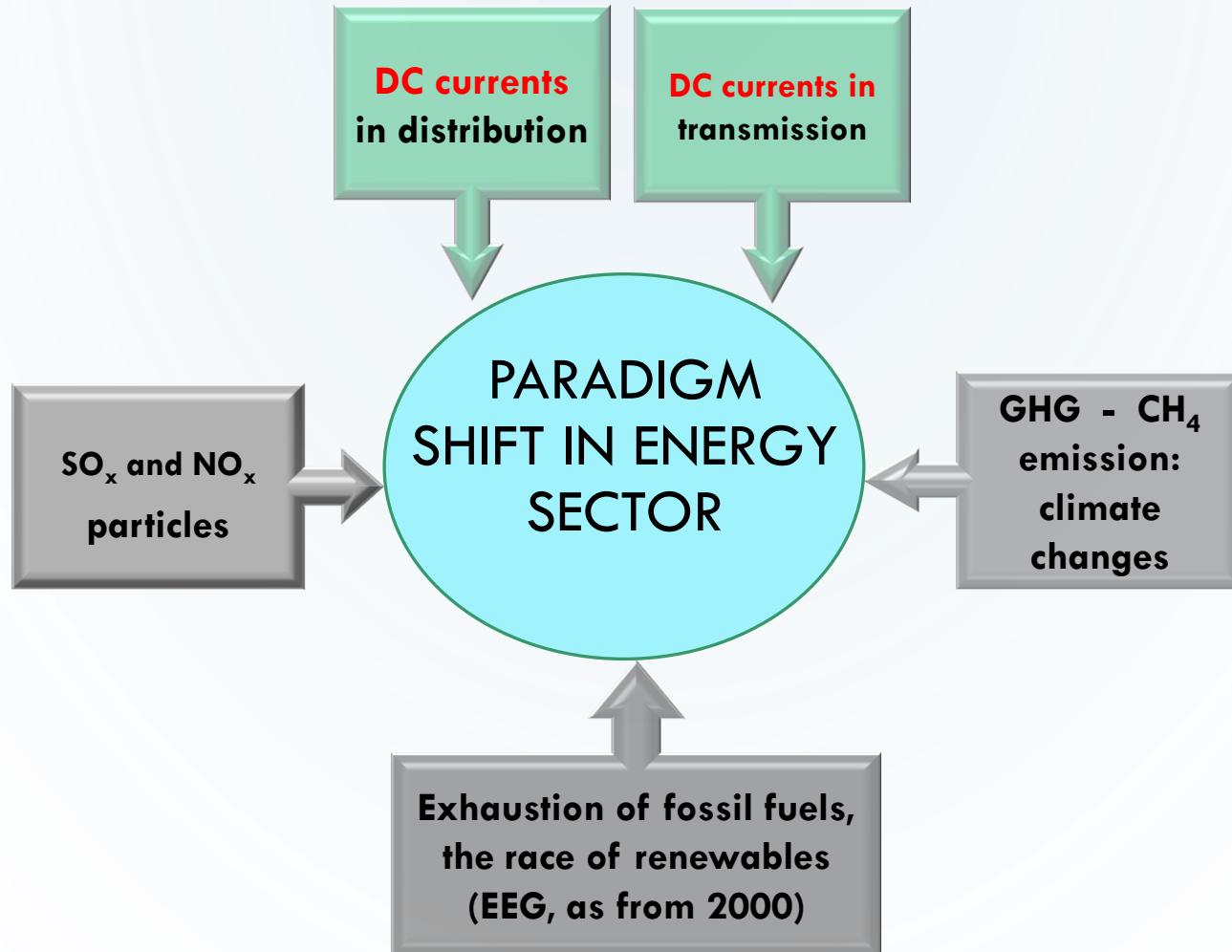


**EU SUSTAINABLE ENERGY WEEK
ENERGY DAY SERBIA**

Energy Sector Support through
Education and Science

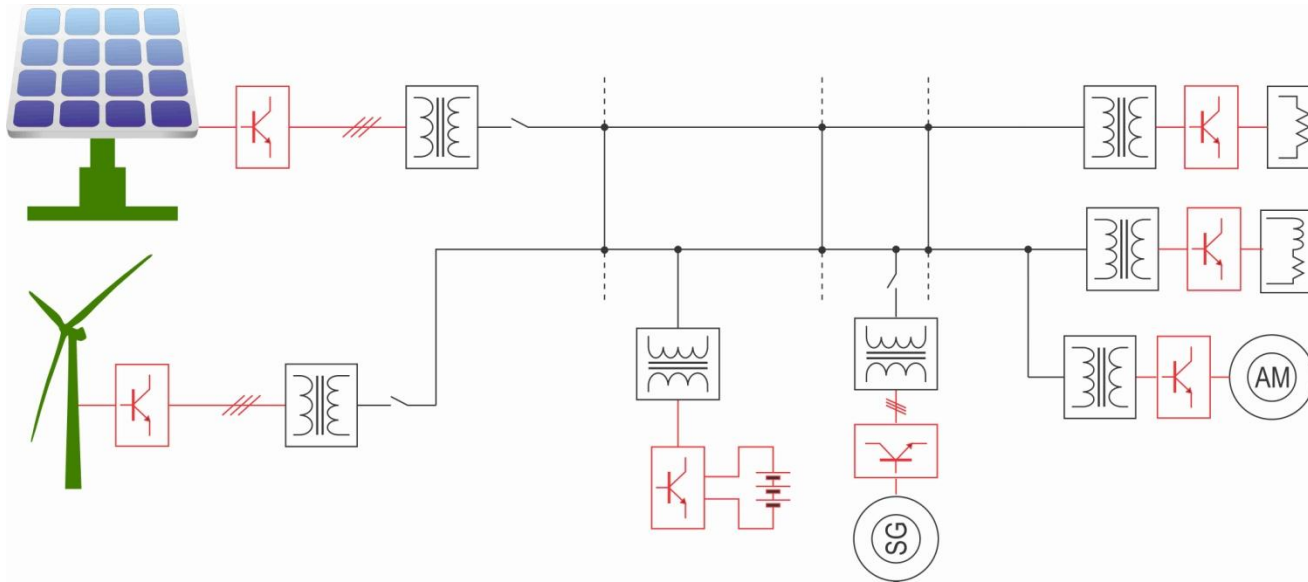
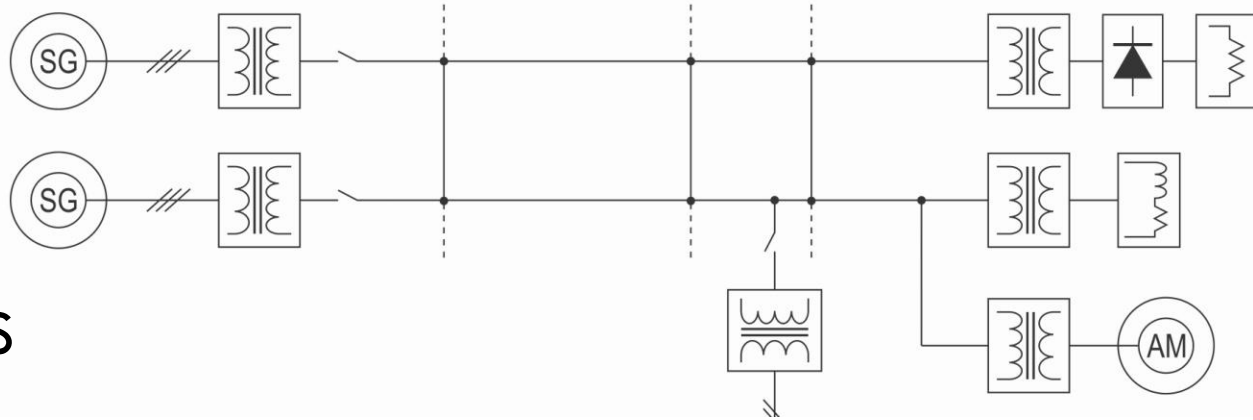
The Only Thing That Is Constant Is Change



19, 20. CENTURY

UNIDIRECTIONAL

SG & PASSIVE LOADS



21. CENTURY:

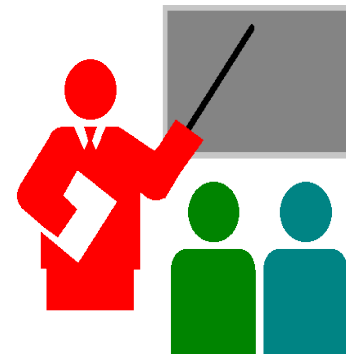
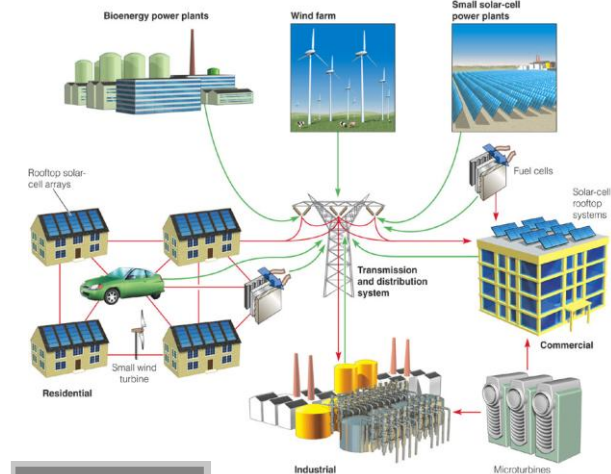
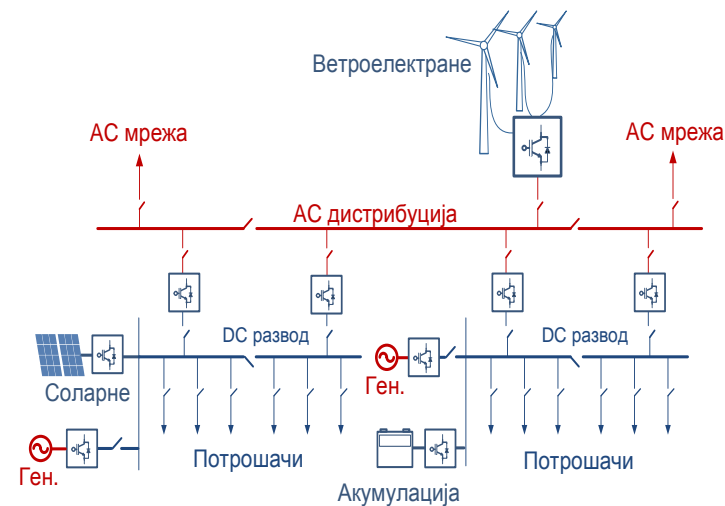
Si REPLACES Fe&Cu

DISTRIBUTED
PRODUCTION,
ACCUMULATION

ACTIVE LOADS

NEW CHALLENGES

- POWER ELECTRONICS
- GRID-SIDE INVERTERS TO INTERFACE SOURCES
- GRID-SIDE INVERTERS TO INTERFACE LOADS
- REGENERATION-ON-DEMAND
- LOAD-ON-DEMAND
- SAFE & FAST COMMUNICATIONS
- HVDC
- DC IN DISTRIBUTION
-LAW, ECONOMY, ENVIRONMENT, POLITICS...



NEW SKILLS – BRAND NEW ENGINEERS

Mechanical engineering
Electrical engineering
Mining
Materials
Physics
Electrochemistry
Electronics
Semiconductors
Superconductors
Economics, Law, Finance

Mathematics, dynamic programming, graphs,
probability, statistics, game-theory, ...

BRINGING FORTH ENGINEERS AND ORGANIZING R/D EFFORTS

CENTRALIZED



Main R/D, design and & engineering -- in dominant countries

Minor countries: purchasing and using new technologies

Education system in dominant countries gather all the regional prodigies

Education system in minor countries teaches more basic skills

SHARED



Evenly distributed:

- Universities and schools

- Scientific education centers and basic skills education centers

- Funding

- Design assignments

- Chances to win technology-edge projects

- Chances to cooperate with the key industrial leaders

....DISTRIBUTED R/D EFFORTS

EDUCATION IN SERBIA

- BEFORE 2000.

Less bothered by politics and lucrative options, youngsters were studying
Renowned 5-years studies of technical sciences,
Old grads: world leaders (Cuk, Boroyevic, Siljak, Obradovic...)
Serbian experts in energy field appreciated around the globe
Most national projects executed by national institutes & universities
PhD studies and research related to the real-world problems of EPS

- AFTER 2000.

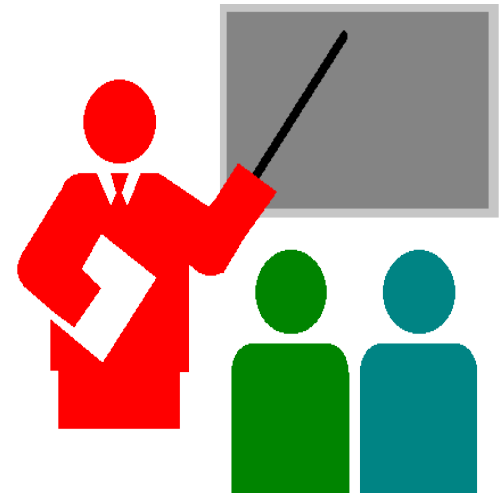
Inhaling the winds of reforms coming from abroad,
we traded high-end standards for lesser skills

Splitting some two-semester fundamental subjects into
one-semester courses, further partition into colloquiums

Promoting the math-stripped courses in programming
languages into computer science, and IT

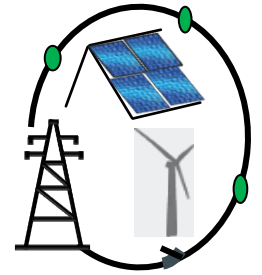
Misconception of hypes and clinging to buzzwords

Science and education funding: Plenty of space for improvements



EDUCATION IN SERBIA

-PLENTY OF POSSIBILITIES FOR IMPROVEMENTS –



Curricula: Large number of courses and exams

Any update of the curricula comes with considerable delay

Low wages take their toll on the availability of dedicated and skilful teachers

Elective subject offered in non-systematic way --- opting for an easier path

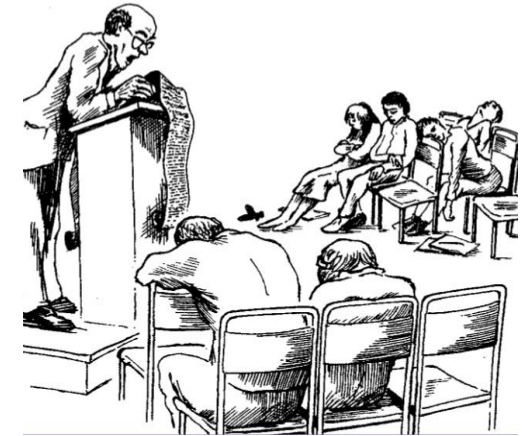
Freshmen with the high-school pattern “learn by heart – pass the test – forget”

Training in solving the problems already solved



Most prominent projects remain beyond the reach of national universities and institutes (assigned to teams out of Serbia)

Most high-tech development involvements of local developers have just a trifle share of the final-product-cost



SUCCESSES: CAPSTON PROJECTS, STUDENT COMPETITIONS:

DRUMSKA STRELA, IFEC, MDTEAM, H-BRIDGES,

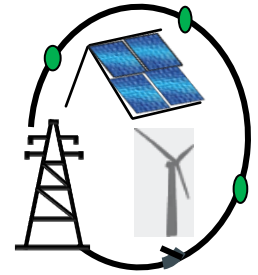
<http://stt.org.rs/>

<http://vukosavic.etf.bg.ac.rs/mdtim.html>

<http://www.h-bridges.etf.bg.ac.rs>

<http://www.mre.gov.rs/aktuelno.php#a331>

ПРОБЛЕМИ ЗАДРЖАВАЊА ЕНЕРГЕТИЧАРА



Студенти ЕТФ са просеком > 9 :

Многи напусте Србију одмах по дипломирању

Постоји жеља свршених дипломаца да се стечено знање примени у решавању проблема у Србији, међутим, могућности за то су ограничене

Истраживачки рад на пројектима МНТР није довољна мотивација

Последице:

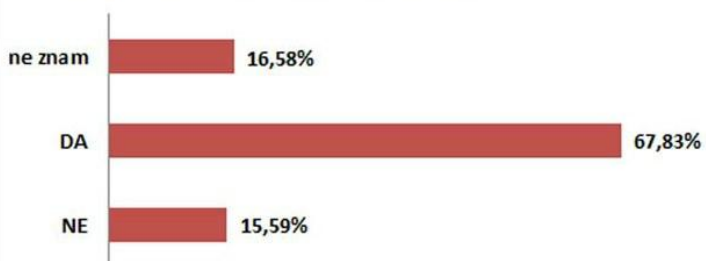
најбољи међу младим стручњацима не раде на решавању српских проблема, (пример: MDteam 2005, IFEC 2016.)

■ НЕЗАПОСЛЕНИ СА ВИСОКОМ СТРУЧНОМ СПРЕМОМ

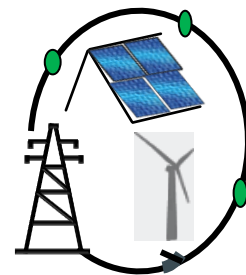
Дипл. економисти	980
Дипл. правници	500
Лекари	365
Дипл. електроинжењери	225
Дипл. машински инжењери	220
Стоматолози	120
Доктори наука	5
Магистри	10



Spremnost za odlazak u inostranstvo



...ЗАКЉУЧАК ... ПОТРЕБНО ЈЕ ФОРМИРАТИ



Студијски програм за образовање енергетичара

Институт за енергетику

Владин стручни савет за енергетику

Образовати, организовати, ангажовати младе стручњаке у анализи, развоју и примени нових технологија, у планирању и преиспитивању стратегија

Приликом доношења одлука везаних за развој и примену нових технологија дати приоритет ангажовању домаћих института и оперативе

Приликом доношења одлука везаних за енергетску транзицију, ресурсе, климатске промене, развој инфраструктуре и примену нових технологија, потребно је ангажовати домаћу струку и домаће експерте.