

Gimnazija Kranj



# Sustainable Development Goals in Education

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## Nuclear fusion energy as motivation and real-life task for students and can be included in the school curriculum

### Introduction

One of the goals of The European Commission is to reduce EU greenhouse gas emissions by 55% by 2030 compared to 1990-levels. The nuclear fusion realized through the ITER project is a promising and ambitious project to produce self-sufficient, green, and reliable (not weather dependent) energy. The fusion energy will be reviewed as a real-life task and will show where could be included in the school curriculum.

### What is fusion?

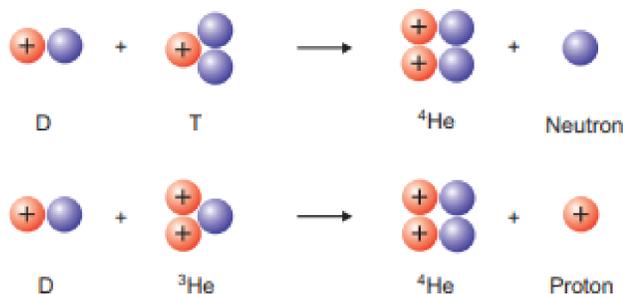


Fig. 1: Fusion reaction equation [1]



Fig. 2: Plasma made in tokamak [2]

### Fusion reactor

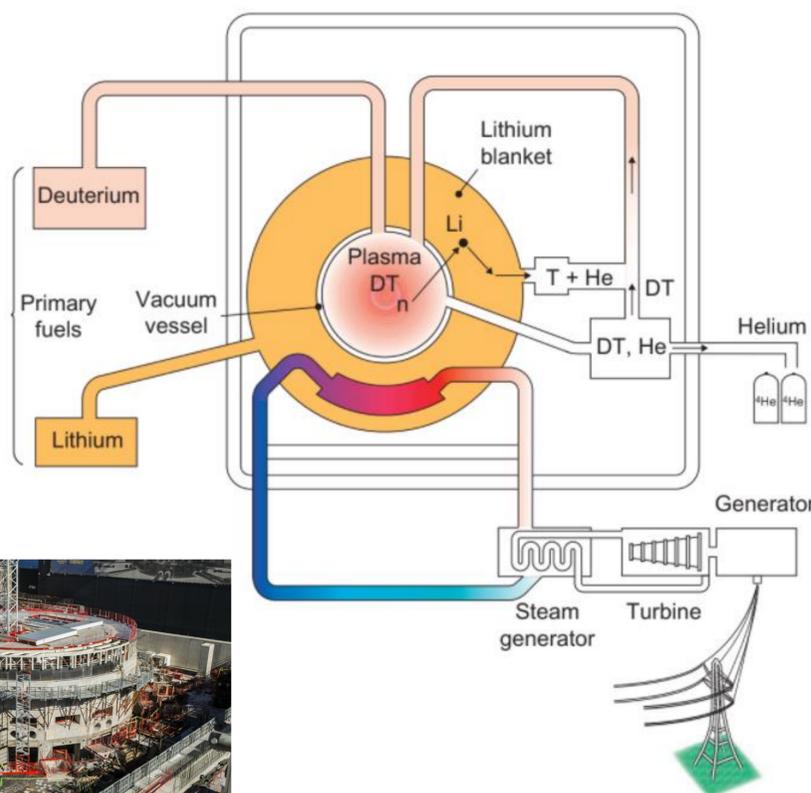


Fig. 4 Fusion reactor scheme [1]

### How to get fuel?

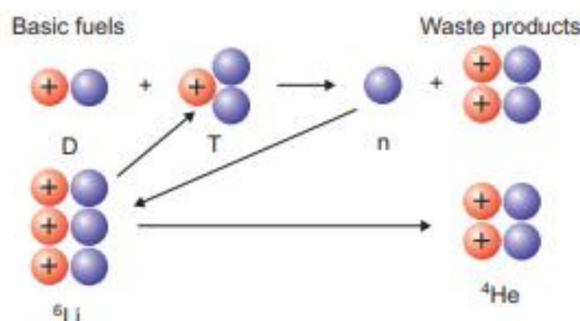


Fig. 3: Fuel recovery equation [1]



Fig. 5: ITER tokamak located in France [3]

### Conclusion:

- student is able to construct equations for fusion reaction,
- student can explain fusion reaction in terms of enthalpy,
- student understands the role of the isotope in a fusion reaction and fuels recovery,
- Student is able to compare fusion and fission reaction,
- student can critically evaluate the risks as well as benefits of fusion reaction and fusion reactors.

[1] Fusion, The energy of the universe, McCracken G., Scott P., Elsevier, 2012 [2] Sciencealert, online: What Is Nuclear Fusion, And Why The Hype? (sciencealert.com), 15.1.2021 [3] ITER France, online: ITER in France, 15.1.2021