



WASTE HEAT RECOVERY THROUGH COOLING: POTENTIALS AND CHALLENGES

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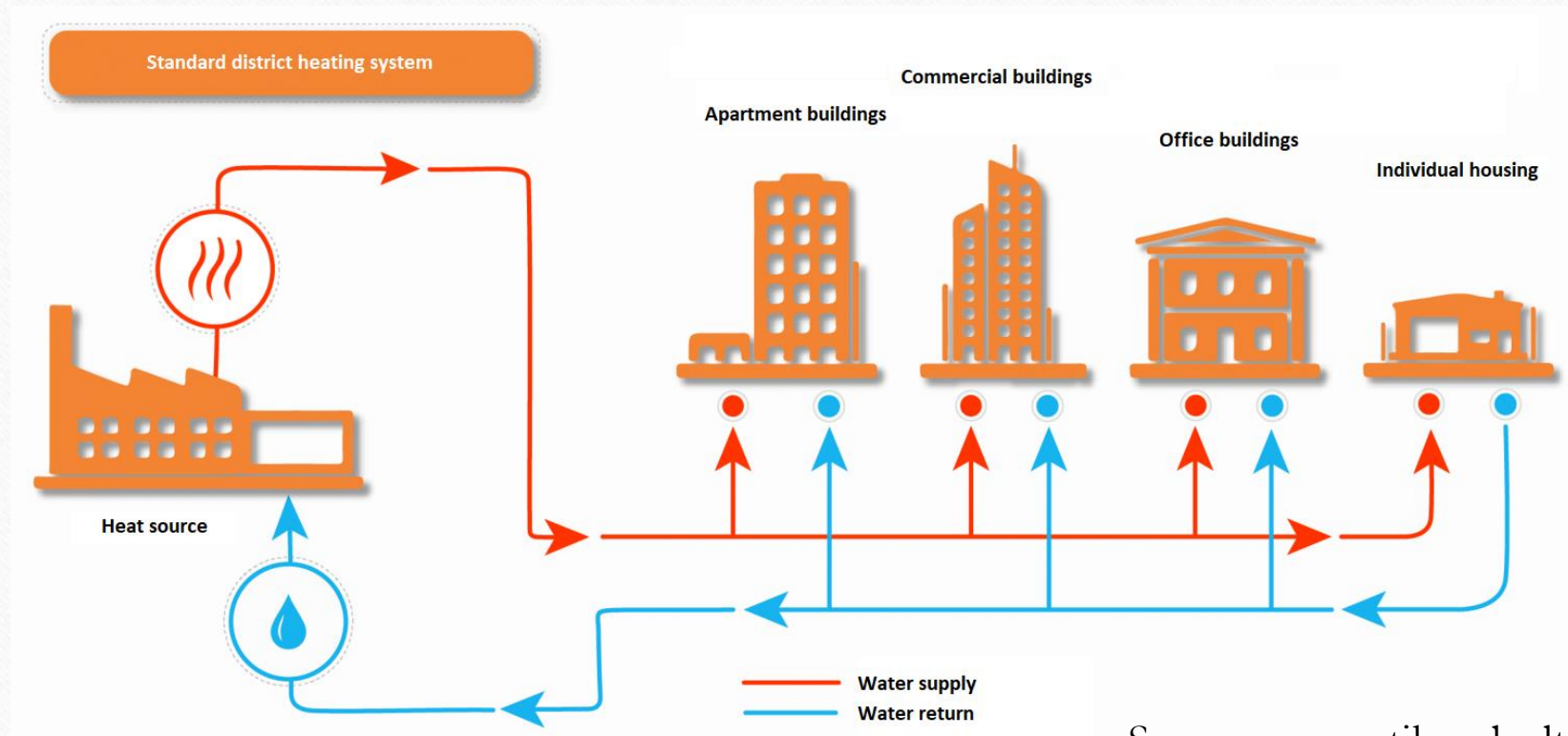


THE OBVIOUS

- **Climate Change** is happening and Consequences are Unavoidable.
- Lack of **Sustainable Energy** system development – Knowledge and Skills.
- **Sector Coupling** is Inevitable – **Renewable Energy Sources**.
- **EU Green Deal** is set in motion. **DHC** is to Survive and Thrive?
- **Recovering Waste Energy** - Potentials and Challenges.



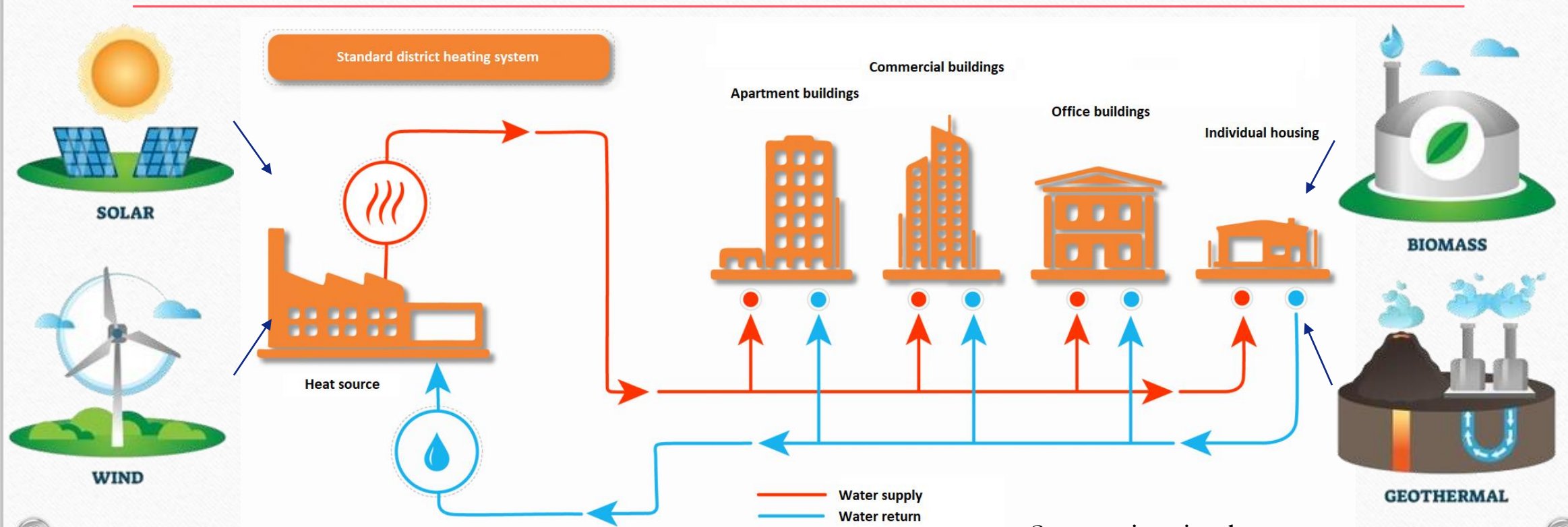
THE STANDARD WAY



Source: energetikosabc.lt



AN EASY SOLUTION?



Source: inspirecleanenergy.com





WASTE HEAT RECOVERY - COOLING

- Using electricity for cooling is still an expensive commodity, but it is necessary due to heat waves and climate change, even in northern Europe. Heat pumps are a most used technology for cooling as it is simple and effective way to cool buildings.
- Since cooling is mostly needed during summer times when electricity price is the highest and reaching its peaking costs, it is inevitable that alternatives must be used to decrease Lithuanian electricity independence and to ensure that locally produced electricity is green and renewable.

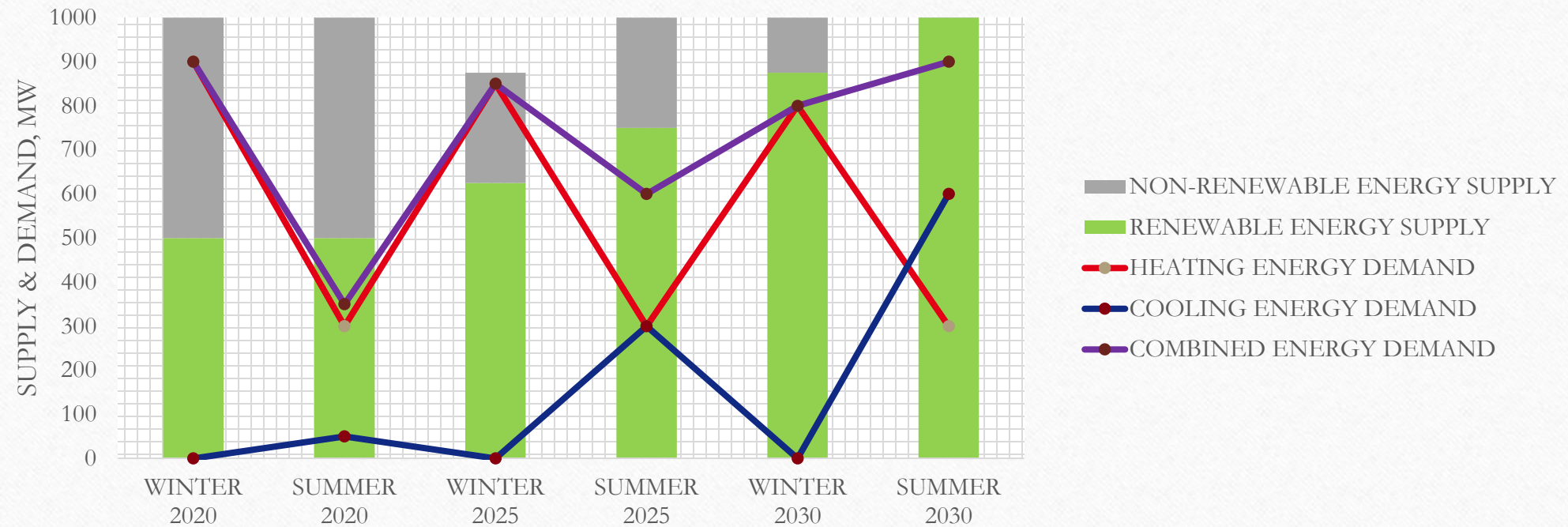


COOLING TECHNOLOGY EXAMPLE

- Absorption chillers can convert heat from hot water with a temperature from as low as 65C into cooling water at 7C. But why absorption chillers?
 1. The refrigerants primarily used in absorption chillers do not contribute to global warming and ozone depletion.
 2. An absorption chiller can reduce the cost of electricity, hot water, heating and cooling for the facility.
 3. Due to lack of compressors in the machine, the noise and vibration are significantly reduced in the building, providing a quiet environment with high reliability.
 4. An absorption chiller is powered nearly entirely by heat that was already going to waste.
 5. It does not consume electricity for the production of chilled water and heat.



HYPOTHETICAL: SUPPLY & DEMAND





MANY OBSTACLES IN THE WAY

- Most energy projects are still carried out on the basis of the **lowest cost analysis** while also using non-renewable energy sources that bring negative social effects and environmental damage only for them to be competitive.
- Due to the **strict regulatory environment, artificial competition** and **public procurement laws**, district heating companies cannot compete sustainably in the heat generation market, cannot accumulate capital that could later on be invested in the coupling of renewable energy and district heating sectors.



IT DOESN'T END HERE

- Improvements to national and municipality legislations.
- Total decarbonisation of cities – starting from 2022.
- Government subsidies starting at 30% of total cost for turning from non-renewable to renewable heating and cooling.
- Total ban on non-renewable heating and cooling energy by 2030.



CONCLUSIONS

- LONG-TERM INVESTMENT TO ENVIRONMENT > SHORT-TERM ECONOMIC PAYBACK
- SAYING “NO” TO SOCIAL EXCLUSION
- LOWER HEATING AND COOLING PRICES
- SWIFT CHANGES TO REGULATORY SYSTEM

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Thank you for your attention!