SunChain 2024

Chances for VIPV
Vehicle Integrated PV

Ruud Derks

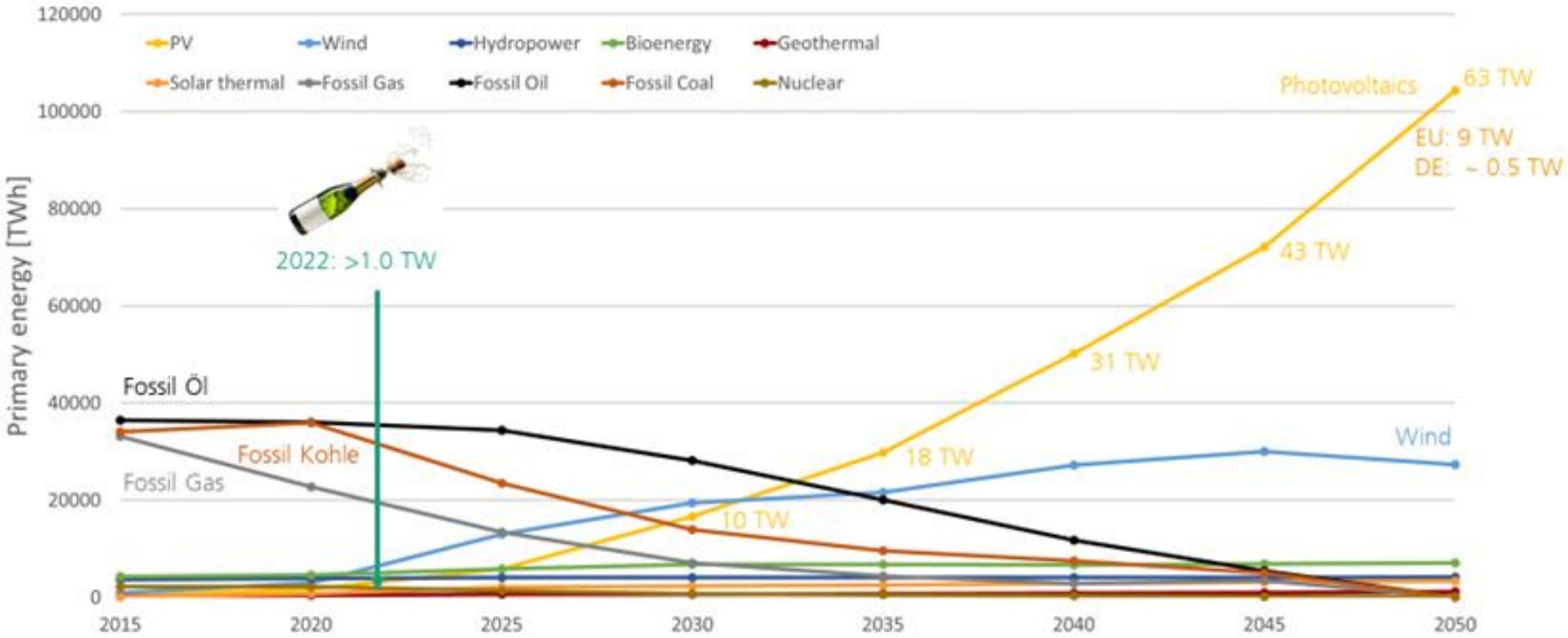
What do you think ?

1. What is typical area in m2 on top of trailer ?
2. What would be the benefit of having solar systems on a trailer ?
3. Who knows Volvo, Scania, Mercedes, DAF ?
4. Who knows Schmitz-Cargobull, Krone, Kögel ?
5. How many trailers in Europe ?
6. What if all trailers would have solar systems ?

VIPV – an introduction

1. Ruud general intro & ASOM
2. Lenneke TNO
3. Martijn real experience at IM Efficiency
4. Nelis Lightyear
5. Discussion & questions

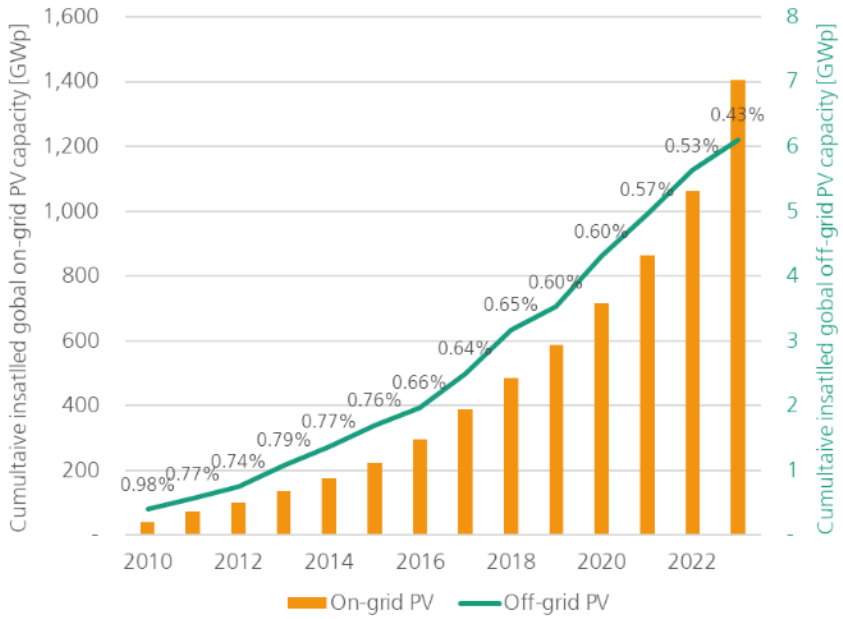
Global Energy Transition: CO_2-free until 2050



Based on: D. Bogdanov et al, Energy 227 (2021)

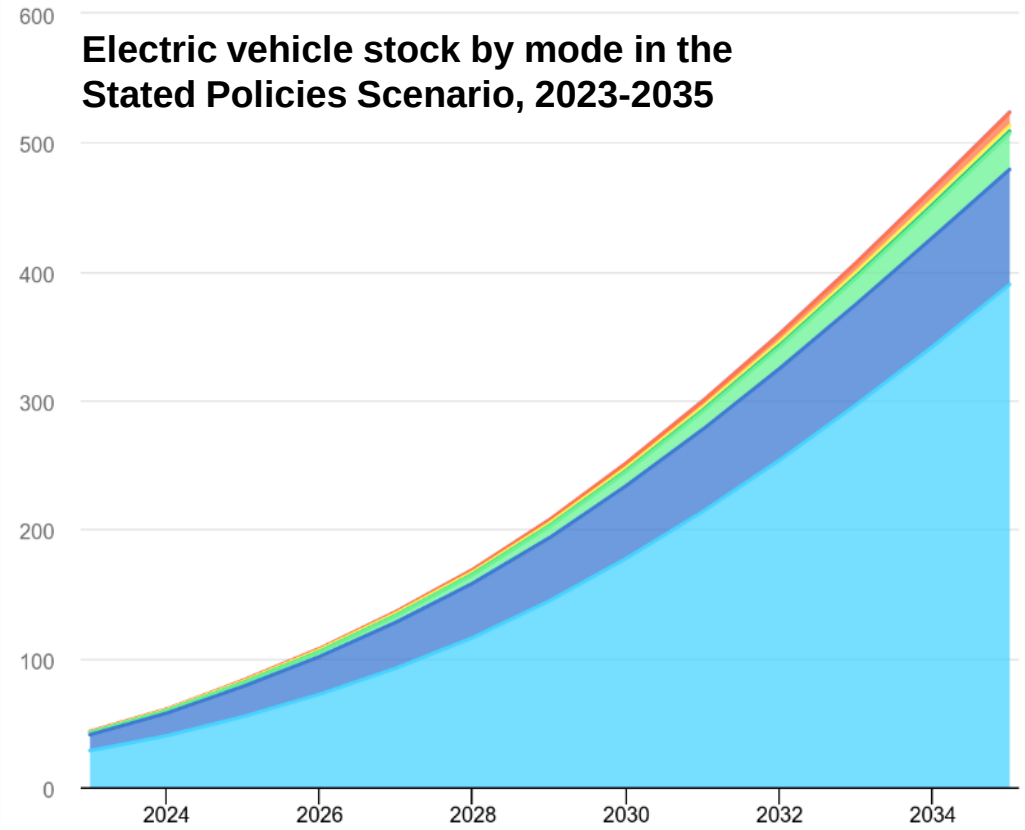
Most installed PV is grid-connected

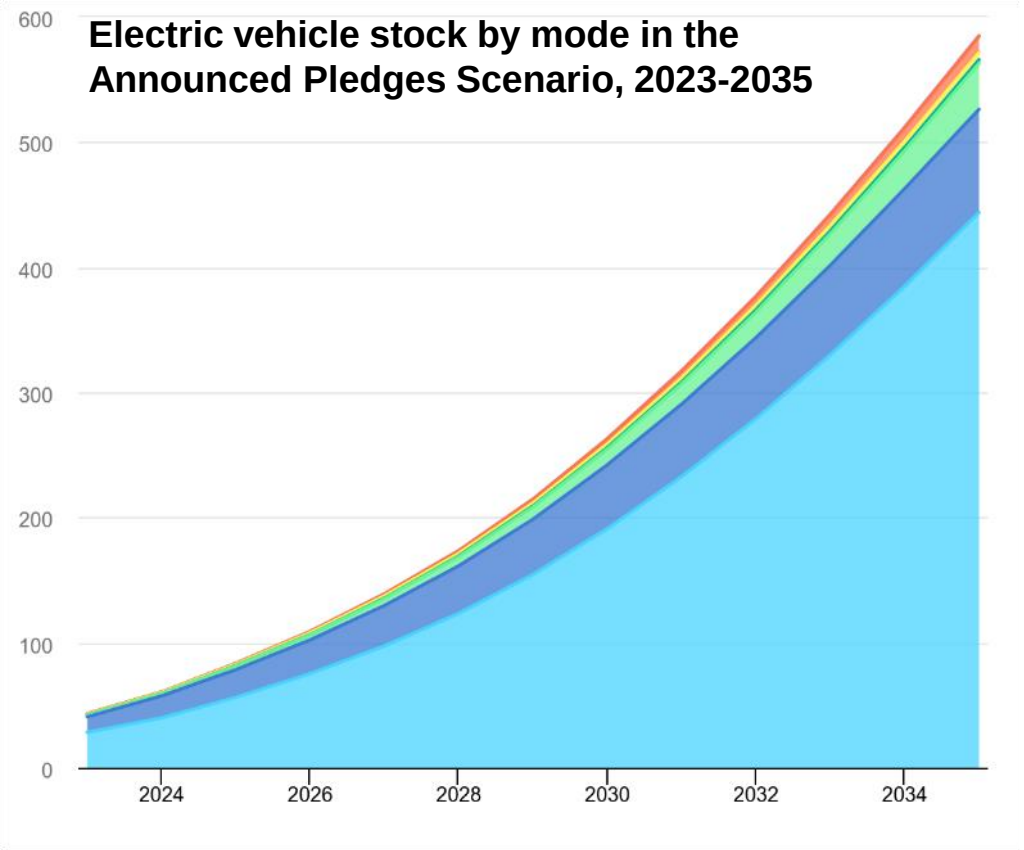
- Approximately 99.6% of today's installed PV capacity is connected to the grid.



BUT: Falling costs and rapid leaps in the development of PV and batteries are fuelling the next wave of solar applications

Electric vehicle outlook by IEA 2024





PLDVs - BEV
PLDVs - PHEV
LCVs - BEV
LCVs - PHEV
Buses - BEV
Buses - PHEV
Trucks - BEV
Trucks - PHEV

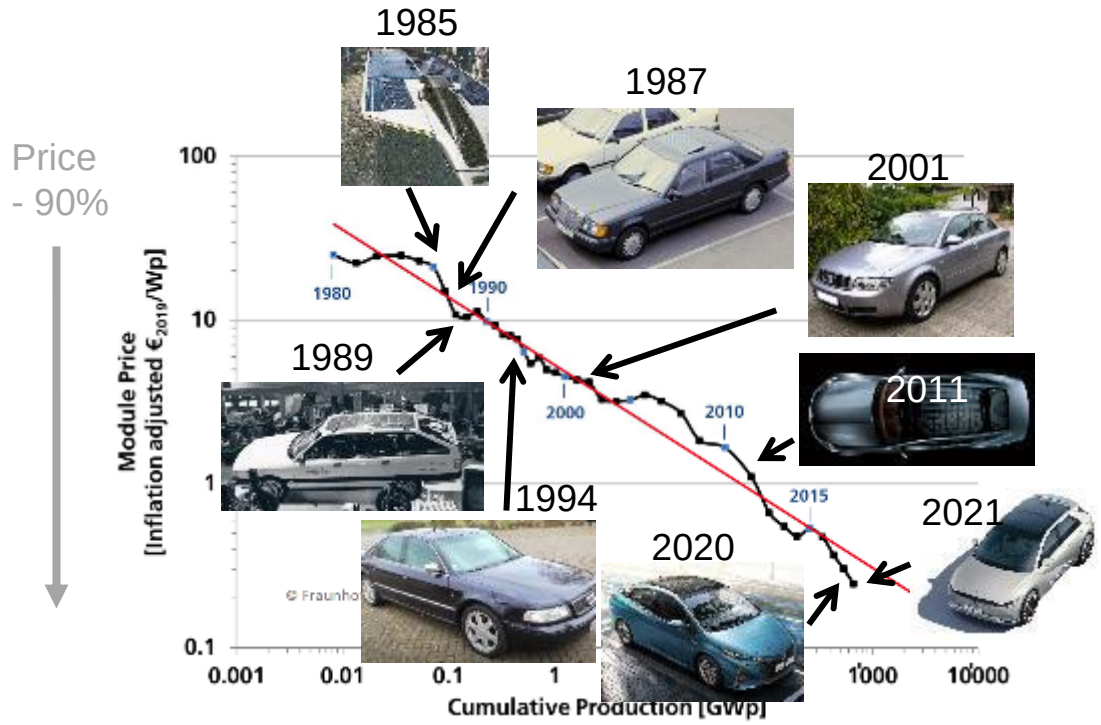
asom Alliance for Solar Mobility

Solar Mobility and the dream of free travelling

- First solar powered electric vehicle:
  - 1955 William G. Cobb (General Motors Corp.)
  - „Sunmobile“ at the General Motors Powerama auto show in Chicago, Illinois
- It‘s been a long way since then ...
  for solar and for electric vehicles

Solar Mobility and the learning curve of PV

- 1985: World Solar Challenge
- 1987: Mercedes E-Class
- 1989: Audi Duo
- 1994: Audi A8
- 2001: Audi A4
- 2011: Fisker Karma
- 2020: Toyota Prius
- 2021: Hyundai Ioniq 5
- 2023: Toyota BZ4X …



Currently peak interest in VIPV fueled by cheap solar technology and increased electromobility

Every electron counts!

- Grid independent and sustainable energy generation, no intermediate storage required
- Less external charging → less costs and charging stops
- Transport must reduce CO_2 emissions to comply with regulations

Solar moves people

Public Transport

© Sono Motors GmbH

© Byron Bay Train

Passenger vehicles

© Squad Mobility BV

© TUX mobility B.V.

© INFINITE MOBILITY AS.

© OPES Solar Mobility

Research

VISION EQXX with Solar roof by Fraunhofer ISE © Mercedes-Benz Group AG

Front hood with Solar cells @Fraunhofer ISE

Solar moves goods

Commercial Vehicle

© Solbian

© OPES Solutions

© Wattlab (KRSolar B.V.)

© IM Efficiency

Research

© Fraunhofer ISE

Solar moves the EU

*Solar Vehicles present "[..] a **high potential** to contribute to the reduction of emissions from the transport sector, by increasing the **energy autonomy of EVs** and partially replacing grid power with **solar electricity produced on board**"*

- "EU Solar Strategy" by the European Commission, 18th of May 2022

Solar moves us

ASOM is the **European cooperative platform** driving the **Solar Mobility Industry**, an **emerging value chain** comprising companies, organizations, and research institutes **pioneering photovoltaic-based solutions for eco-friendly, convenient transportation**.

ASOM - cooperative European platform for the Solar Mobility Industry

Vision Governmental Affairs Working Group:

- Raise awareness, proactive and positive messaging
- Advocacy and influencing towards political stakeholders

Vision Research Working Group:

- Standardization, Modeling/forecasting on market
- Technology impact and roadmapping
- Soft factors

Vision Marketing Working Group:

- Informing and educating the public
- Stimulating market across modalities
- Organise events
- Share insights/materials/network

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© 2023 Valoe Oyj

© 2023 Sun Rider (Need The Globe B.V.)

© 2023 Lightyear Layer Manufacturing line

asom Alliance for Solar Mobility

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Lenneke Slooff-Hoek (TNO)

Lead Marketing WG
Frank Orlicek (OPES)

Lead Governmental Affairs WG &
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TNO innovation for life
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STRATO
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