Driving Energy and Resource Efficency in the Water Sector

The necessary regulatory, political and technical framework

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Why do we need Energy and Resource Efficiency in the Water Sector?

SUSTAINABLE DEVELOPMENT GOALS

6 CLEAN WATER AND SANITATION

SDG No 6

"Ensure availability and sustainable management of water and sanitation for all"

7 AFFORDABLE AND CLEAN ENERGY

SDG No 7

"Ensure access to affordable, reliable, sustainable and modern energy for all"

Climate change and environmental reasons

Import independency

Cost reduction

Resource scarcity

Access to clean drinking water and sanitation for health reasons

The necessary REGULATORY framework

Suggestions for more efficiency in the water sector

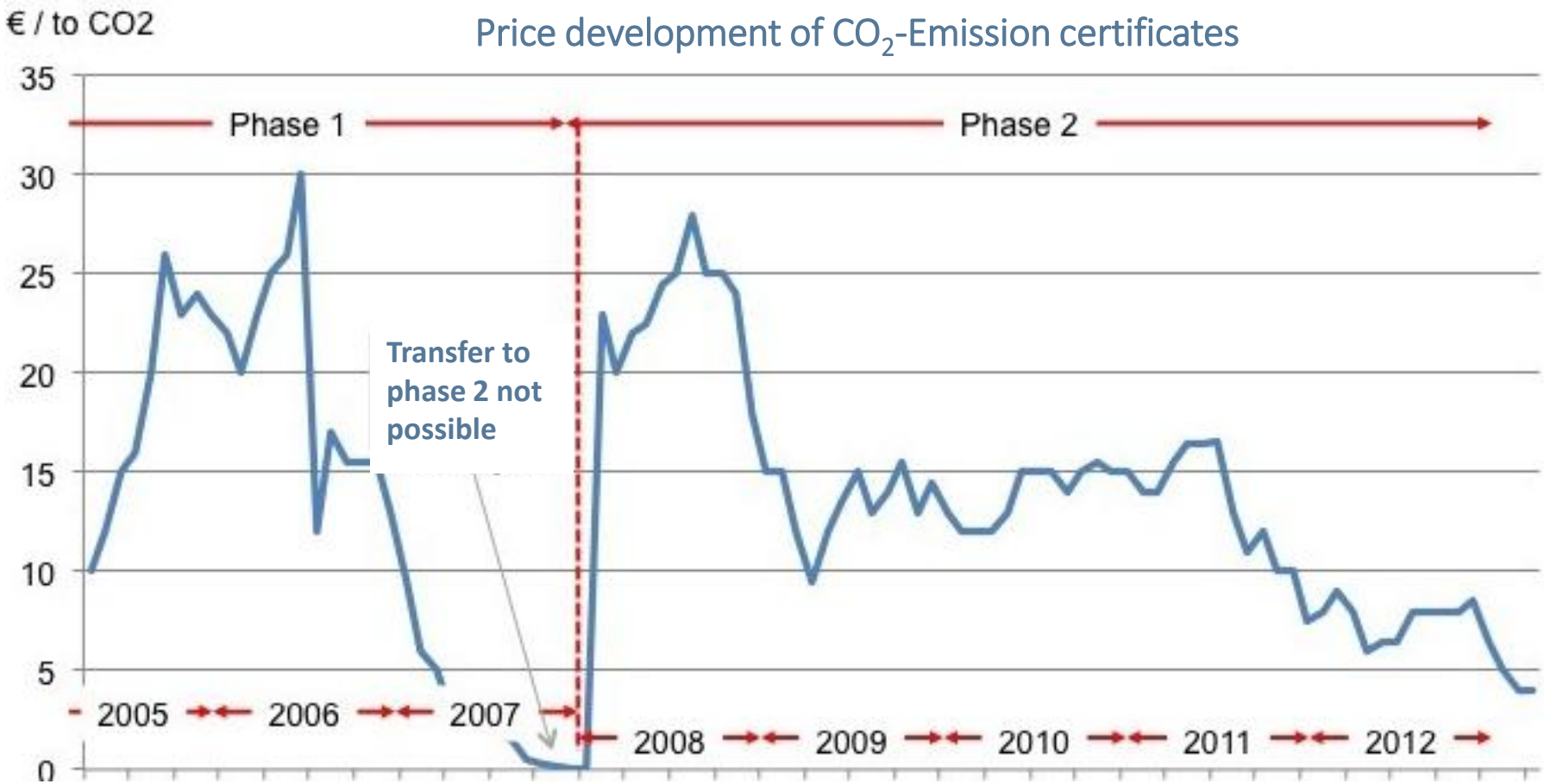
Regulatory framework:
- Protection of resources
- Waste water regulation
- Water quality

Integrated view on:
- Public governance
- Assets/systems
- Operation
- Sustainable Financing
- Water pricing
- Accountability

Create locally adapted incentives for reduction of water and energy consumption e.g. Decreasing non-revenue water share

Regulation of tariffs, performance and standards, Affordable access to clean water

Example for REGULATORY framework: CO_2-Emission certificates



Source: https://www.erneuerbareenergien.de/

The necessary POLITICAL framework

Suggestions for more efficiency in the water sector

Explain and communicate with the stake holders, population, especially with the agriculture sector

Integrated views:
- (Protection of) resources
- Water grid
- Water cycle
- Include agriculture

Use learning curves through International cooperation under consideration of local specifics

Financing schemes to enter in the system:
- Cost covering of….

Transparency and accountability

Multi-stakeholder approach:
Define roles for public organisations, local communities and private sector

Consideration of local situation:
Locally adapted solutions in the water sector

Example for POLITICAL framework: The European Water Framework Directive

Goals

- Adding and bundle European directives for water protection
- Improve the quality of ground and surface water

Content of the ordinance

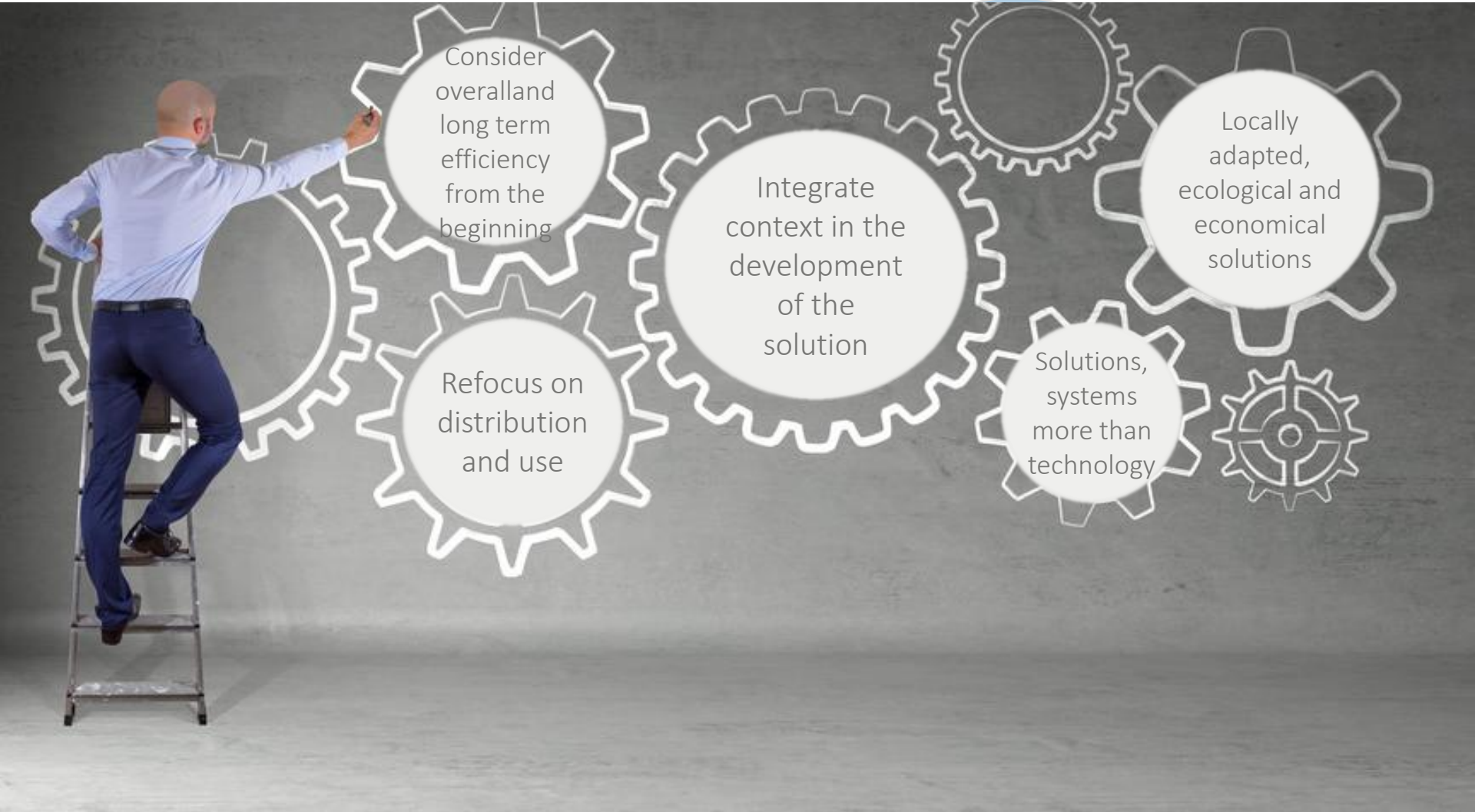
- Standards for the conditions of ground and surface water
- Responsible are all states and counties along the water shore together
- Cost covering principle for water services

Effect

- Different sectors and states work together with unified regulations
- Same environmental standards EU-wide

The necessary TECHNICAL framework

Suggestions for more efficiency in the water sector



Example for TECHNICAL framework: Energetic optimisation of a WWTP in Bac Ninh, Vietnam

Challenge

- The WWTP in Bac Ninh (North Vietnam) has a capacity for 90.000 PE. However, the freight loads are 80% less than expected.

Measures

- A new aeration mode for biological treatment has been implemented

Impact

- 30% increase of Nitrogen removal efficiency
- Reduction of energy consumption by 16%
- Decrease of energy costs by 20%

Challenges for the Jordanian Water sector

- Jordan in one of the countries with the highest water scarcity in the world
- The population is growing significantly
- Ground water reserves are only available to 100 m^3 per capita, the global average is 500 m^3 per capita

Measures for Efficiency implemented in Jordan

- High use of recycled waste water in agriculture
- Desalination of sea water
- The connection rate to the waste water grid was increased by 5% in the last 5 years
- Closing of connections/wells, to decrease Non-revenue water of ca. 50%
- Plan to link the water consumption limit for a sector to the GDP contribution of this sector
- Incentive: Water prices for households increase with water consumption

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