

VIRTUAL EDITION

IRENA INNOVATION WEEK²⁰²⁰

Transforming Transport: innovative renewable-based solutions in road freight, shipping and aviation

7 October 2020 • 16:00-20:00 CEST • Virtual

#IVIW2020



Welcoming remarks



Dolf Gielen

Director

IRENA Innovation and Technology Centre

Ministerial perspectives on the way ahead



H.E. Seamus O'Regan

Minister of Natural Resources

Canada

Session Overview

16:00 – 16:20

Setting the Scene

16:20 – 17:05

Panel I: Decarbonising Shipping with Renewables



17:15 – 18:00

Panel II: Decarbonising Aviation with Renewables



18:10 – 18:55

Panel III: Decarbonising Road Freight Transport with Renewables



19:05 – 19:50

Panel IV: Identifying cross-sectoral synergies in shipping, aviation and road freight transport

19:50 – 20:00

Closing Remarks

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Please make sure to **mute** yourself during the session to avoid background noise



If you have questions for our panelists, please use the Q&A



If you encounter any technical issues, please write your issue to Cisco Webex Events



This session will be recorded and recording along with the slides will be available on the Innovation Week website

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Setting the scene

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Setting the scene



Roland Roesch

Deputy Director
IRENA Innovation and Technology Center



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Decarbonising Transport with Renewables

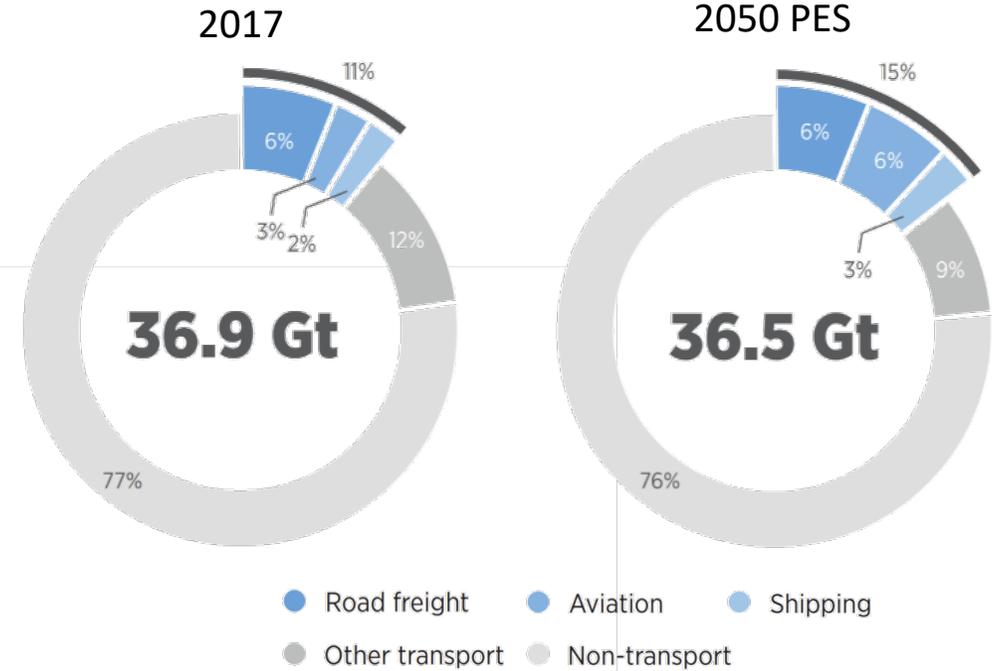
Roland Roesch

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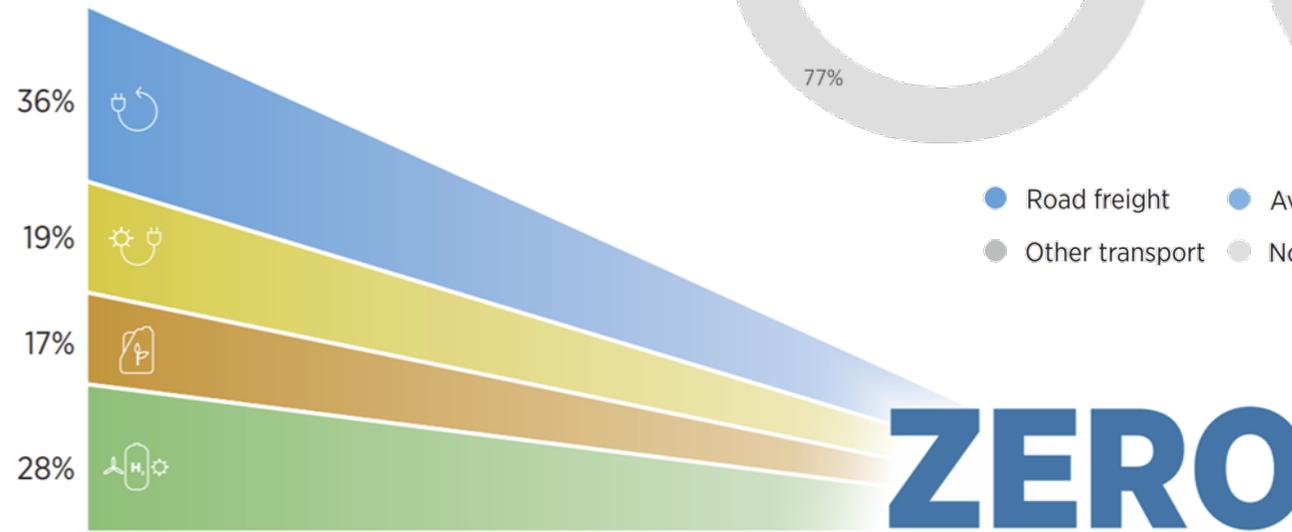
Reaching zero emissions in select transport sectors

The transport sector, as a whole, accounts for nearly a quarter of global CO₂ emissions.

Transport share of total energy and process emissions



Direct Energy & Process CO₂ Emissions in 2050 (Planned Energy Scenario)



Reduced demand and improved energy efficiency



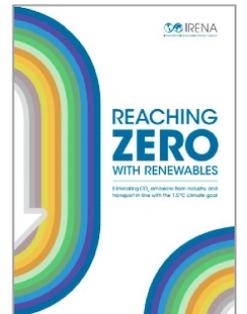
Direct use of clean, predominantly renewable, electricity



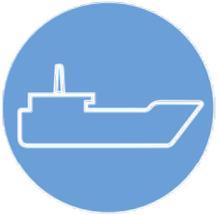
Direct use of renewable heat and biomass



Indirect use of clean electricity via synthetic fuels & feedstocks



Decarbonising shipping with renewables



Shipping

Shipping accounted for 10% of all transport emissions, or 2.3% of global CO₂ emissions in 2017.

2 options compatible with reaching zero emissions



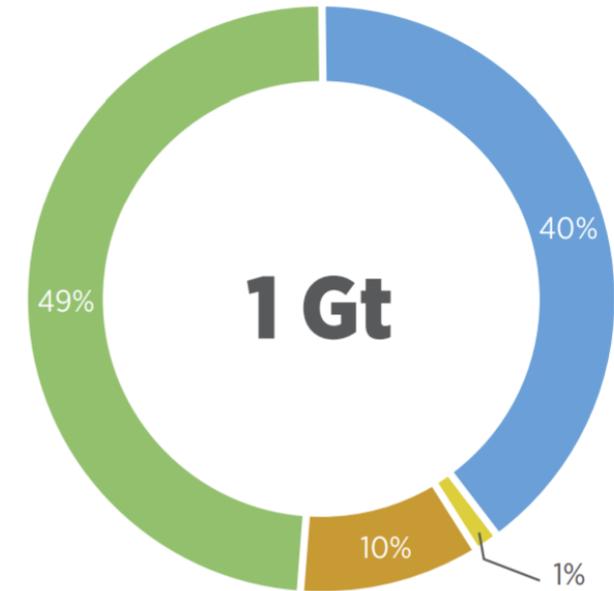
Advanced biofuels

→ Use biomass-based fuels such as biodiesel, renewable diesel, bio-methanol, bio-fuel oil and liquefied biogas.

E-fuels

→ Use green hydrogen or synthetic fuels such as green methanol, ammonia and methane.

Estimated role of key CO₂ emission reduction measures to reduce shipping Planned Energy Scenario emissions to zero.



Reduced demand and improved energy efficiency



Direct use of clean, predominantly renewable, electricity



Direct use of renewable heat and biomass



Indirect use of clean electricity via synthetic fuels & feedstocks

Decarbonising aviation with renewables



Aviation

Aviation accounted for 11% of all transport emissions, or 2.5% of global CO₂ emissions in 2017.

3 options compatible with reaching zero emissions



Biojet fuel

→ Use fuels produced from sustainably sourced biomass.

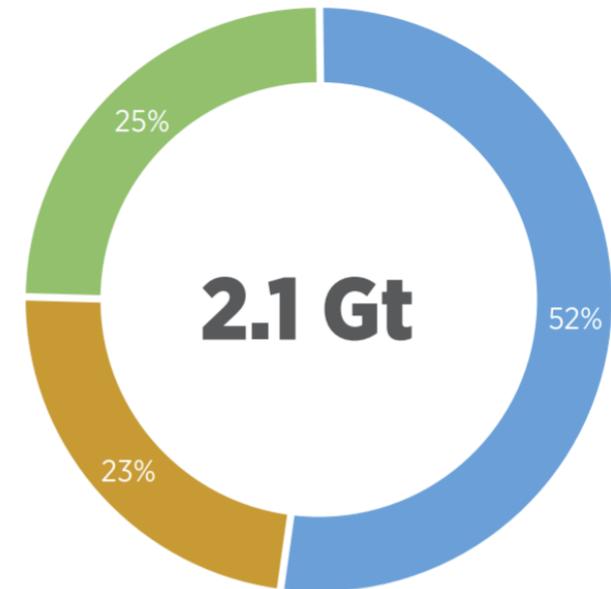
E-fuels

→ Use synthetic fuels produced from cleanly sourced CO₂ and green hydrogen.

Battery-powered aircraft

→ Use propulsion systems powered by batteries charged with renewable electricity.

Estimated role of key CO₂ emission reduction measures to reduce aviation Planned Energy Scenario emissions to zero.



Reduced demand and improved energy efficiency



Direct use of clean, predominantly renewable, electricity



Direct use of renewable heat and biomass



Indirect use of clean electricity via synthetic fuels & feedstocks

Decarbonising road freight transport with renewables



Road freight

Road freight transport accounted for 27% of all transport-related emissions or over 6% of global CO₂ emissions in 2017.

3 options compatible with reaching zero emissions



Battery electric vehicles

→ Use electric motors powered by a battery pack, charged with renewable electricity.

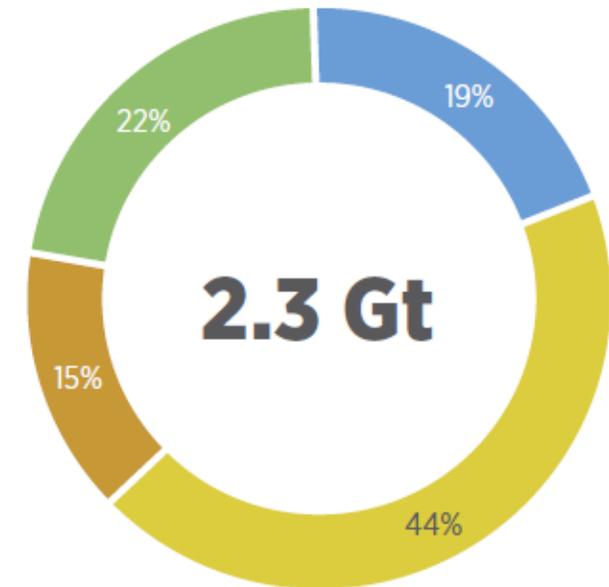
Fuel cell electric vehicles

→ Use electricity produced by fuel cells powered by compressed (green) hydrogen.

Advanced biofuels

→ Use biomass-based fuel substitutes, such as biodiesels and renewable diesels.

Estimated role of key CO₂ emission reduction measures to reduce road freight Planned Energy Scenario emissions to zero.



Reduced demand and improved energy efficiency



Direct use of clean, predominantly renewable, electricity



Direct use of renewable heat and biomass



Indirect use of clean electricity via synthetic fuels & feedstocks

Upcoming work on the transport sector

Which future for heavy-duty vehicles in the Penta region? Integrating electromobility in the energy transition

22 October 2020 | Webinar



Oct 22nd, 2020. Virtual event on electric trucks with Benelux and Penta Forum. Registration link [here](#)



2021 Innovation Landscape on Smart Electrification

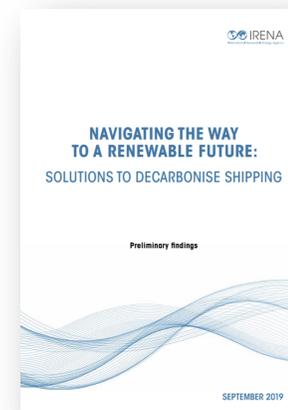
- Systemic innovation for smart electrification of the transport, industry and buildings sector

2021 Navigating the way to a renewable future 2.0

- A pathway to decarbonise the shipping sector by 2050.

2020 Innovation Outlooks on:

- Renewable Methanol
- Biofuels for aviation (update)



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Thank you!

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Setting the scene



Jari Kauppila

Head of Quantitative Policy Analysis and Foresight
International Transport Forum



Transforming Transport: innovative renewable-based solutions in road freight, shipping and aviation

IRENA Innovation week 2020

October 7, 2020

The ITF

- **Intergovernmental organisation**
 - OECD framework, 62 member countries
 - More than 70% of road transport 80% of global air transport and 90% of maritime
- The only global body covering **all transport modes**
- **Think tank** for transport policy
 - **Data and statistics**
 - **Analysis, identification of best practices**
 - **Knowledge sharing**
- Organising global dialogue for better transport
 - **Annual Summit**, largest gathering of transport ministers
 - **Corporate Partnership Board**
 - “Platform for **discussion and pre-negotiation**”



Focal areas of ITF work

- Digitalisation
- Connectivity
- Safety & security
- Universal access
- **Decarbonisation**



Linking transport sector to other sectors

Decarbonising transport initiative



- Launched in 2016, right after the signature of the Paris Agreement
- Aims to support governments in the definition of policies that help meeting its ambition

Progress tracking

- Evaluate how current mitigation measures contribute to reducing transport CO₂
→ **NDC analysis**

In-depth sectoral reports

- Identify effective policies for decarbonising transport sub-sectors
→ **urban passenger, road freight, maritime transport, aviation...**

Focus studies

- **Analyse specific decarbonisation issues**
→ e.g. Impact of decarbonising road transport on tax revenues, Vehicle technology choice, Regulations & standards for low/zero emission vehicles

National pathways

- **Help countries define pathways to meet their transport CO₂ reduction ambitions**

Policy dialogue

- Organise global dialogue on transport and climate change → **ITF Summit**, roundtables, briefings, workshops
- Act as a conduit for transport sector input to climate change negotiations → **Involvement in UNFCCC & COP**
- **Transport Climate Action Directory**

"The International Transport Forum's TRANSPORT CLIMATE ACTION DIRECTORY is a key tool for moving from ambition to climate action - our most urgent challenge in climate policy today.

Governments now have a new resource to help them choose mitigation and adaptation measures that work in their specific context and that support their objectives."

www.itf-oecd.org/TCAD



Patricia Espinosa

Executive Secretary
UNFCCC

Decarbonisation

Key pillars

- Manage travel demand
 - Reduce trip distances
 - Shift modal choice towards energy efficient modes
 - Maximise the capacity utilisation of vehicles
- Enhance energy efficiency of vehicles
- Decarbonise energy vectors/fuels
- Minimise emissions beyond vehicle use and energy/fuel production
 - Vehicle manufacturing and infrastructure construction

} Today's focus

+ Need to place this in the broader framework of the SDGs

- Importance of meeting multiple targets: co-benefits for safety, affordability, health/pollutant emission reduction, energy security, accessibility, connectivity, industrial development, economic growth...



Today's session

- The **pathway** towards net zero GHG emissions is **relatively clear for urban transport**, with central roles possible for travel demand management, changes in modal balance and **direct electrification**
 - This is **not always the case for long distance transport** (i.e. road freight transport, shipping and aviation)
 - Key technologies include battery electric, plug-in hybrids, biomass & power to fuels, e-fuels (with or without carbon, e.g. ammonia in shipping), hydrogen
 - Different challenges and opportunities in different transport modes
 - **Innovation can help decarbonise these sub-sectors**
 - Progress needs to take place across different dimensions (e.g. technical, political, regulatory, commercial)
 - We see **this session** as a **precious resource to help inform future technology and policy developments**
- 

Thank you!

Jari Kauppila

Head of ITF Secretary-General's Office and Head of Quantitative Policy Analysis and Foresight

International Transport Forum

Jari.kauppila@itf-oecd.org

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Panel I: Decarbonising Shipping with Renewables

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Panel I: Decarbonising Shipping with Renewables

Panellists



Tue Johannessen
Senior Innovation Portfolio
Manager
Maersk



Bart Hellings
COO
GoodFuels



Tristan Smith
Lecturer
University College London



Jakob Steffensen
Head of Innovation and
Partnerships
DFDS



Anne Sophie Vinther Hansen
Investment Manager
Vækstfonden
(Danish Sovereign Fund)

Moderator



Roland Roesch
Deputy Director

IRENA Innovation and Technology Center

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Digital Break

Coming up next: Panel II - Decarbonising Aviation with Renewables

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Panel II: Decarbonising Aviation with Renewables

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Panel II: Decarbonising Aviation with Renewables

Panellists



Valentin Batteiger
Lead – Alternative Fuels
Bauhaus Luftfahrt



Hassan El-Houjeri
Climate and Sustainability
Technology Strategist
Saudi Aramco



Glenn Llewellyn
VP Zero Emission
Technologies
Airbus



Oskar Meijerink
Project Lead – Future
Fuels
SkyNRG



Jack Saddler
Professor
University of British Columbia

Moderator



Jagoda Egeland
Advisor to the Secretary-General
International Transport Forum

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Digital Break

Coming up next: Panel III - Decarbonising Road Freight Transport with Renewables

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Panel III: Decarbonising Road Freight Transport with Renewables

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Panel III: Decarbonising Road Freight Transport with Renewables

Panellists



Henrik Engdahl
Chief Engineer - Charging
Volvo Group



Angie Farrag-Thibault
Project Lead for Clean Trucking
World Economic Forum



Elisabeth Fretheim
Head of Business Development
Nikola Motor



Steven Nadel
Executive Director
American Council for an
Energy Efficient Economy

Moderator



Francisco Boshell
Analyst, RE Technology Standards and Markets
IRENA

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Panel IV: Identifying Cross-sectorial Synergies in Shipping, Aviation and Road Freight Transport

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Panel IV: Identifying Cross-sectorial Synergies in Shipping, Aviation and Road Freight Transport

Panellists



Mariette van Empel

Director Sustainable Mobility
Ministry of Infrastructure and
Water Management of the
Netherlands



Jane Hupe

Deputy Director - Environment,
Air Transport Bureau
ICAO



Randall Krantz

Senior Advisor on
Shipping Decarbonisation
Global Maritime Forum



Christoph Wolff

Head of Mobility
World Economic Forum

Moderator



Pierpaolo Cazzola

Advisor on Energy, Technology and Environmental Sustainability
International Transport Forum

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Closing remarks

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Summary remarks



Pierpaolo Cazzola

Advisor on Energy, Technology and
Environmental Sustainability,
International Transport Forum

IRENA Innovation Week 2020: Programme

Day & Time	Session	Partners
Monday 5 th October 09:30 – 11:30 CEST	High-level opening session	
Monday 5 th October 17:00 – 20:00 CEST	Session 2: Smart electrification of end-use sectors: implications for the power system	 EPRI ELECTRIC POWER RESEARCH INSTITUTE
Tuesday 6 th October 08:00 – 11:00 CEST	Session 3: Scaling up green hydrogen and green e-fuels production to <u>decarbonise</u> industry & transport	 Hydrogen Council
Tuesday 6 th October 17:00 – 20:00 CEST	Session 4: Growing the bio-economy: solutions for the sustainable supply of biomass & biofuels	 GBEP Global Bioenergy Partnership
Wed 7 th October 08:00 – 11:00 CESR	Session 5: Renewable solutions for industry transformation	 MISSION POSSIBLE PLATFORM
Wed 7 th October 17:00 – 20:00 CEST	Session 6: Transforming Transport: Innovative renewable-based solutions in road freight, shipping & aviation	 International Transport Forum
Thursday 8 th October 10:00 – 12:30 CEST	Session 7: IRENA Youth Talk: Entrepreneurship and Innovation for the green energy agenda	 Initiate!  SDG7 YOUTH CONSTITUENCY YOUTH IN SUSTAINABLE ENERGY
Thursday 8 th October 14:00 – 16:00 CEST	Session 8: The Way Forward	

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Thank you!

Coming up next

Session 7: IRENA Youth Talk: Entrepreneurship and Innovation at 10:00 tomorrow

Register at

<https://innovationweek.irena.org/>

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