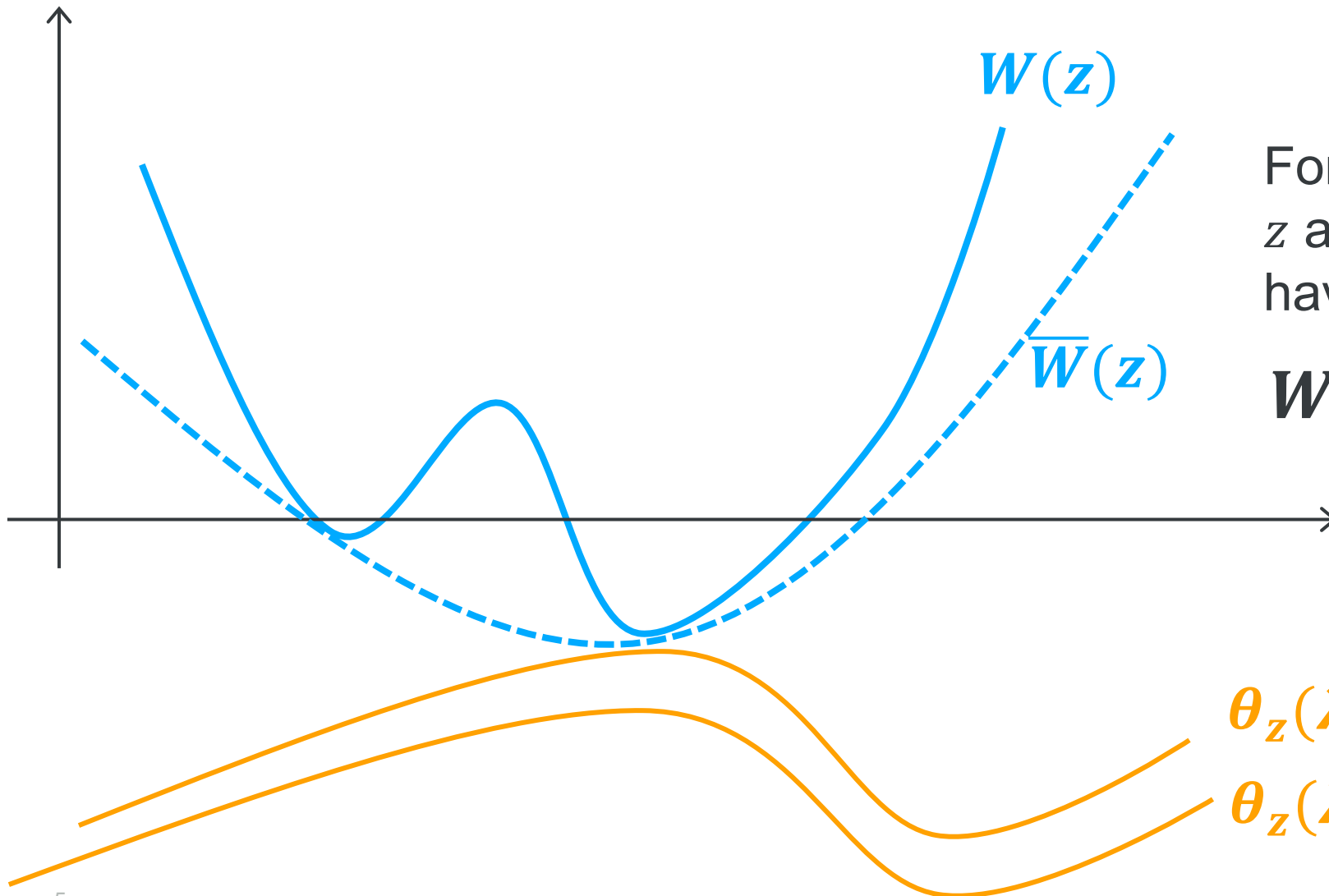


How does a hydropower plant work ?

With maintenance



Convex surrogate \bar{W}

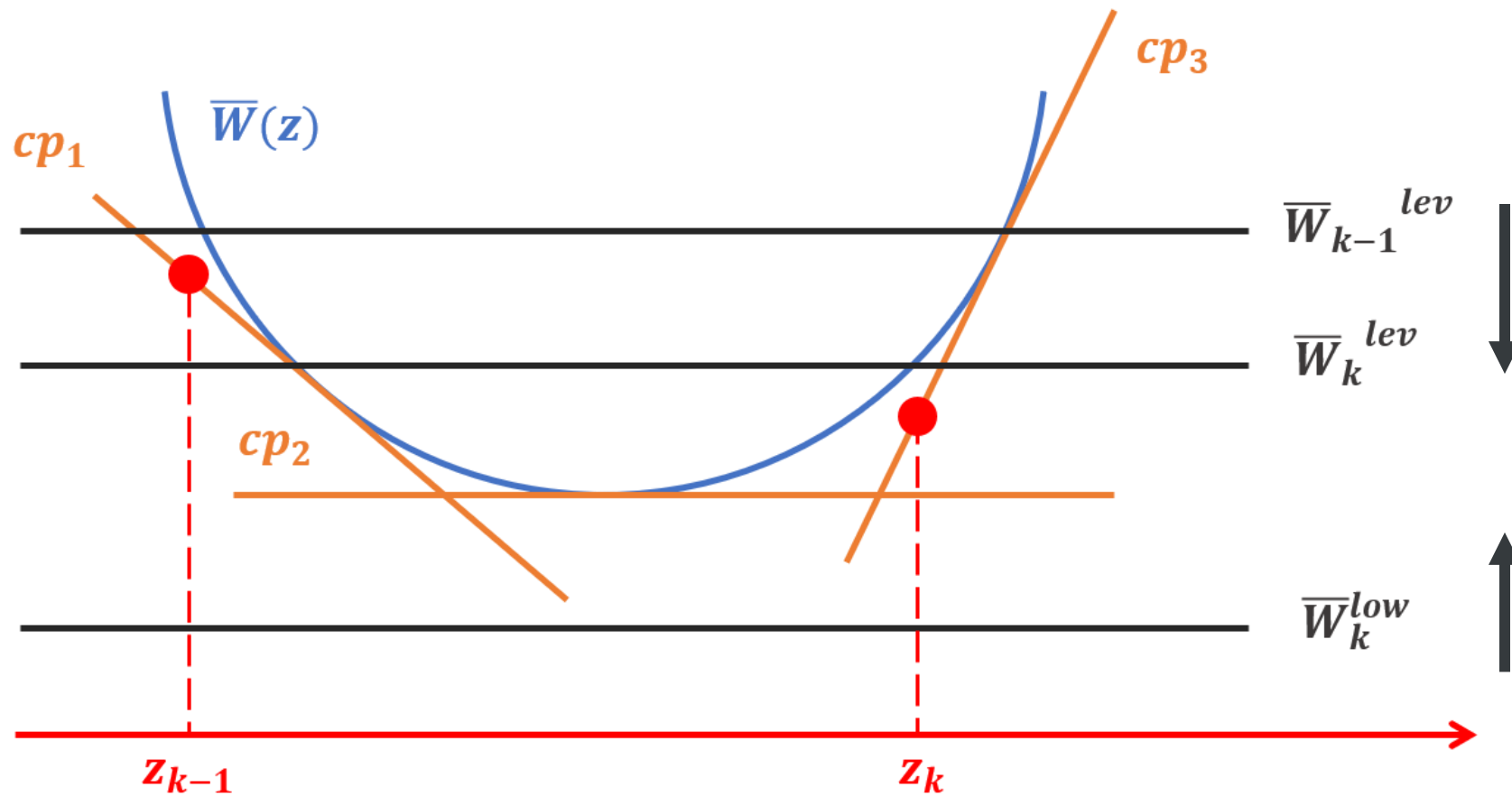


For all maintenance decision z and all dual vector $\lambda \geq 0$, we have:

$$W(z) \geq \bar{W}(z) \geq \theta_z(\lambda)$$



Bundle method



Nested bundle methods

Bundle method on \bar{W}

Get the optimal maintenance schedule z^*

Bundle method on θ_z

→ Get
$$\begin{cases} \bar{W}(z) = \sup_{\lambda} \theta_z(\lambda) \\ s \in \partial \bar{W}(z) \end{cases}$$

