

Transcript Lesson 2. Energy Use

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Welcome back to the course Renewable Energy Integration in the Energy System. Lesson one explained: What is energy? Lesson two of the series will explain Energy use.

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Starting with a recap from lesson one. The most used definition about energy is the ability to do work. Energy is present, it can be converted or transferred but remains present. Energy is measured in various units, depending on the application. We define efficiency as the proportion of the total applied energy that does the work we want to be done. Finally, power is the energy per amount of time.

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Non-energy use: use of an energy commodity for a product that is not energy. For example, plastic, fertilizer, etc. The Netherlands produces many (petro)chemicals for export.

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Most energy used for heating, space heating + water heating are almost 80% of the total usage.

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Loss of energy for electricity is also located in the transport system, largest losses are with production

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Across the world, huge variation in sources for energy. Note, this is only primary energy (so excluding material usage).

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All data are recalculated to the same unit and materials are excluded (e.g. plastic, nylon)

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It needs to renew pretty fast, with our current rate of usage of energy!

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Imagine it's 2050 and the population of the Netherlands has grown to 20 million people. We use 106 kWh per person per day, so our total energy consumption is approx. 88 GW.

We take average energy (production) and are not bothered by seasonal influences.

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Does not help very much

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If we assume 30% of sea with windmills, we would be done!

Pay attention,

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Still not there.....

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Still not there.....

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Not very significant

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Now we are stuck with a rest of 14 GW.

In the future better technology & more efficient needs to help (+ energy savings!)

In the meanwhile, either continue fossil (not recommended) or nuclear (best of the rest)

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These books and webpages have been used as a references to prepare this lesson.

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