

Hydrogen initiatives in the Autonomous Province Bozen/Bolzano

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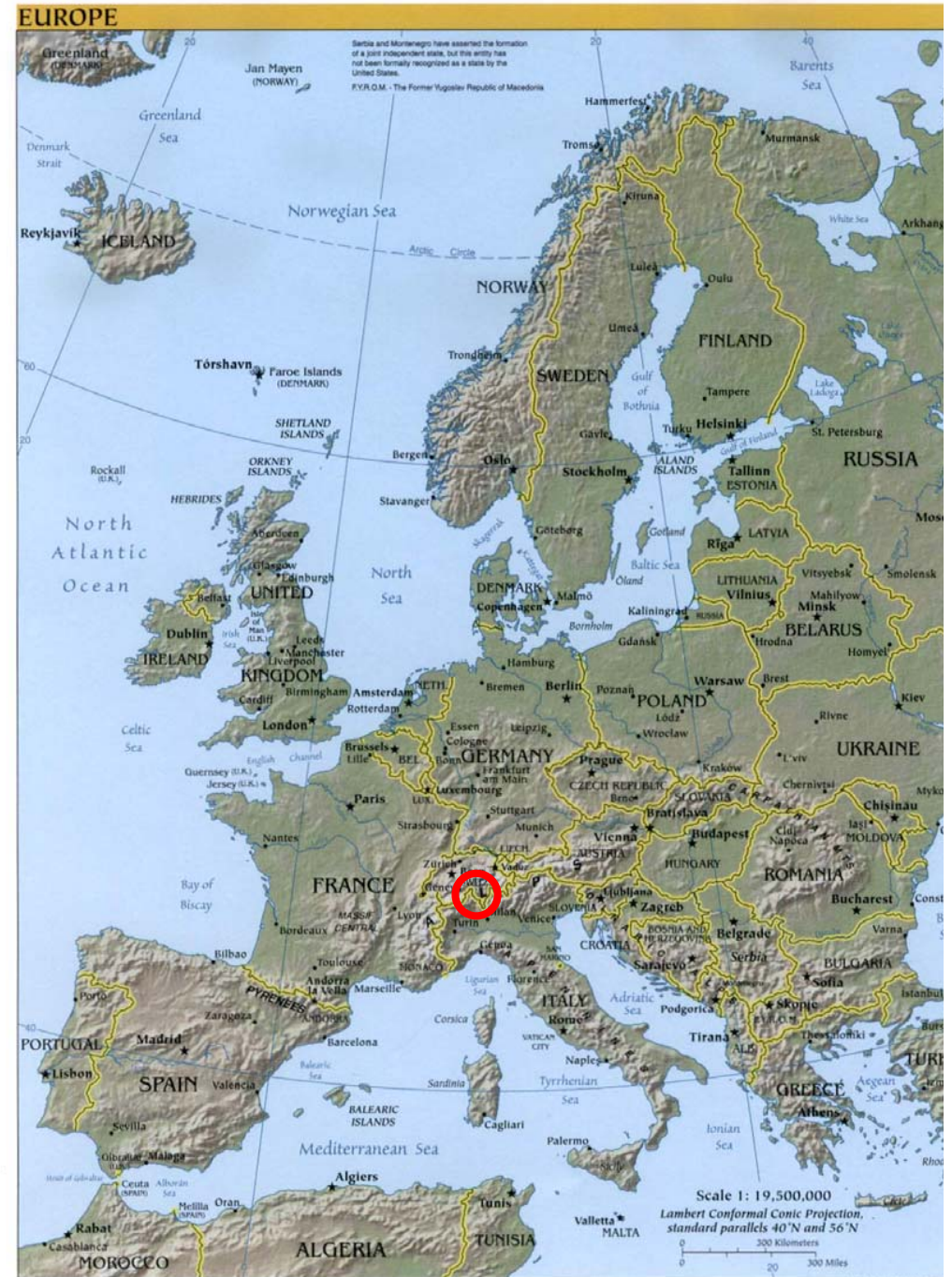
Director Department
Spatial Planning, Environment and Energy

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Autonomous Province of Bolzano/Bozen

Area: 7.400 km²
Populat.: 490.000

Mother tong:
70% German
24% Italian
6% Retoromanch

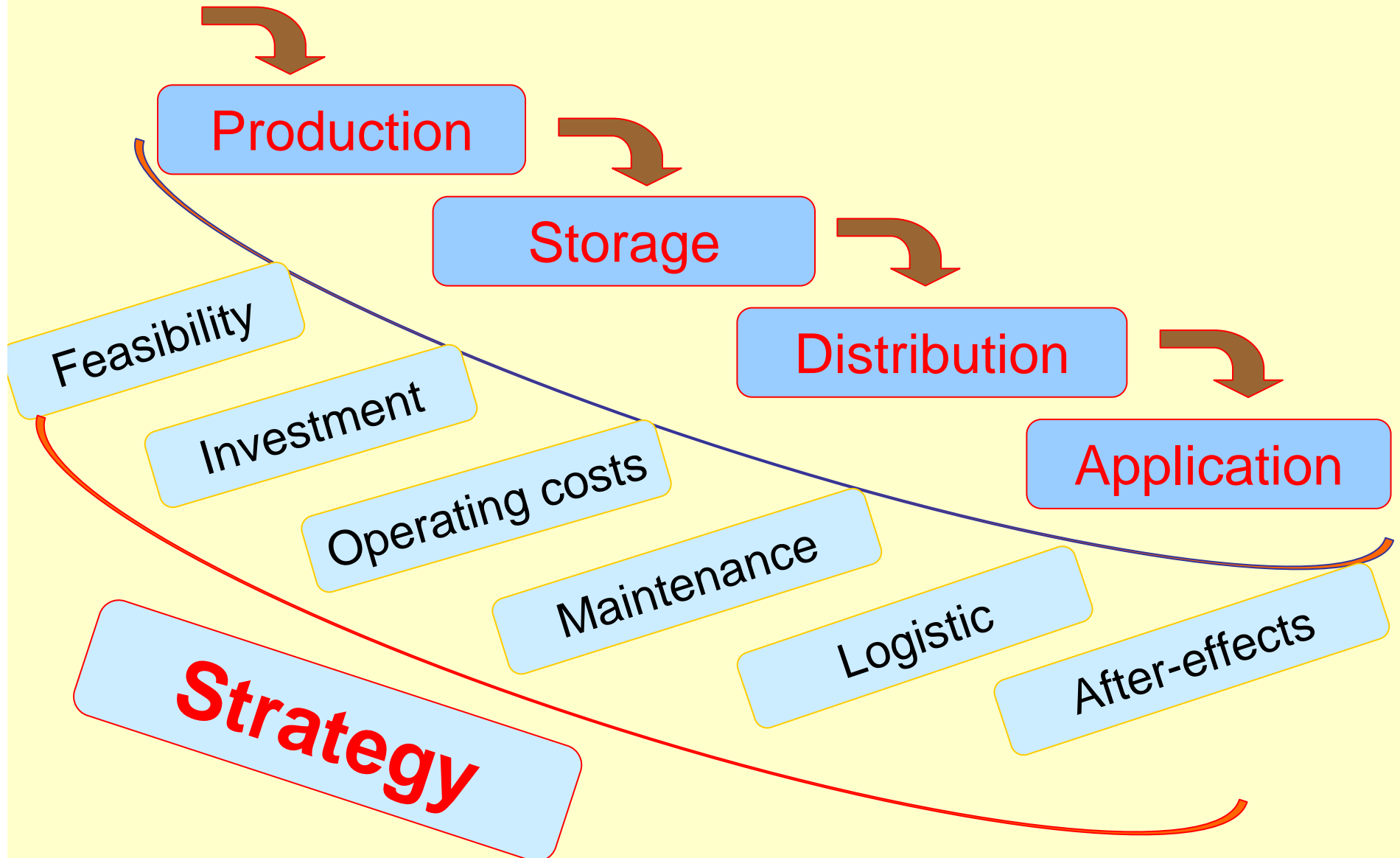


Implementation of hydrogen technology in Europe

Critical observations

- Great expectations by citizen, little concrete responses from industry
- Producers of engines seem to show little interest
- No refill stations ⇔ no vehicles: break up that circuit!
- Indispensable to produce green hydrogen !
- Production of H₂ by big companies – should be on local duty ⇒ local added value
- Subsidies for R&D only, instead also for real applications (this stimulates further development)

Strategic Considerations H₂



H₂-backbone of regional decisions



feasibility – investment – operation – maintenance – logistic

The initiatives of Bolzano province

- We consider the hydrogen technology as a important challenge for our future development
- Production of green H₂ on a industrial scale, using exclusively renewable sources
- Distribution to satisfy the local need, getting self-sufficient in production and need
- Start of construction 2008, start of H₂- production 2009
- R&D by local research entities and companies
- Activation of applications on a large scale and on different levels, including local entrepreneurs
- Coordination by IIT (Institute of Innovative Technologies): Province, A22, SEL, Leitner Technologies ...
- Starting with education programs for basic knowledge and for application safety ...

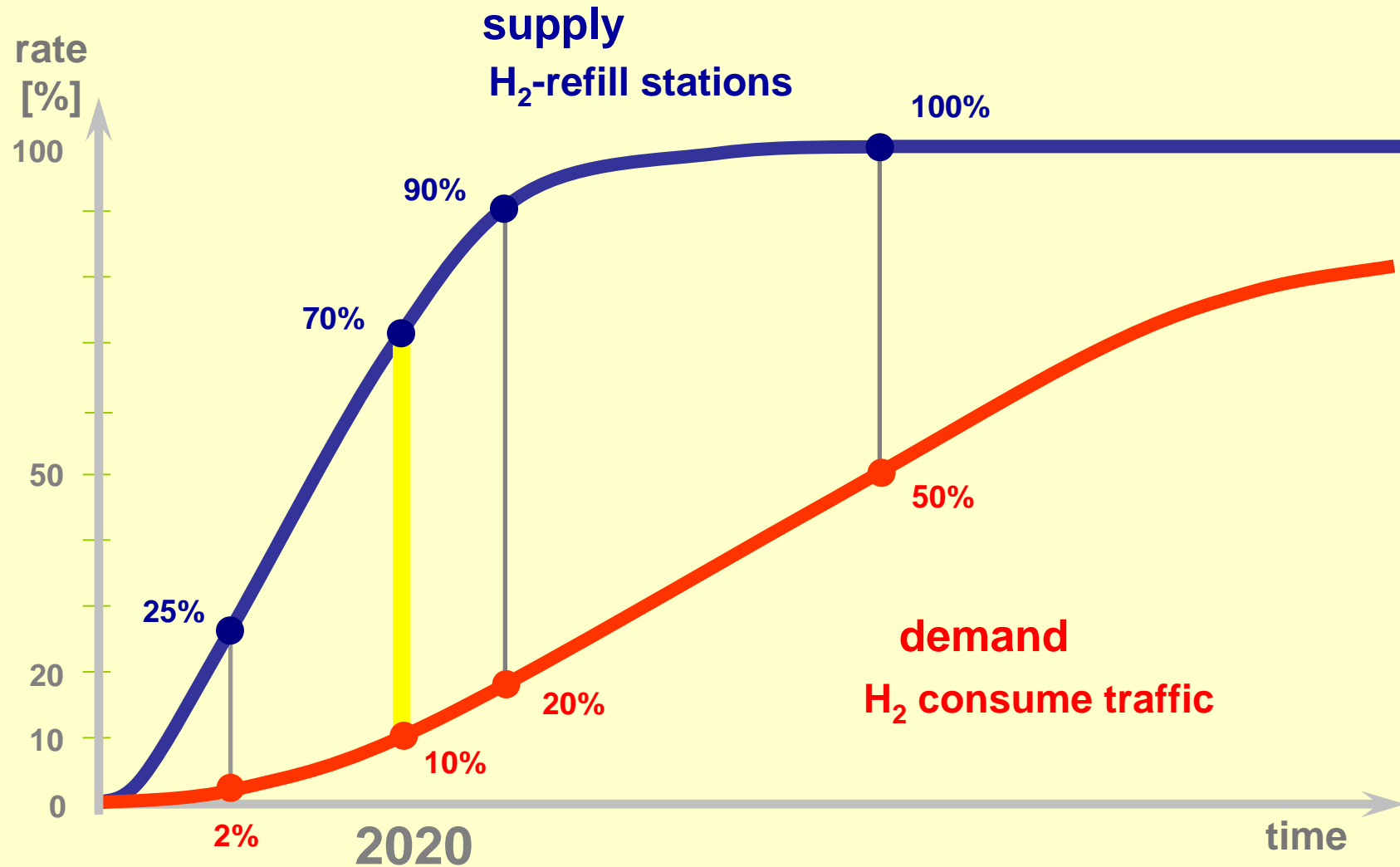
The production site Bozen/Bolzano

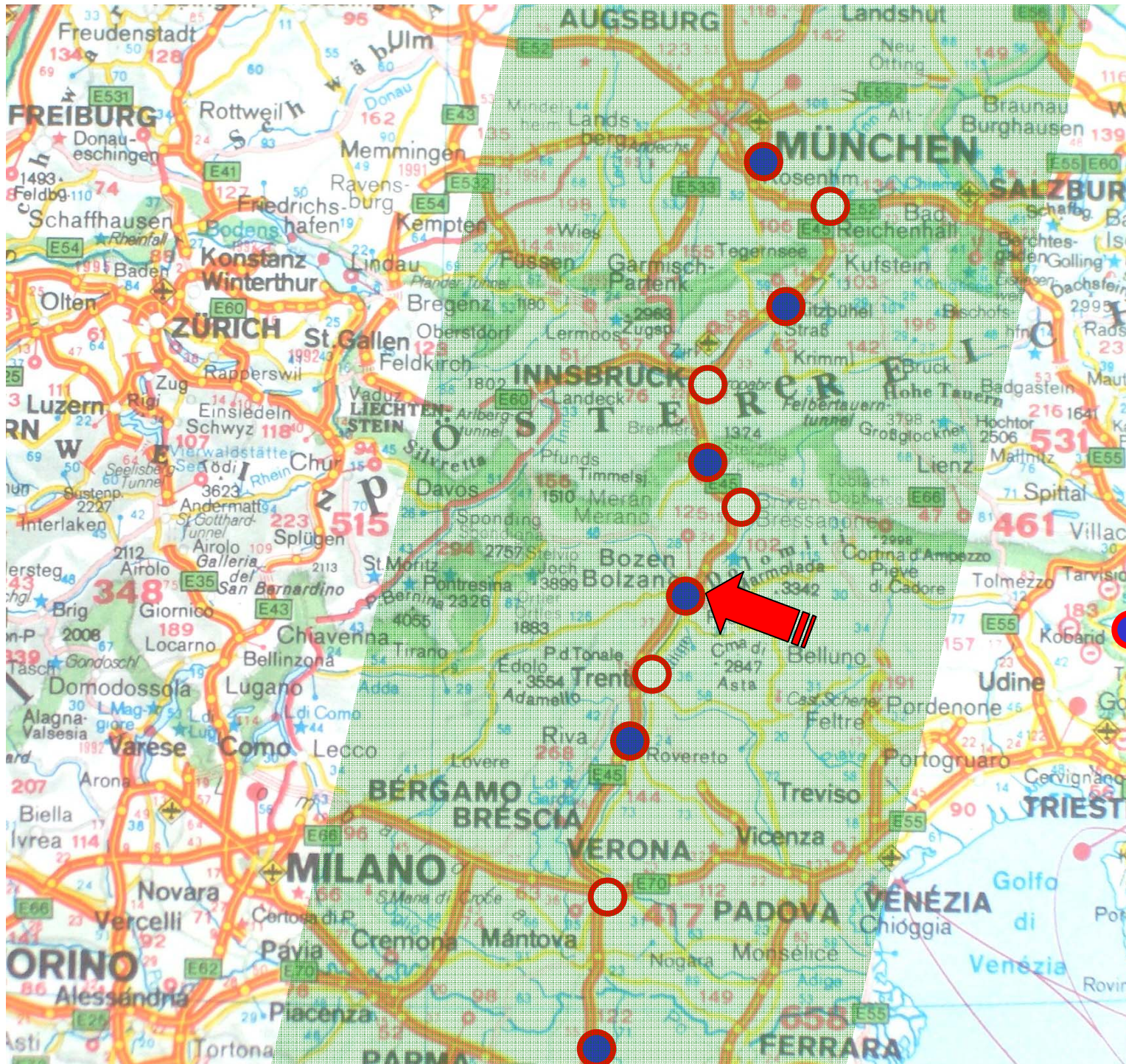


Applications

- H₂-busses in Bozen/Bolzano city, then in other cities
- H₂/CH₄ mixtures (20/80) in methane-busses
- First busses with ICE; FC busses still too expensive and different problems (H₂-bus alliance)
- Pickup trucks for delivery of goods in the cities
- Preparing project Munich – Modena – highway (650 km)
- Trucks with H₂-engines on the highway (activating indirect incentives)
- Stationary systems: alpine huts, backup systems, independent signal/information panels ...

Supply – demand for H₂





Highway

Munich /
Modena

650 km

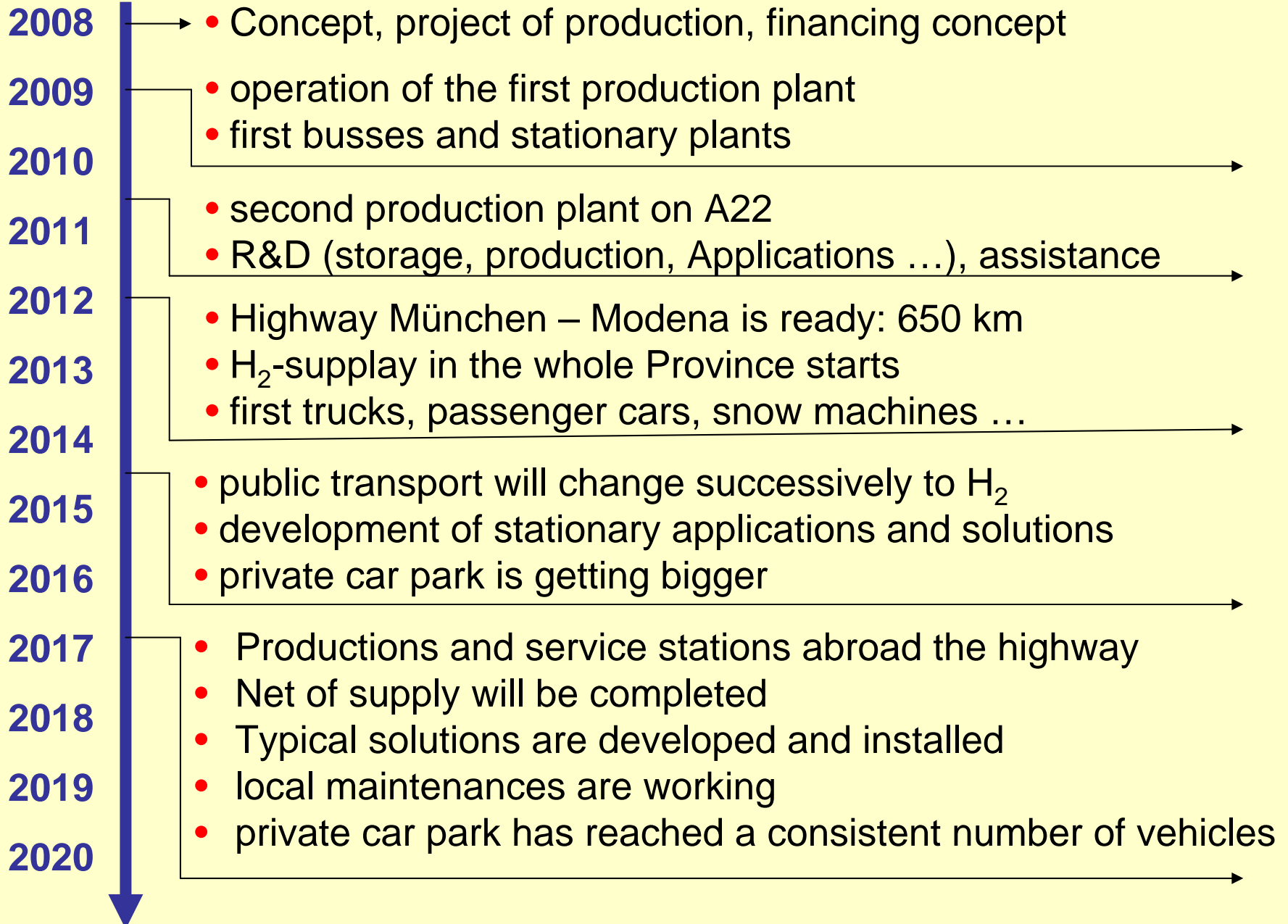
production and
distribution

○ strategic
distribution

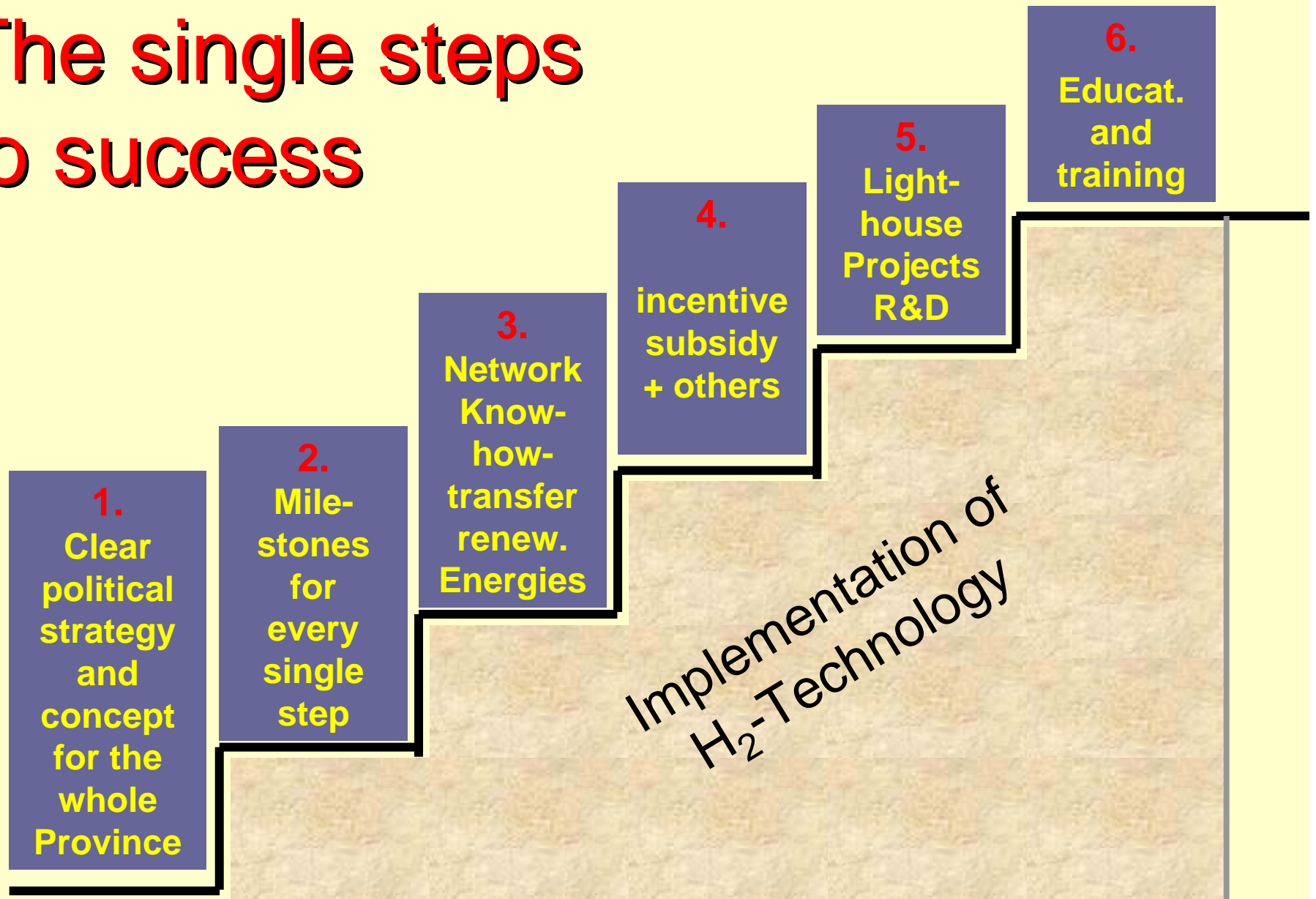
H₂-Highway, why?

- Clear political, ecological, economical, technical and visionary signal
- H₂-distribution along the highway as visible backbone, accessible from outside, important at the beginning!
- Good working infrastructure on a longer axis gives a positive signal to the industry
- Incentives for H₂-trucks: no pay-toll, no restrictions on weekends, no restrictions by night ...
- Moving companies have a defined physical action range, H₂ amount is programmable
- Lorries/ cars have independency action range of 500 km
- Broad lateral H₂-corridor of 200-300 km

Timetable South-Tyrol



The single steps to success



Repercussions and benefits

- Independency: money spend for locally produced energies ⇒ added value
- Enough renewable sources to produce hydrogen in excess ⇒ H₂-exporting province ?
- Technological perspectives for industries and SME, active and passive
- Higher know-how level = higher competition
- Citizens are involved in the process and get a vision for the future
- Guiding the province in to the future:
ecological, economical and social challenge
⇒ **sustainable future**

Future: resignation or start?

- Every change creates fear, means a start to a uncertain future
- Increasing oil prices are a chance for renewable energies
- Renewable energies are available locally, they differ in form, quality and quantity
- Production from local available resources = local challenge = local added value
- New technologies = new ideas = new applications = new jobs
- Involving the citizens from the beginning = make it to their vision (be aware from utopias)

... "What will be burned in the future years instead of coal?", asked the seaman. "Water", answered Smith. „Hydrogen and Oxygen will each one or together be a inexhaustible source of heat and light, on a intensity, the coal would never have; **the water is the coal of the future.**“

Jules Verne, “The mysterious island”, 1874

Thank you for your attention
Dr. Walter Huber