



27 avril 2020

Panel session Building sector: Towards resource-efficient carbon neutrality



Toward zero emission in the swiss buildings

Actual situation and challenges

Roger Nordmann, MP Swiss Parliament

President of the social-democrat Group

Environment, Spatial Planning And Energy Committees (former President)

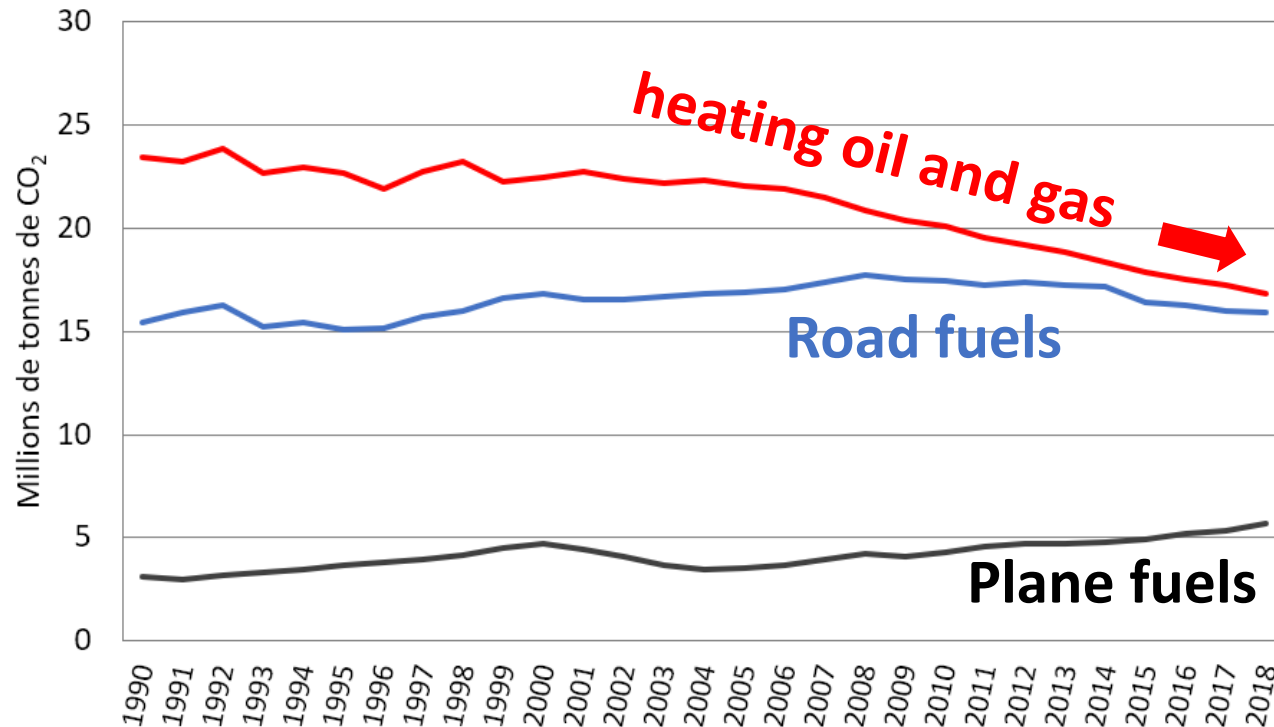
Board swisscleantech Association

President of Swissolar

Lausanne

Evolution of the CO2-emissions in Switzerland (oil and gaz)

Emissions de CO2



Swiss Building 2007 à 2017

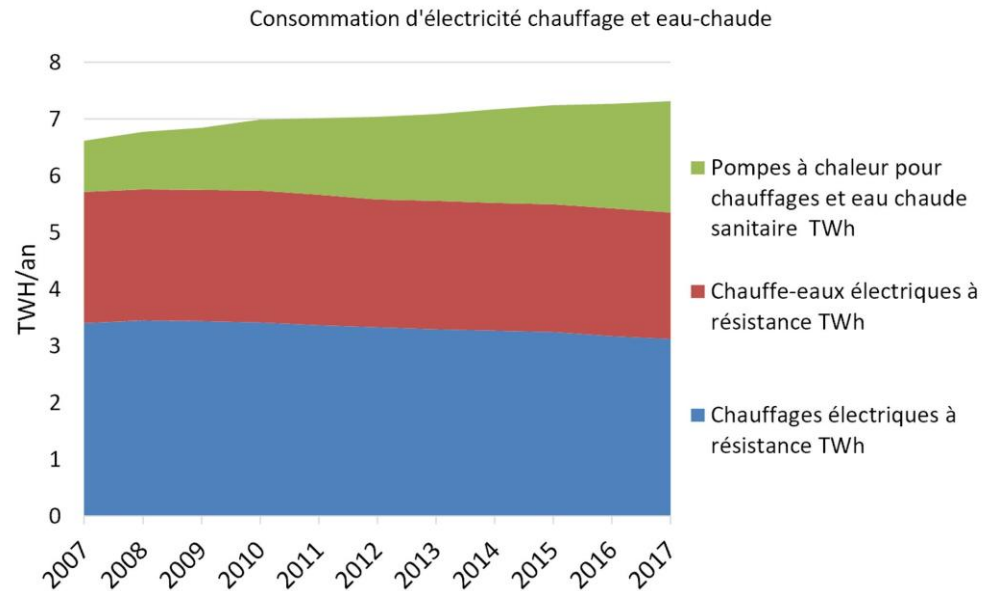
Fossil heating and domestic hot water : down from 71 to 57 TWh
= **-14 TWh fossil**
(-19 % energy and -21 % CO₂)
(heated floor + 8%)

- Combustibles fossiles corrigés des variations climatiques (essentiellement gaz et mazout)
- Carburants fossiles sauf kérozène vols internationaux (essentiellement diesel et essence)
- Kérozène fossile des vols internationaux

Main driver from 2007 to 2017

More renewable heat:

- From 11 to 16,7 TWh (+ 5,7)
- mainly thanks to heat pumps, **which use 1 TWh more electricity..**



- Also wood, sun, regeneration

Remainder: Efficiency = Insulation, building technology, adjustments

To reach zero emission, we will need

- **around 6 TWh** additional electricity for heat pumps, mainly during the winter
= big quantity, therefore not the solution for everywhere
- Retrofit existing building
- Harvest more renewable heat

Key challenges retrofit

Overall speed of retrofitting

Overcome the dilemma between tenants and landlords which blocks investments

Get the right decisions and finance the retrofit of condominiums (Propriété par étage).

Key challenges renewable heat

- Where to install district cooling?
- Where to dismantle first the gas grid?
- Which additional sources for district heat: middle deep geothermal heat, wood, sun, cogeneration (evt. first fossil with progressive transition to syn-gaz)?
- Seasonal heat storage geothermal energy

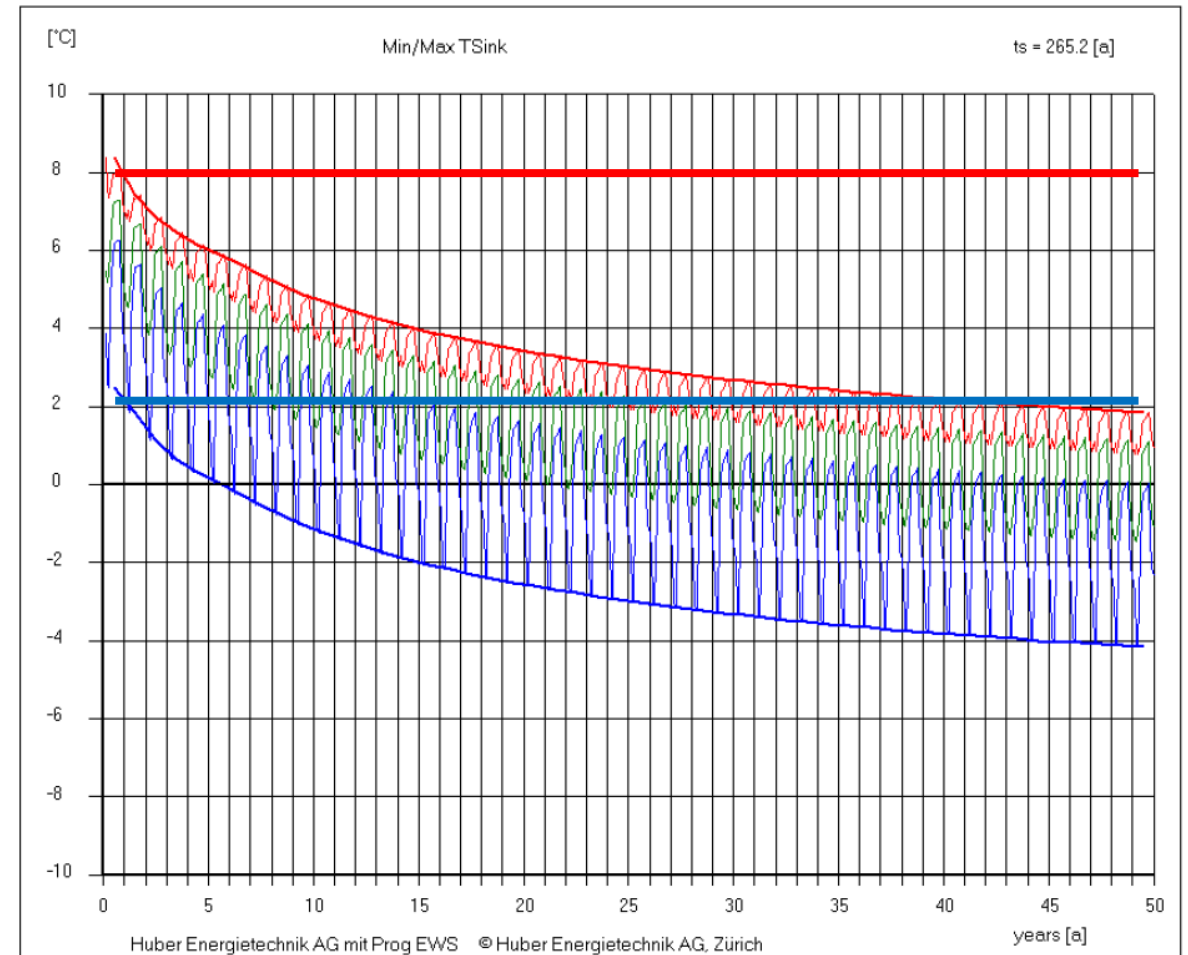
Seasonal heat storage: two interesting technologies (among others).

Huge inhouse water tank



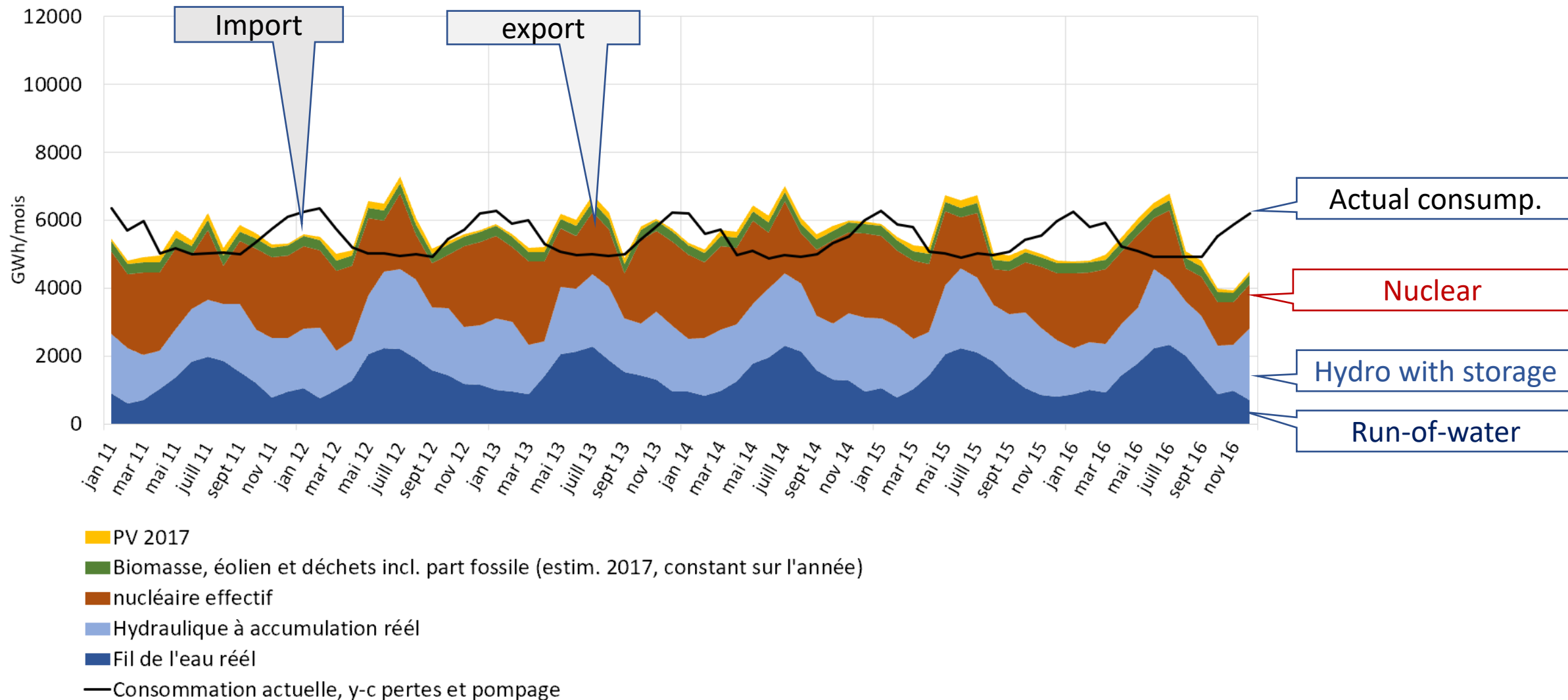
Source: www.jenni.ch

Summer Regeneration of borehole of heat pump

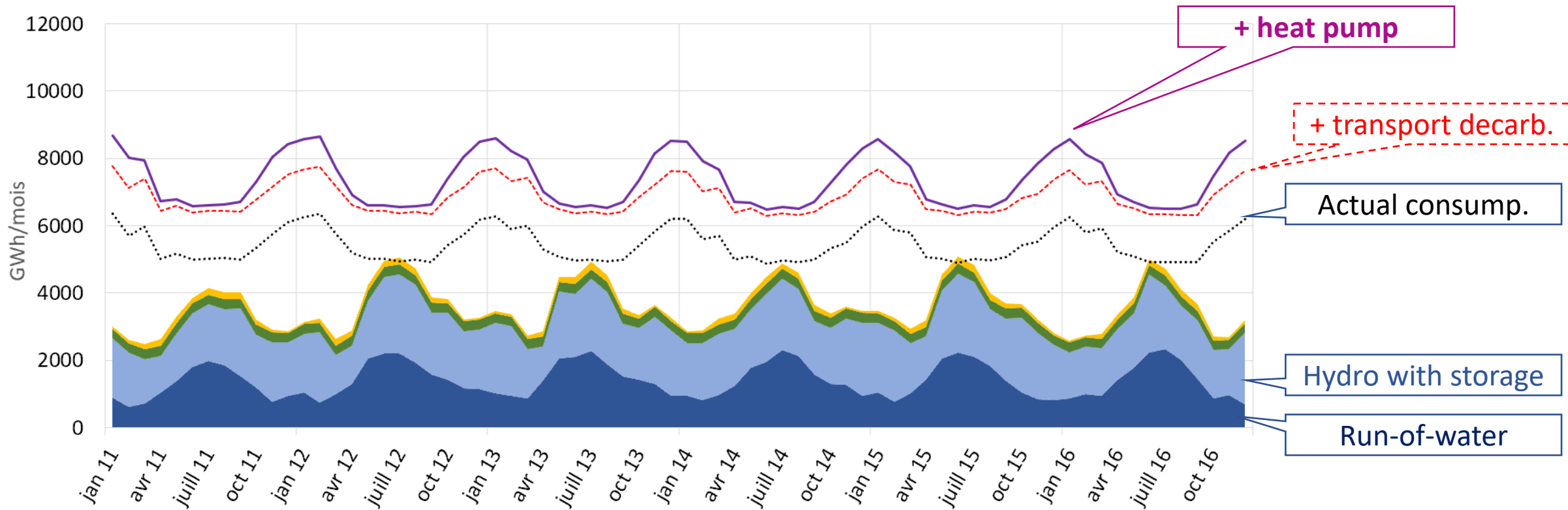


Source: Huber Energietechnik cité par René Naef

The monthly electricity production and consumption in Switzerland: actual situation

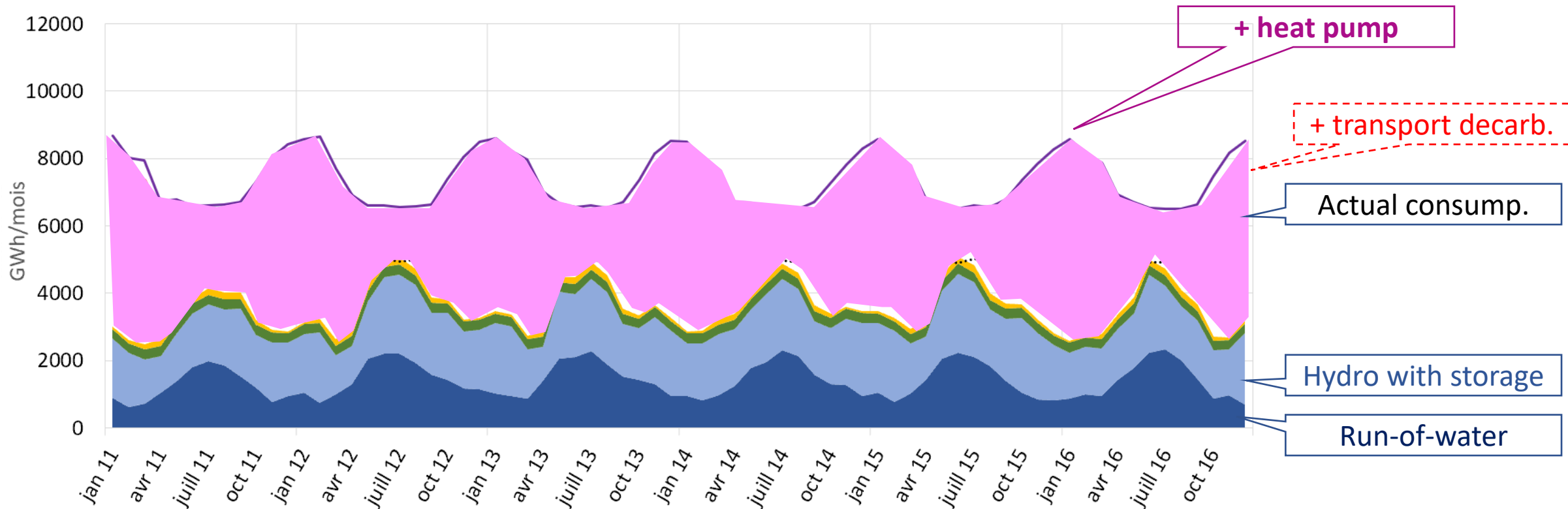


The monthly electricity production and consumption in Switzerland: nuclear removed + new consumption



- PV 2017
- Biomasse, éolien et déchets incl. part fossile (estim. 2017, constant sur l'année)
- Hydraulique à accumulation réel
- Fil de l'eau réel
- + Electricité pour décarbonisation chauffage et eau chaude sanitaire
- - - + Electricité pour remplacement diesel et essence (100% = 17 TWh/J)
- ⋯ Consommation actuelle, y-c pertes et pompage

The monthly electricity production and consumption in Switzerland



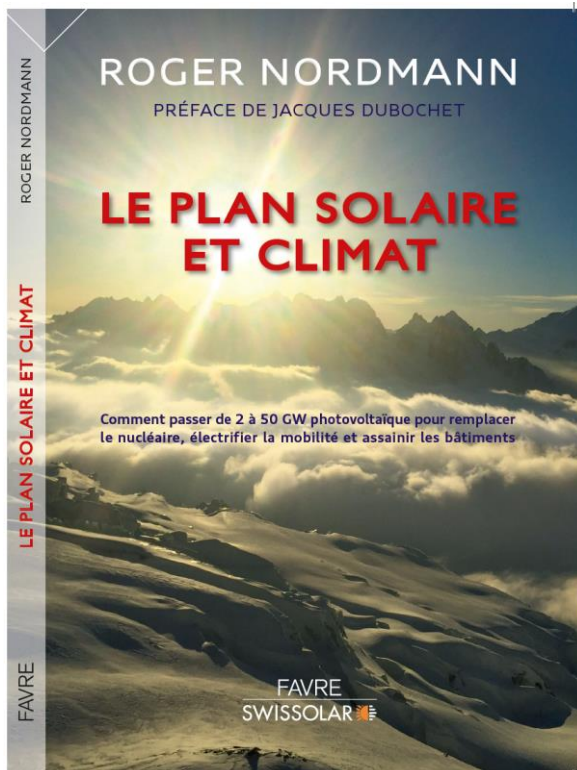
- PV 2017
- Biomasse, éolien et déchets incl. part fossile (estim. 2017, constant sur l'année)
- Hydraulique à accumulation réel
- Fil de l'eau réel
- + Electricité pour décarbonisation chauffage et eau chaude sanitaire
- - - + Electricité pour remplacement diesel et essence (100% = 17 TWh/J)
- ⋯ Consommation actuelle, y-c pertes et pompage

40 to 45 TWh / year
(current consump.: 62 TWh/y)

Des p'tits pas, des p'tits pas, des p'tits pas ça suffit pas!

(small steps are not enough)

Manifestants pour le climat, Lausanne, 2 février 2019



French edition may 2019

Thanks for the attention

www.roger-nordmann.ch

www.swissolar.ch

www.swisscleantech.ch



German translation august 2019