Assumptions:

-The region(SA,IR,KU) continues exporting she same amount of energy as it already does. Only now in the form of synthetic fuels (or H2 forms)

-All oil and natural gas is used for its energy, so, oil products used for lubrication and plastic production are neglected

-The region is already a hub for fuel distribution around the world, this can be continued with relative ease

-certain efficiency standards can be assumed constant

This means that the region now has to generate x amount of energy( take loses into account) for energy trade/export. See excel for the energy export values

All other industry values are scaled with growth factors, for keeping the lights on and running the pumps, compressors etc. (would probably be lower, could use more research)

X energy export now, with y efficiency in usage, effective energy usage is z, we need to export k energy, with l efficiency in usage, for equal m=z effective energy usage, means n energy needed for production

We will assume that energy usage in industry is constant? We won’t use seasonal storage, so only daily storage to keep production constant. So How does production and energy usage fluctuate over the seasons? (if energy generation barely fluctuates, then keep export demand continiuos for every 15min)

Other energy intensive industry processes come to regions with low seasonal fluctuations. As such, the region will attract these industries, in matlab so far only steel and alu, at 5% global share

More assumptions to be made! / written down

For export:::: 🡪

Current energy output \* growth rates \* average fuel eff= energy needed in 2050

Energy produced \* specific ren-fuel eff = energy supply 2050

Energy supply = energy demand

Energy production needed= (current energy export\* world growth rates \* avg fuel eff) / specific ren-fuel eff

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Say that export energy is based on solar generation: ( not the case if we use constant energy for all the 15min periods

The seasonal fluctuations can be determined by : a days share of the total yearly export demand= total irradiation over a year/ irradiation over that day

Saudi Arabia: All energy exports + industry energy usage \* growth factors

Syria, Iraq, Jordan and Israel: Highly unstable regions,

Jordan, Lebanon, Syria, israel: neglect? ( currently barely any industry to speak of)

Iraq, Kuwait: oil based like Saudi Arabia

Turkey: decent location for transportation hub, also good for agriculture

The average annual growth of energy intensive industries is 3.4%/Year for the world>> <https://www.eia.gov/outlooks/ieo/pdf/industrial.pdf> << good source !!!

Energy intencive industry uses roughly 50% of the global energy usage in industry in 2012^^

Energy usage in industry = 2712374Ktoe IEA

So energy usage in energy intensive industry: 3.1545e+10 MWh/year

<https://www.eia.gov/outlooks/aeo/pdf/0383(2017).pdf>

Most of our region makes most of their money on oil related industries, these industries are fairly energy intencive. The region has plenty of unused land area and is well located for solar power generation. There is a chance that energy intecive industries replace themselves to these locations for their cheap energy. Much like labour intecive industries are now being uitgezonden to countries like China.

Our oil based region will have to find another revenue stream as the world leans renewable, options are:… food, energy intensive processes, textile(turkey) automotive, …

Saudi arabia:

Expected growth of the mining and minerals sector <https://www.export.gov/article?id=Saudi-Arabia-Mining-and-Minerals>

Economic growth and increasing population demand for more ‘iinformation technology’

<https://www.export.gov/article?id=Saudi-Arabia-information-technology>

main manufacturing industries are: chemical products, machinery and equipment, building materials and food products. The average annual growth rate has been around the 5.6% ??? <http://www.sidf.gov.sa/en/IndustryinSaudiArabia/Pages/IndustrialDevelopmentinSaudiArabia.aspx>

oil revenues are 72.5% of the government revenue <https://www.washingtonpost.com/business/economy/saudi-arabia-a-kingdom-built-on-oil-plans-a-future-beyond-it/2017/04/21/6574d2ee-251a-11e7-bb9d-8cd6118e1409_story.html?utm_term=.1eb8d5630bf2>

Saudi arabia will proberbly have to look to export of value-added goods, instead of the crude oils. They have plenty of land, oil, and loads of solar energy possibilities. They are also fairly well located for export to ….? So they could for instance become a world leader in plactics manufacturing. (not all based on sources)

<http://www.arabianbusiness.com/a-new-future-for-saudi-arabia--539749.html>

TURKEY:: good export location

*‘In 1999, the industrial sector in Turkey contributed to 29 percent of GDP and employed 27 percent of the labor force. More remarkably, industry accounts for 89.4 percent of Turkey's total export earnings. The key industries in Turkey are textiles, iron and steel, chemicals, cement, food processing, motor vehicles, construction, glass and ceramics, and mining.’*

<http://www.nationsencyclopedia.com/economies/Asia-and-the-Pacific/Turkey-INDUSTRY.html>

turkey facts:  
<http://www.allaboutturkey.com/info.htm>

agriculture and textile are the main focuspoints

agriculture accounted for 25.2% of the emplocment in 2010

good chances in the food industry, good location due to the abundance of renewable energy potential. <https://www.pwc.com.tr/tr/publications/arastirmalar/pdf/turkey-in-2041-eng.pdf>

economy is expected to grow, and so: the energy usage is expected to grow aswell,

Iraq :

Good chances in agriculture! Also: food processing, metal, chemicals, textiles, leather and fertilizers

<http://www.economywatch.com/world_economy/iraq/industry-sector-industries.html>

------------ economic paper?

<https://www.pwc.com/gx/en/issues/the-economy/assets/world-in-2050-february-2015.pdf>