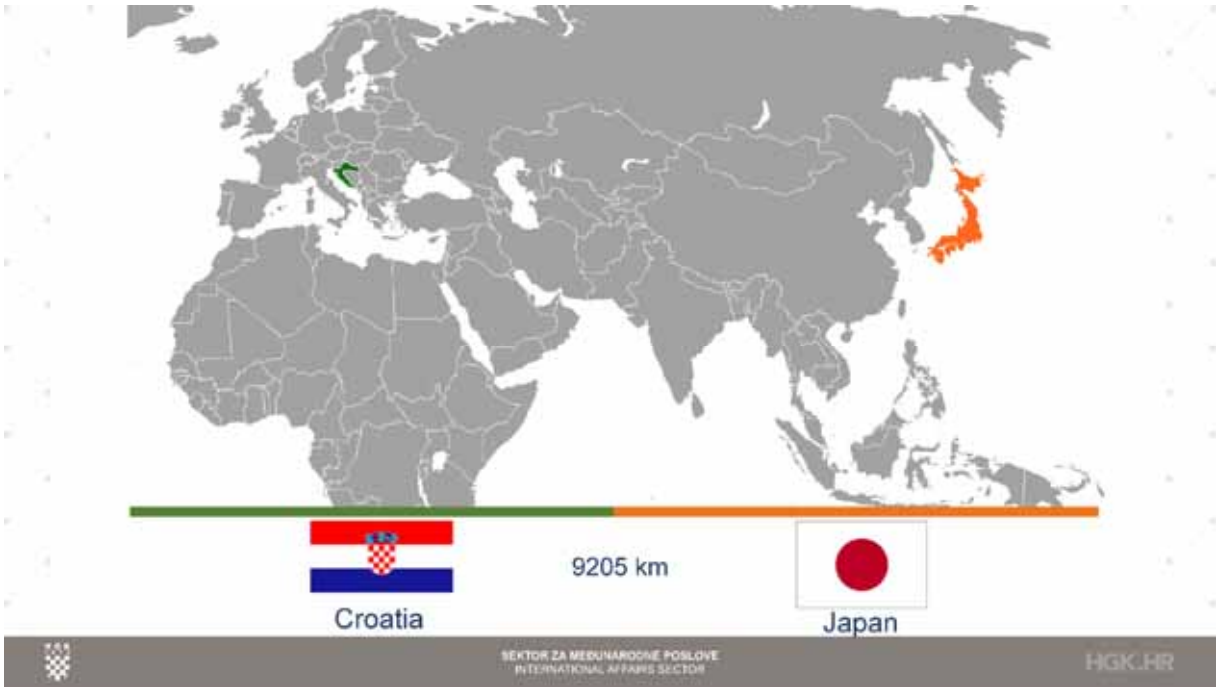
PRESENTATIONS

Croatia – Japan

Ms. Ines Obradović, Director, International affairs, Croatian Chamber of Commerce

CROATIA – JAPAN

Zagreb, March 1, 2022



COMPARISON

	CROATIA	JAPAN
Area (km2)	56,594	377.835
Population (milion)	3.9	126
GDP per capita (IMF 2021), USD	29,777	44,585
Real GDP growth (2022, f, %):	5.8	3.2

EU sources

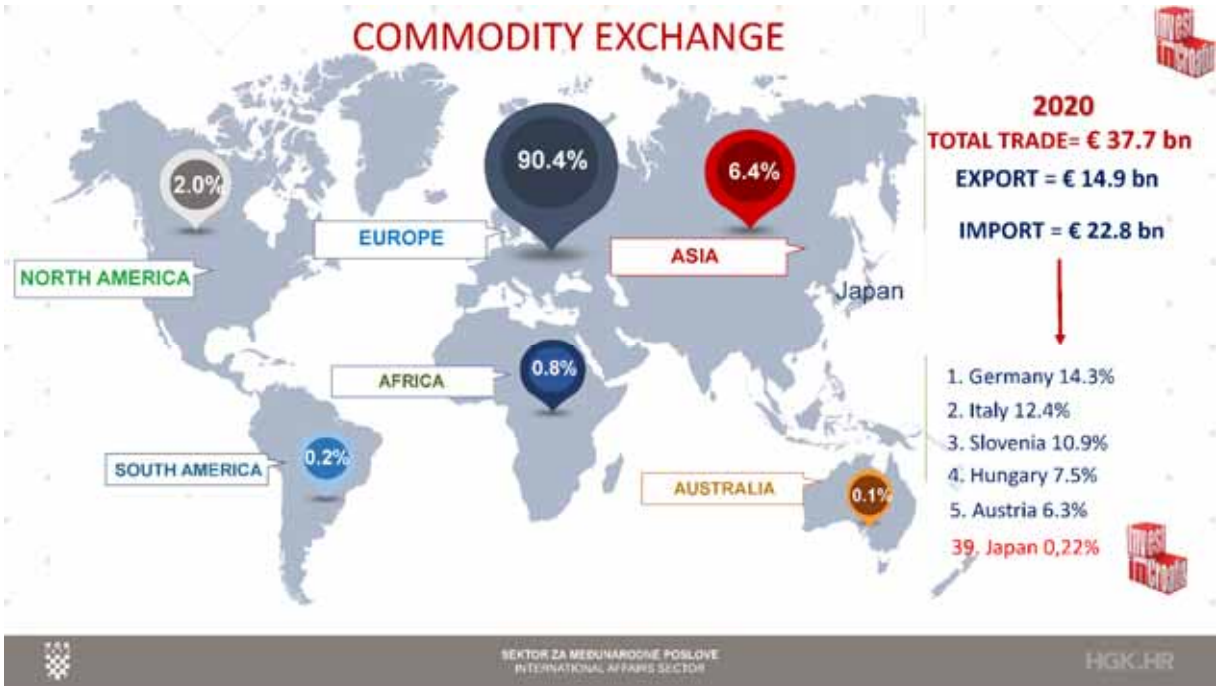
Allocation for Croatia:

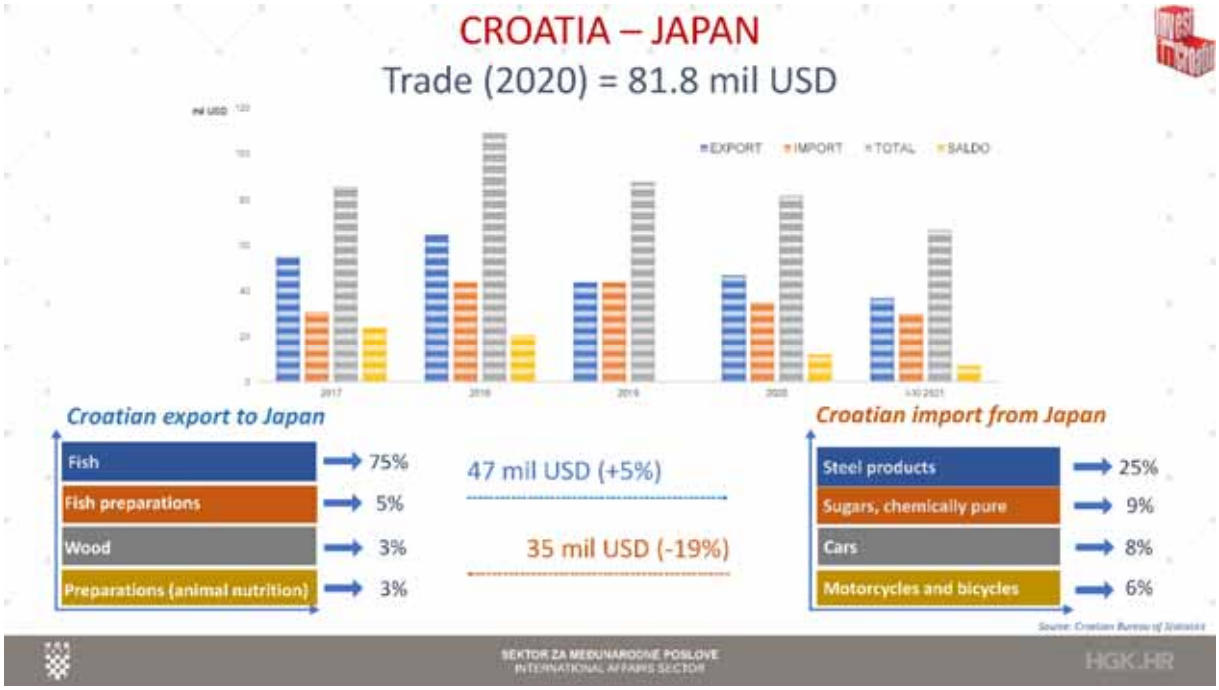
> 24,5 bn EUR

For Croatia for RRF 2021-2026:
6,3 bn EUR grants allocation
+ 3,6 bn EUR loans

For Croatia from cohesion policy, security and fisheries policy (current prices):
9,68 bn EUR 2021-2027

Agriculture policy:
4,76 bn EUR 2021-2027


COMMODITY EXCHANGE
2.0%
NORTH AMERICA
EUROPE
90.4%
ASIA
6.4%
Japan
AFRICA
0.8%
SOUTH AMERICA
0.2%
AUSTRALIA
0.1%
2020
TOTAL TRADE= € 37.7 bn
EXPORT = € 14.9 bn
IMPORT = € 22.8 bn
1. Germany 14.3%
2. Italy 12.4%
3. Slovenia 10.9%
4. Hungary 7.5%
5. Austria 6.3%
39. Japan 0,22%
SEKTOR ZA MEĐUNARODNE POSLOVE
INTERNATIONAL AFFAIRS SECTOR
HGK.HR


CROATIA – JAPAN
Trade (2020) = 81.8 mil USD
EXPORT
IMPORT
TOTAL
SALDO
Croatian export to Japan
Fish
75%
Fish preparations
5%
Wood
3%
Preparations (animal nutrition)
3%
47 mil USD (+5%)
35 mil USD (-19%)
Croatian import from Japan
Steel products
25%
Sugars, chemically pure
9%
Cars
8%
Motorcycles and bicycles
6%
SEKTOR ZA MEĐUNARODNE POSLOVE
INTERNATIONAL AFFAIRS SECTOR
HGK.HR

Croatia – business & investment attractive destination

FDI = €37.9 bn

(1993 – 3Q 2021)

FDI - JAPAN TO CROATIA
(2005 – 3Q 2021) **€6.81 mio**

- **Nipro PharmaPackaging International NV**
  (Piramida)
- **J-trading inc.**
  (Kali Tuna)
- **Yazaki**
  (R&D Center Zagreb)

Source: Croatian National Bank

Croatian tourism - Japan

Croatian tourism – 2021

11.5 mil Foreign tourists (87% increase)

Year	Arrivals of Japanese tourists	Overnight stays of Japanese tourists
2019	150,217	233,312
2020	7,407	15,627
2021	4,842	15,099

Possibilities of cooperation
Croatia – Japan

- Construction / know how
- Mobility
- Food industry

- Energy technologies / green economy
- Tourism / Health
- IT / digital transition

EU - JAPAN FREE TRADE AGREEMENT

February 1, 2019

- Remove almost all custom duties
- Reducing unnecessary barriers to trade

- provide opportunities for the EU in particular in sectors like:
  - ✓ pharmaceuticals
  - ✓ medical devices
  - ✓ agri-food
  - ✓ motor vehicles
  - ✓ transport equipment

Contact us

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Social Media

https://www.facebook.com/HrvatskaGospodarskaKomora
https://twitter.com/hgk
https://www.linkedin.com/company/croatian-chamber-of-economy

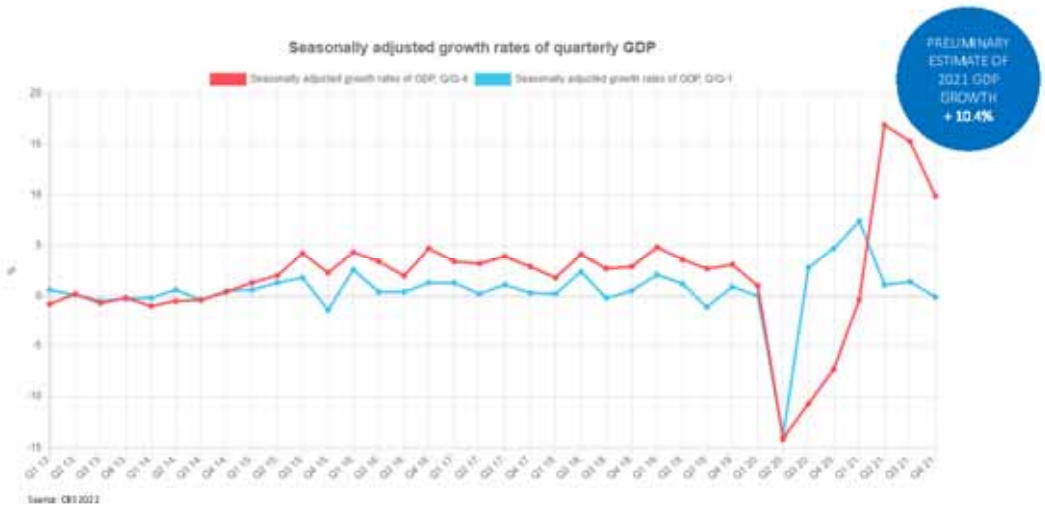
BBB – Green and Digital Transformation

Ms. Nataša Mikuš Žigman, State Secretary of the Ministry of Economy and Sustainable Development of the Republic of Croatia

Building Back Better

Green and Digital Transition of the Economy

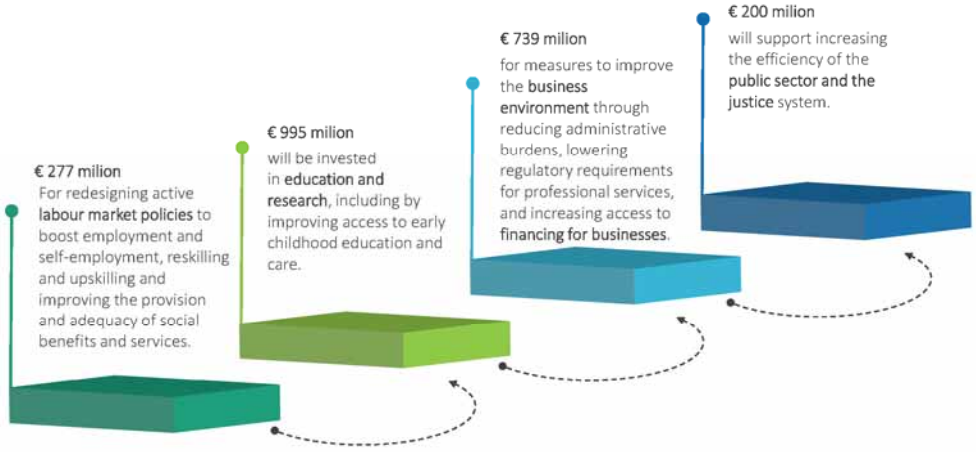
PEOPLE CENTERED RECOVERY



EUROPEAN COMMISSION
Economic forecast for Croatia

Indicators	2020	2021	2022	2023
GDP growth (%, yoy)	-8,1	10,5	4,8	3,0
Inflation (%, yoy)	0,0	2,7	3,5	1,6

ECONOMIC AND SOCIAL RESILIENCE – KEY MEASURES

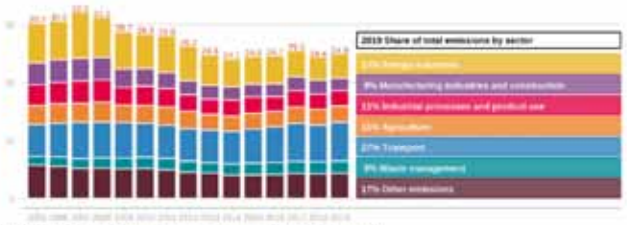


ALIGNING WITH NET-ZERO GHG EMISSIONS

TOTAL GREENHOUSE GAS EMISSIONS (TCO2E) PER INHABITANT IN 2019

Data source: Eurostat demo_pjan and EEA (GHG trends, GHG estimates, UNFCCC reporting).

TOTAL GHG EMISSIONS BY SECTOR (MTCO2E) (ROUNDED DATA)

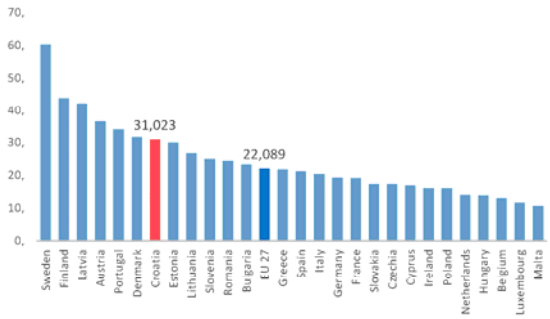


Data source: EEA (GHG trends, GHG estimates, UNFCCC reporting).

Reducing GHG emissions % (as of 1990)	2030	2050
Energy industries	-42,6%	-95,4%
Industrial processes and product use	-68,0%	-87,7%
Agriculture	-45,6%	-68,2%
Waste management	-14,8%	-61,2%
Climate neutrality	-44,8%	-89,4%

ENERGY TRANSITION FOR A SUSTAINABLE ECONOMY

SHARE OF ENERGY FROM RENEWABLE SOURCES, 2020 (%)



Source: EUROSTAT 2022

NATIONAL RECOVERY AND RESILIENCE PLAN

- achieving the 2030 target of 36.6% share of renewable energy set by Croatian National Energy and Climate Plan (NECP)
- meeting Croatia's contribution to the EU energy efficiency target of 32.5% by 2030
- share of renewables in transport of 14% by 2030

The reforms shall consist of legislative initiatives to

(i) remove barriers and administrative procedures restraining the uptake of **renewable energy** sources;
(ii) (ii) finalize the **certification of the gas transmission system operator**; and
(iii) (iii) promote use of **alternative fuels** in transport, including hydrogen and advanced biofuels.

GREEN TRANSITION

investments in **energy efficiency and post-earthquake reconstruction** of buildings

investments in **sustainable mobility**, notably in upgrading railway lines, autonomous electric taxis with supporting infrastructure adapted for people with disabilities, installing charging stations for electric vehicles and introducing zero-emission vehicles and vessels.

Investments in **low-carbon energy** transition through modernising energy infrastructure, supporting investments for the production of advanced biofuels and renewable hydrogen and financing innovative carbon capture and storage projects.

investments in supporting businesses for green transition and energy efficiency, supporting their projects aimed at boosting the **green economy**, sustainable tourism and investing in green technologies.

TECHNOLOGICAL CHANGE FOR SUSTAINABILITY - SUPPORT TO ENTERPRISES FOR THE TRANSITION TO AN ENERGY- AND RESOURCE EFFICIENT ECONOMY

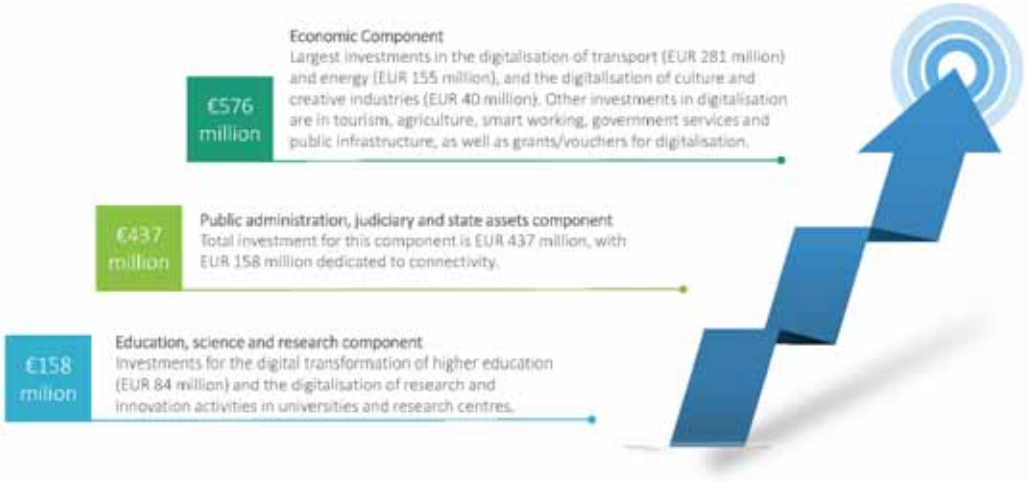
- €252,173,335 total allocation
- Grants for small, medium-sized and mid-cap companies investing in green technologies that contribute to an energy- and resource-efficient economy in energy-intensive industries, including metalworking, textile, food, chemical, construction and woodworking
- Grants shall only be awarded to companies from the eligible sectors if they demonstrate that the planned investments contribute to promoting a circular economy and/or decarbonisation and emission reduction of energy-intensive industries

DIGITAL TRANSFORMATION

EU'S 2030 DIGITAL DECADE TARGETS FOR DIGITAL TRANSFORMATIONS

Digital challenges for Croatia include the digitalisation of public administration and the provision of online public services and increasing fixed and wireless digital connectivity to facilitate investment in digital infrastructure in remote rural areas that are lagging behind in terms of gigabit connectivity services.

NRRP – DIGITAL INVESTMENTS - EUR 1,285 BILLION (20.4% OF THE PLAN'S BUDGET)



NRRP – DIGITAL INVESTMENTS - EUR 1,285 BILLION (20.4% OF THE PLAN'S BUDGET)

CALLS FOR AWARDING THE GRANTS AND ADVISORY SERVICES IN DIGITALIZATION AND INNOVATION:

Investment in management capacities of small and medium enterprises (total call allocation: EUR 3,981,684)

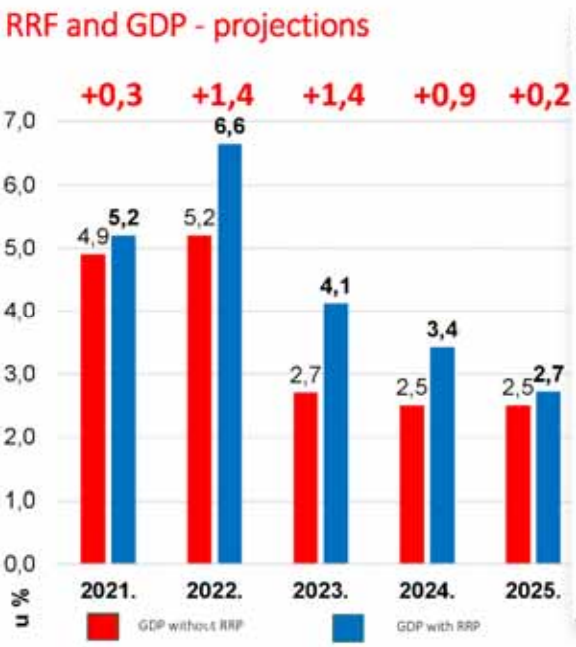
Grants for **start-ups** (total call allocation: EUR 18,806,822)

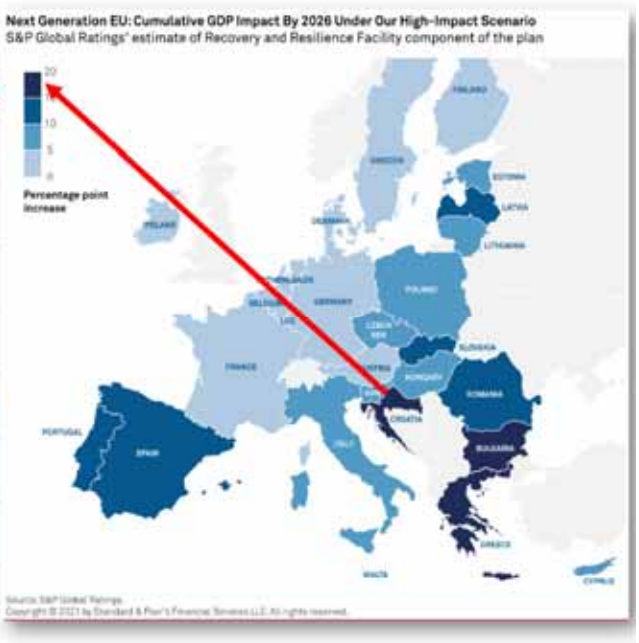
Strengthening the acceleration activity (total call allocation: EUR 7,963,368)

Commercialization of innovations (total call allocation: EUR 50,434,667)

Vouchers for digitalization (total call allocation: EUR 9,954,210)

Grants for digitalization (total call allocation: EUR 27,340,898)





DRR from Japan to Croatia

Dr. Robert Mikac, Professor at the Faculty of Political Sciences of the University of Zagreb

IRMO

CONFERENCE

Towards a resilient society – Croatia & Japan cooperation

Disaster Risk Reduction review: From Japan to Croatia

University of Zagreb
Faculty of Political Science
Associate Professor Robert Mikac, PhD

IRMO

Disclamer

- Terms used which have a gender meaning are used neutrally and refer equally to the feminine and masculine genders, unless it follows otherwise from the meaning of each statement
- The views expressed during the presentations and discussions are personal opinions and cannot be linked to any institution
- It is not possible to cover everything in such a short presentation, so only some of the key elements are listed
- No one individually can know everything, so I ask you to respect the above if I will not be able to answer some of your questions

2

IRMO

Agenda

- Introduction
- Strategic overview
- Policy review
- Main implementation activities
- Open questions / Way forward
- Conclusion

IRMO

Introduction

Sendai Framework for Disaster Risk Reduction

UN policy and activities

EU policy and activities

Croatian platform for disaster risk reduction

European Forum for Disaster Risk Reduction

Own tradition

Regional activities and cooperation

Disaster Preparedness and Prevention Initiative for South Eastern Europe

IRMO

Strategic overview

- National Development Strategy of the Republic of Croatia until 2030 (2021)
- National Security Strategy (2017)
- Disaster risk assessment for the Republic of Croatia (2019)
- Disaster Risk Reduction Strategy, *in the adoption procedure* (2022)

IRMO

Policy review

- DRR system law → Law on the Civil Protection System
- Each disaster risk sector has its own law governing the DRR policy approach
- DRR is a commitment to all three political and organizational dimensions (national, regional, local)
- Strong connection with EU DRR policies (use of EU funds)
- Regional bilateral cooperation and support to neighboring countries

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Main implementation activities

- Croatian national platform for disaster risk reduction
- Regional platform for disaster risk reduction
- The EU Operational Programme (OP) "Competitiveness and Sustainable Development"
- Planning and implementation of DRR projects financed through national and EU funds (eg. defense of the city of Karlovac from floods)

7

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Open questions / Way forward

- Reduction should take precedence over reaction
- Coordination and cooperation need to be raised to a higher level
- It is necessary to further improve their own procedures and learn from the best (Japan)

8

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Conslusion

- Disaster risk reduction is not the exclusive right and responsibility of individuals or individual institutions → it is a process in which we are all invited / obliged to participate

IRMO

Thank you for your attention

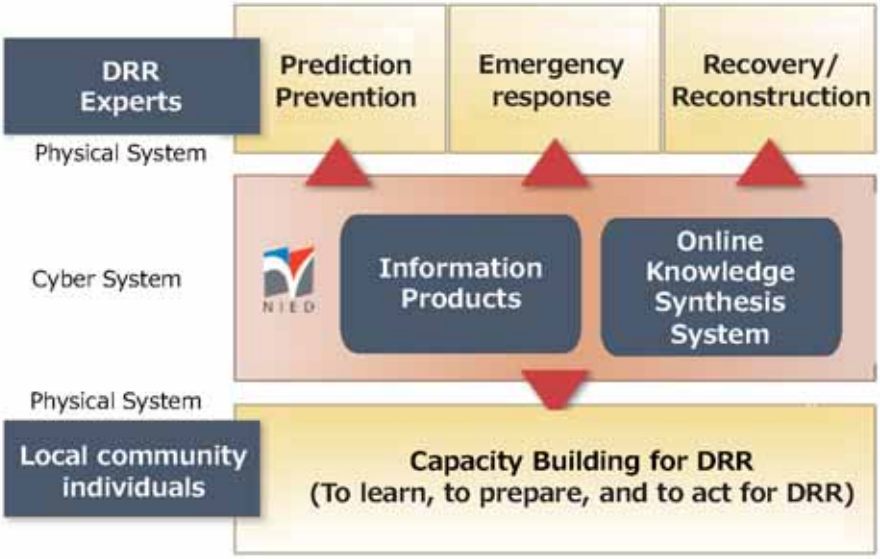
Robert Mikac
robert.mikac@fpzg.hr

Towards Disaster Resilient Croatia

Dr. Haruo Hayashi, President of the National Research Institute for Earth Science and Disaster Resilience (NIED)

NIED Approach to Improve Disaster Resilience

"All Hazards × All Phases" based on Digital Twin



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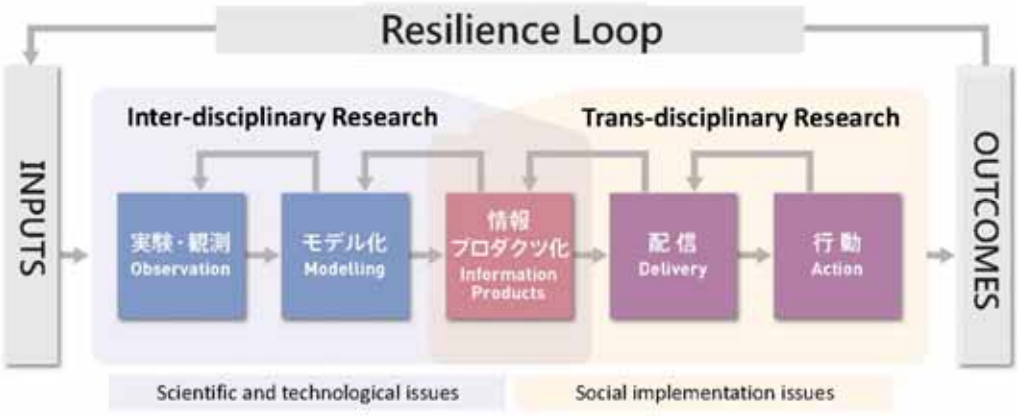
NIED Information Products

Co-Design, Co-Production



Comprehensive research on "all hazards × all phases".

Providing information products for appropriate "actions"

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What is “Disaster Resilience”

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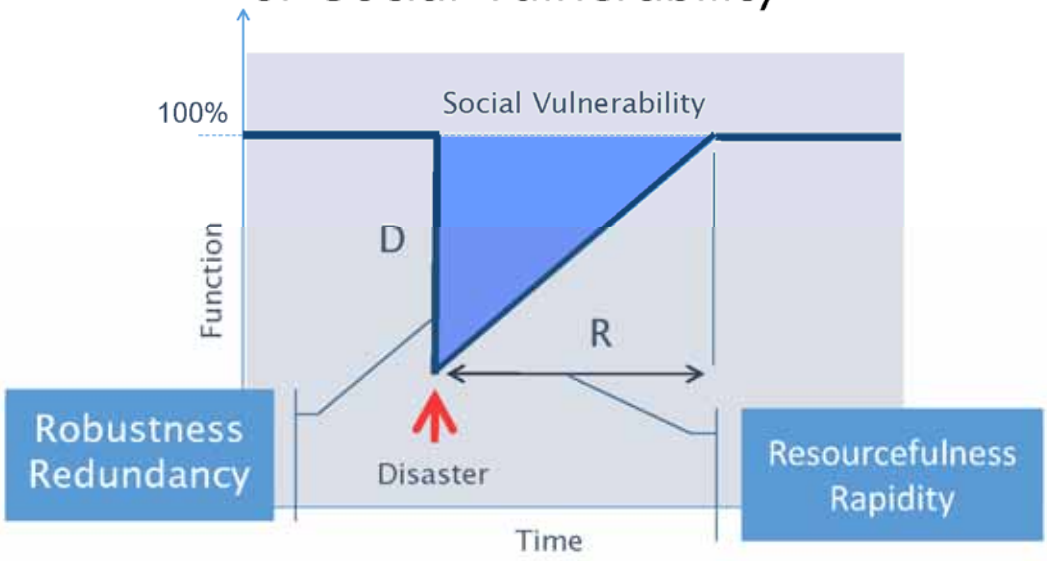
Disaster Resilience is equal to reduce the area of triangle, or Social Vulnerability



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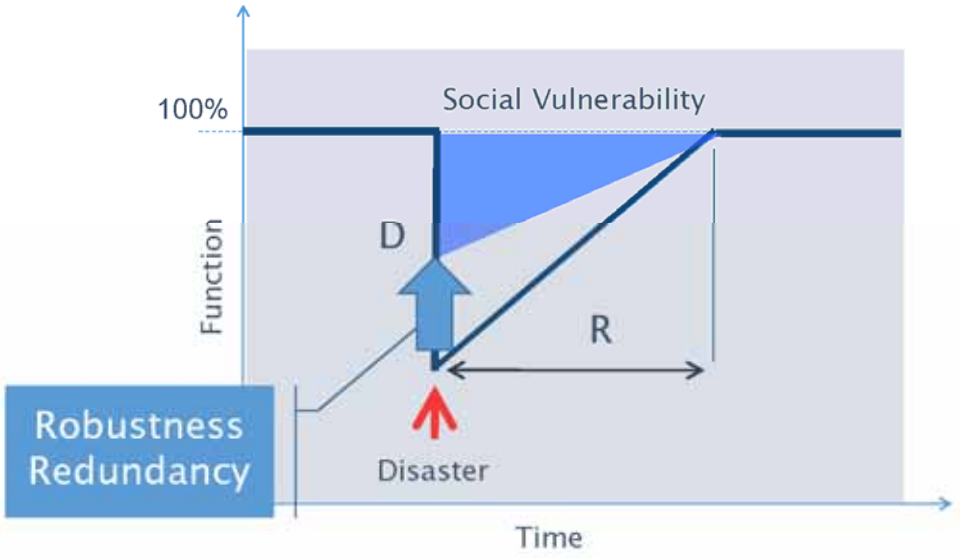
By Mitigating Damage & Losses (D)
through improved Robustness and Redundancy



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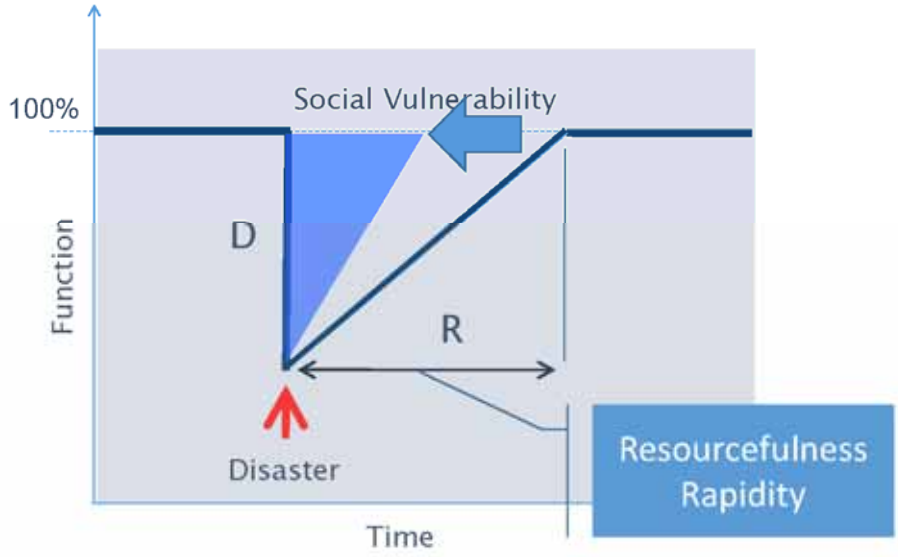
By Preparing for Quick Recovery (R)
through Resourcefulness and Rapidity



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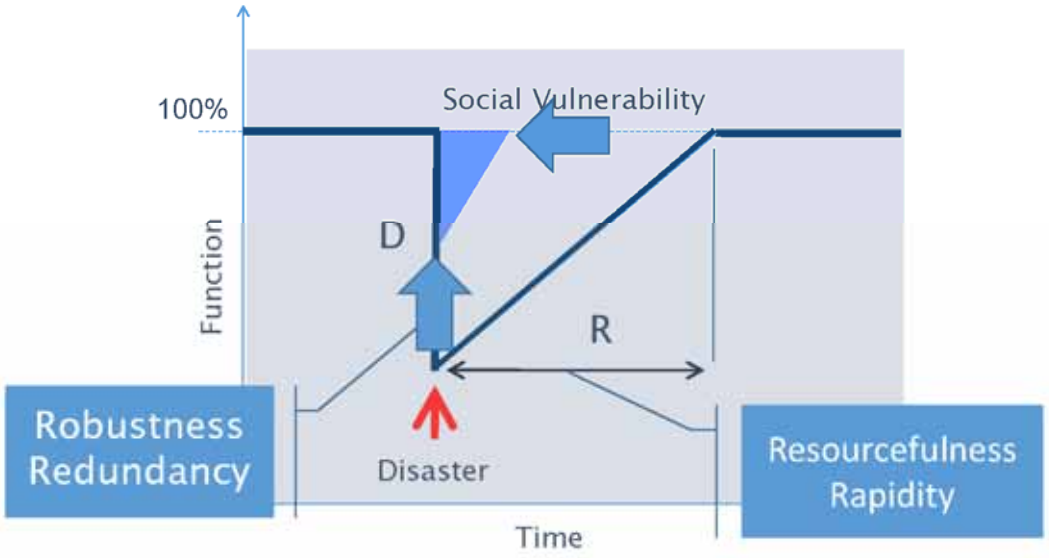
Key Point is
the Integration of two Strategies
through Multiple Lines of Defense



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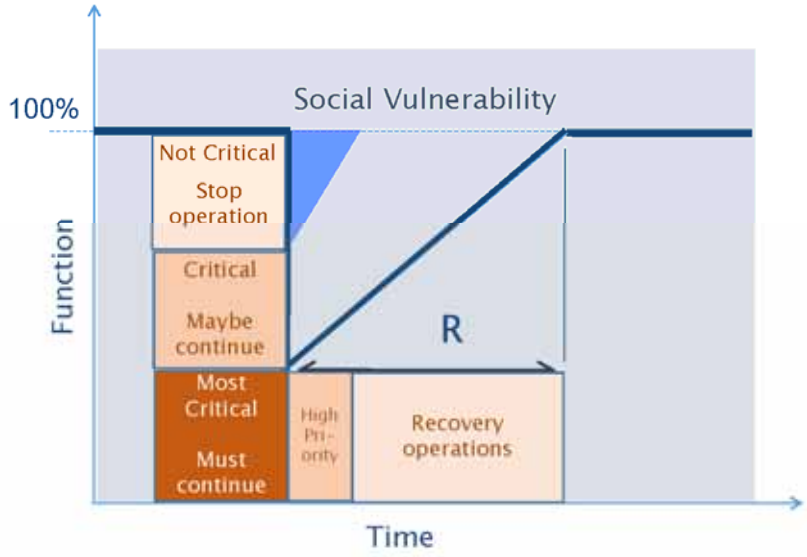
By Prioritizing what to do for
the improvement of total resilience



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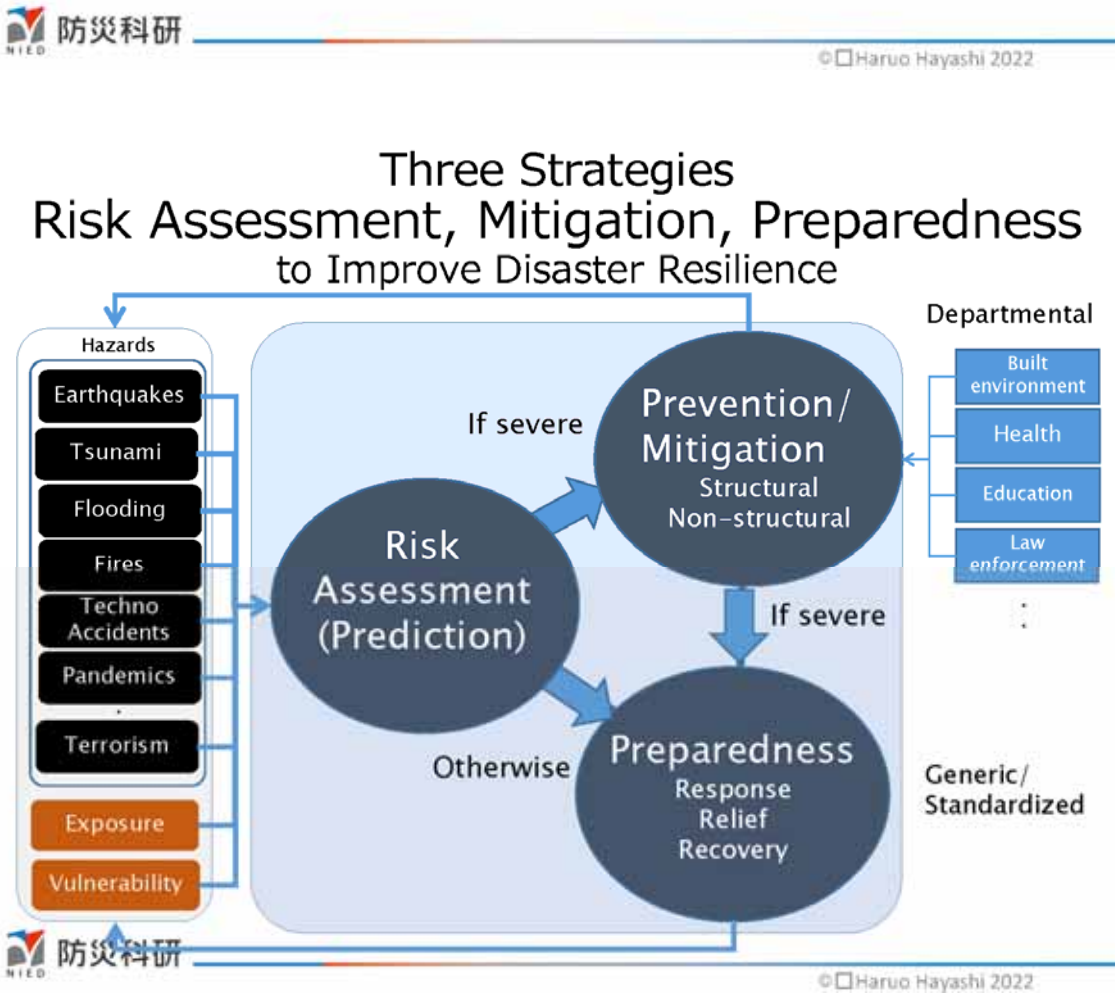
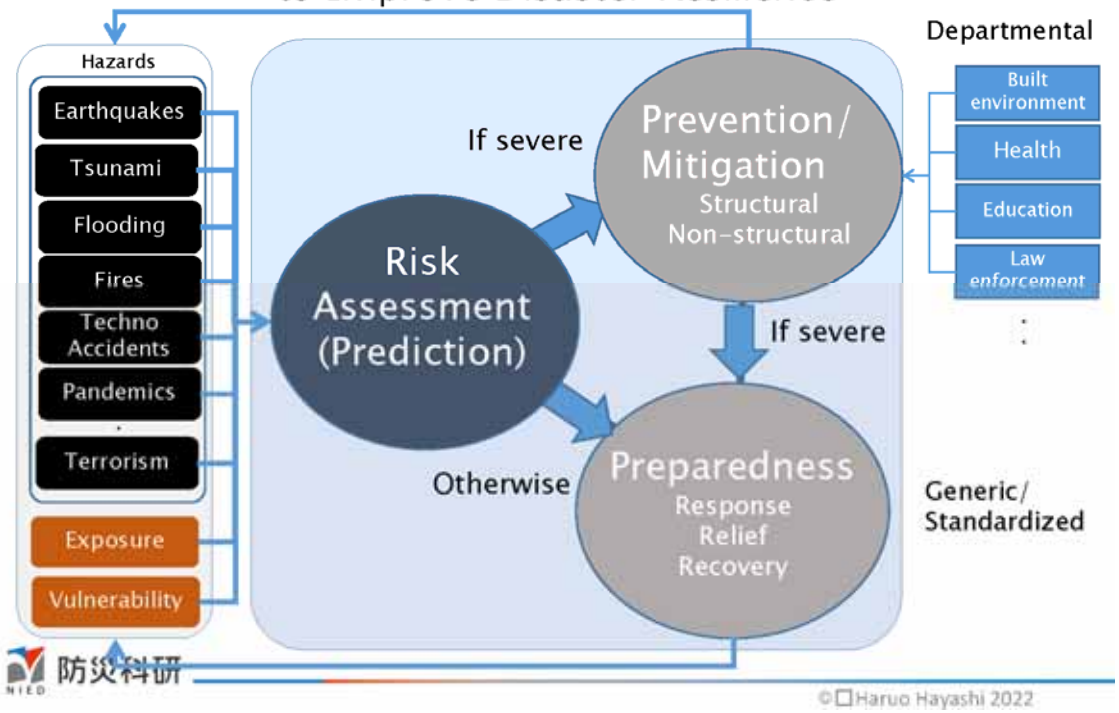
How to make Croatia "Disaster Resilient "



Three Strategies
Risk Assessment, Mitigation, Preparedness
to Improve Disaster Resilience



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Croatia is located near Inter-plate Boundary Earthquakes will occur every once a while

Grünthal G., Wahlström R. (2012) The European-Mediterranean Earthquake Catalogue (EMEC) for the last millennium. *Journal of Seismology* 16(3): 535-570. DOI: 10.1007/s10950-012-9302-y

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https://www.constantinealexander.net/2012/08/the-earthquake-risk-and-europe.html

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Croatia is located near Inter-plate Boundary Even Damaging Earthquakes will occur

Grünthal G., Wahlström R. (2012) The European-Mediterranean Earthquake Catalogue (EMEC) for the last millennium. *Journal of Seismology* 16(3): 535-570. DOI: 10.1007/s10950-012-9302-y

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https://www.constantinealexander.net/2012/08/the-earthquake-risk-and-europe.html

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Earthquakes will concentrate along two lines in Croatia Be prepared for future earthquakes!

Earthquakes in Croatia, 1979-2021

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https://earthquake.usgs.gov/earthquakes/search/

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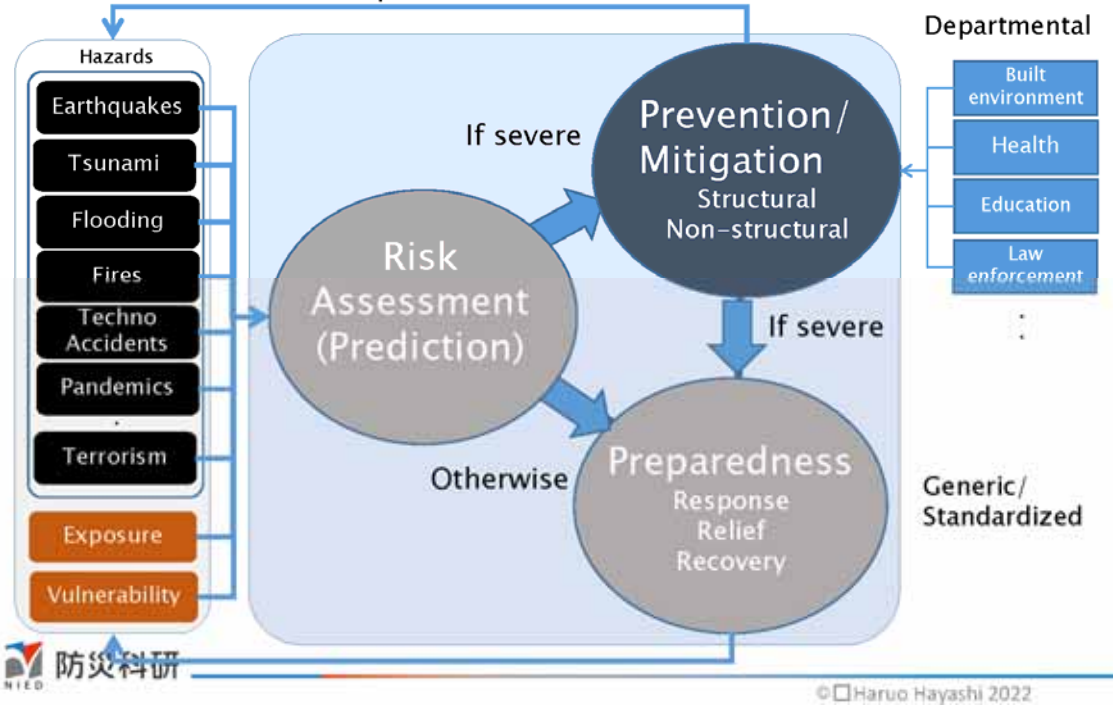
Three Strategies
Risk Assessment, **Mitigation**, Preparedness
to Improve Disaster Resilience



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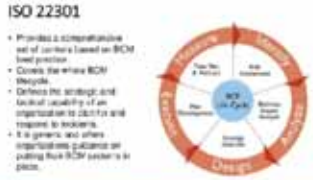
Three Goals for Disaster Risk Reduction

- What to protect
  1. Human Lives
     Skopje earthquake
     July 26, 1963 M=6.1
     1,000-1,100 Dead
     First Priority

  2. Property: Physical damage
     Infrastructure
     Critical Facilities
     Business & Residential properties
     Long-term Commitment

  3. Operational Continuity:
     Functional loss
     ISO22301
     ISO22320
     Second Priority



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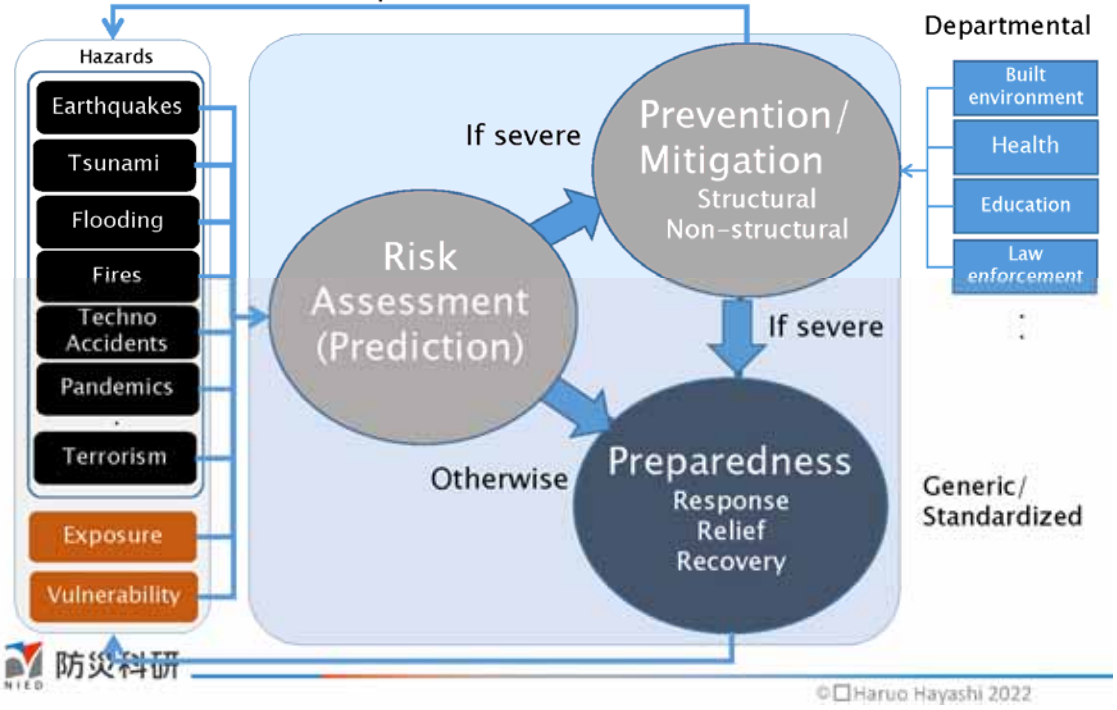
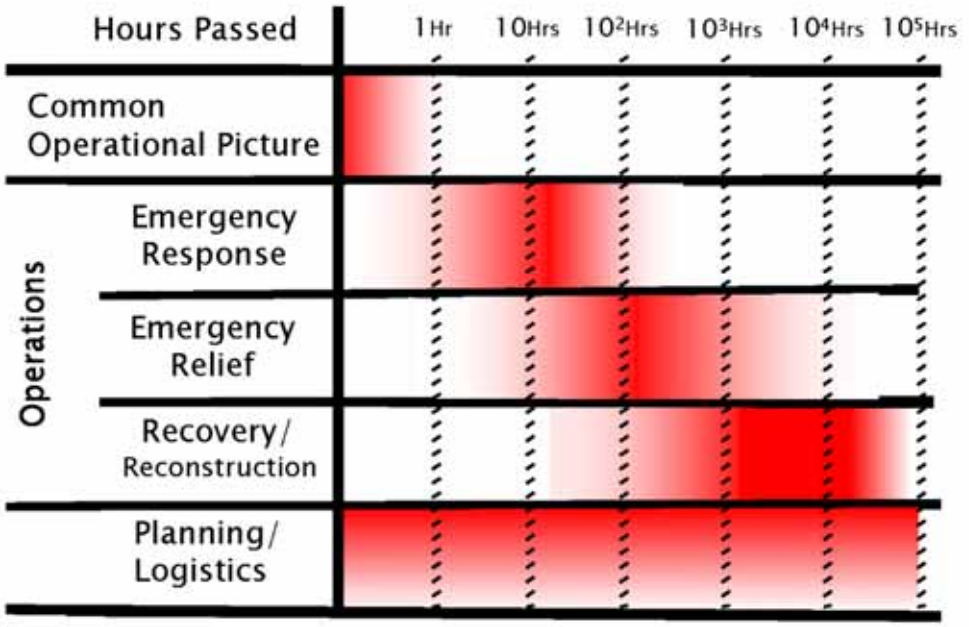
Three Strategies
Risk Assessment, Mitigation, **Preparedness**
to Improve Disaster Resilience



For Effective
Disaster Response and Recovery

1. Get a big picture view of what is going on
2. Size up what to do
3. Allocate necessary resources appropriately
4. Empower the impacted people as much as possible
5. Involve all stakeholders
6. Do not hurry, take time

Disaster Response is Generic in Nature
Five Tasks for Effective Disaster Response



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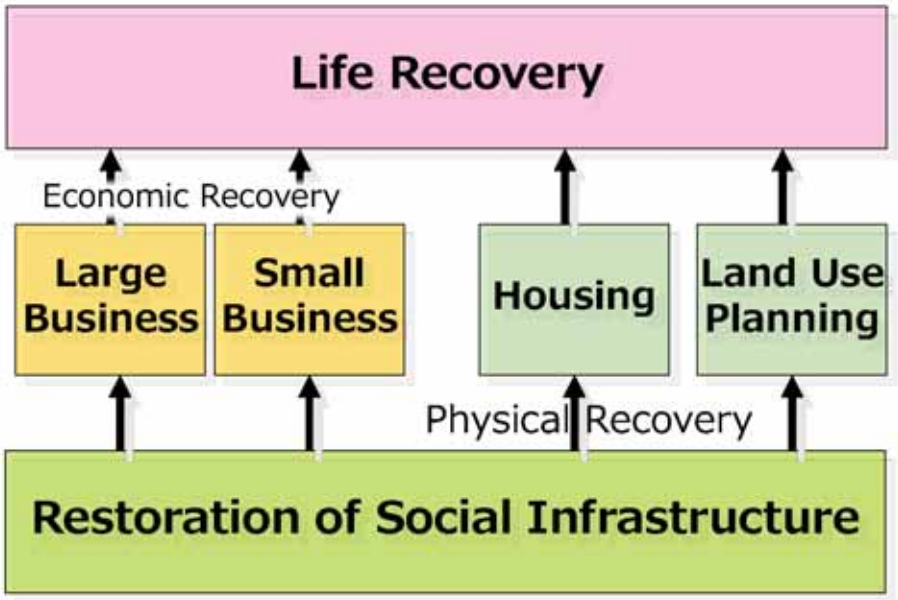
Three Tier Structure of Recovery Plan
(1995 Kobe Earthquake/2011 Tohoku Earthquake)



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Croatia and Japan
Can and Should Collaborate together in fight for
Disaster Risk Reduction

防災科研 NIED

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SCIENCE FOR RESILIENCE

Earthquakes, tsunami, volcanoes, violent winds, heavy rains,
snowstorms, floods, and landslides are
natural threats that will always exist.
However, at NIED, we believe that disasters can be reduced.
Therefore, we are constantly developing technologies and strategies
to prepare for and respond to disasters.
With better prediction, smarter prevention, and faster restoration,
we aim to protect lives and livelihoods for a sustainable future.

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Global Commons Stewardship

Dr. Naoko Ishii, former CEO and Chairperson of the Global Environment Facility (GEF)

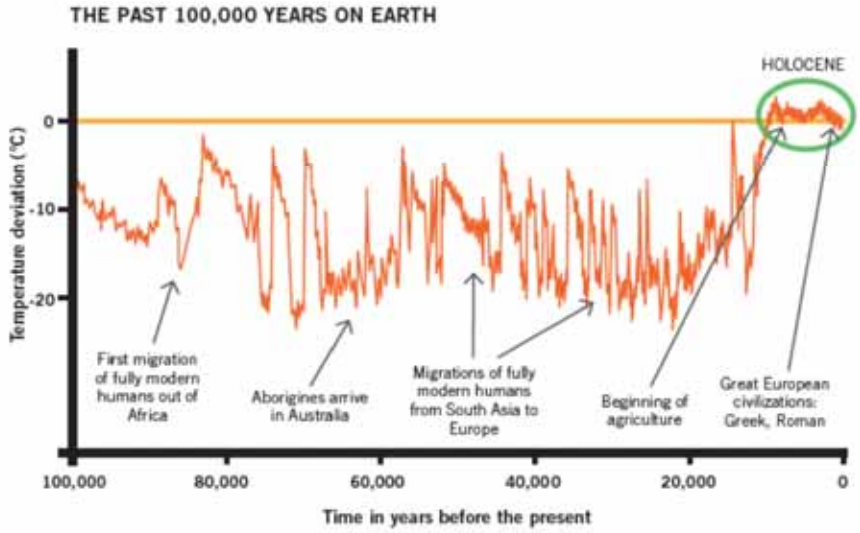
"Global Environmental Crisis"

We are approaching the tipping points beyond which stability and resilience of the earth system, critical for the human civilization, is lost irreversibly

- From the Holocene to the Anthropocene
- Fundamental change in the relationship between Earth's system and human economic system
- Need drastic change by 2030 in order to maintain stable Earth's system beyond 2050

From the "Holocene" to the "Anthropocene"

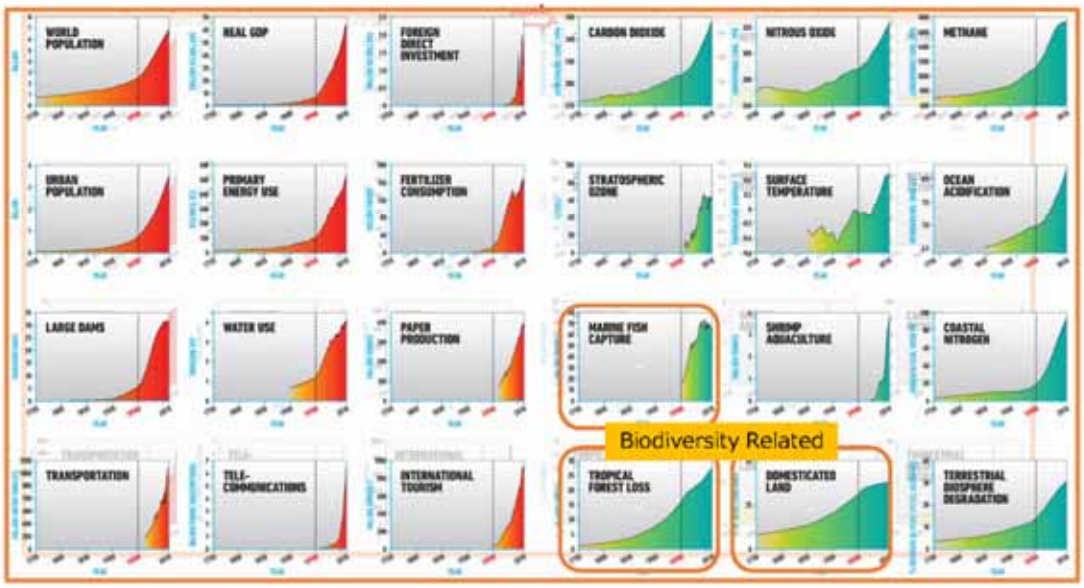
Human civilization of the last 10,000 years dependent on stability of the earth system in the Holocene



Source: Johan Rockstrom and Mattias Klum, 2015, *Big World Small Planet*

"The Great Acceleration" since mid 20th century

The great acceleration has ended the Holocene.
Now humanity has the decisive power on the earth system.

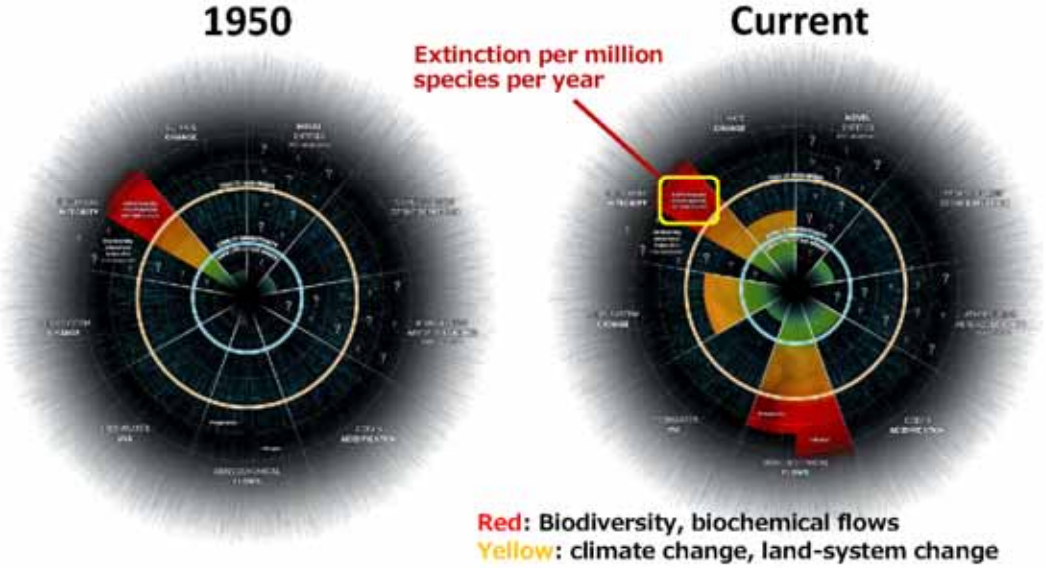


The trajectory of the Anthropocene: The Great Acceleration (Anthropocene Review) 15 January 2015.

5

Planetary Boundaries

9 sub-systems most critical for the stable and resilient earth.
Their "Tipping Points" about to be transgressed due to the human activities.



Red: Biodiversity, biochemical flows
Yellow: climate change, land-system change

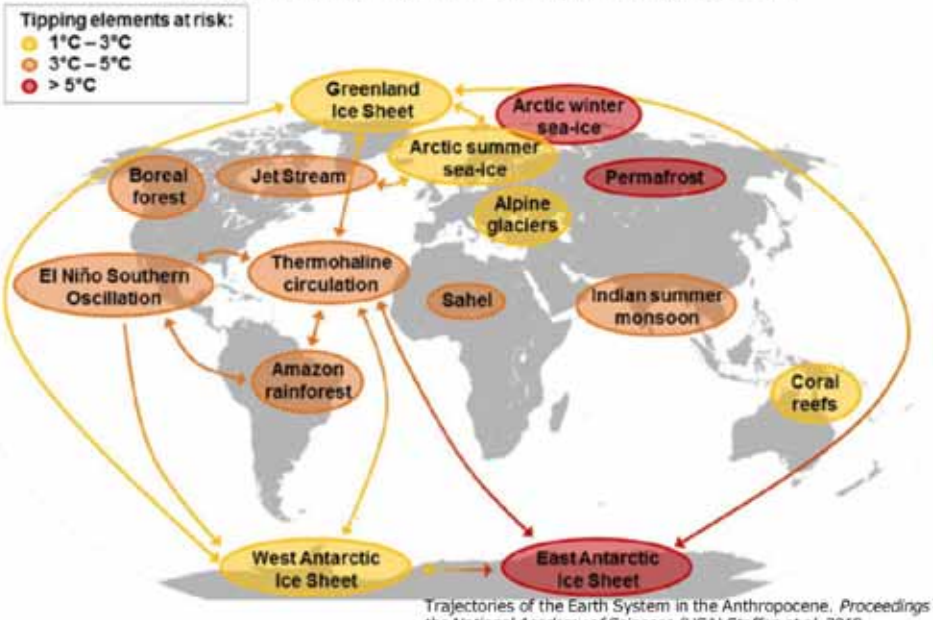
Steffen et al. 2015 / Image : Globaia

6

Tipping cascade: about to be triggered

Feedbacks sequence to alter the earth system irreversibly

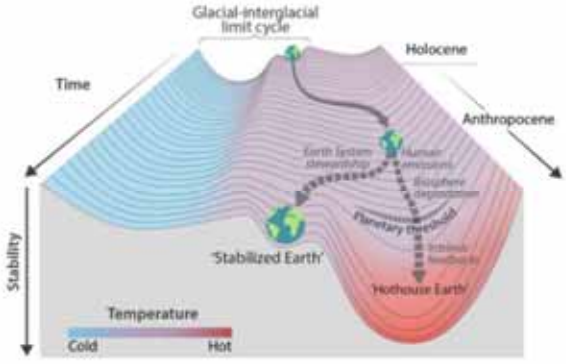
Global map of potential tipping cascades



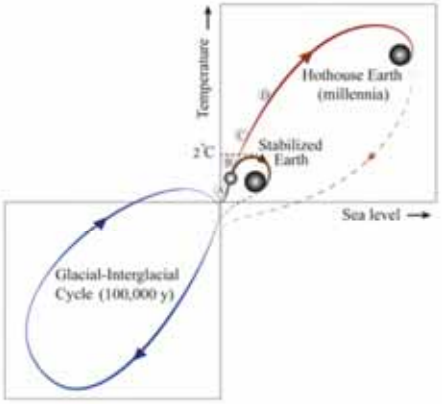
Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Sciences (USA) Steffen et al. 2018*

7

Risk of "Hothouse Earth" pathway



Stability landscape showing the pathway of the Earth System out of the Holocene and thus, out of the glacial–interglacial limit cycle to its present position in the hotter Anthropocene.



A schematic illustration of possible future pathways of the climate against the background of the typical glacial–interglacial cycles (Lower Left).

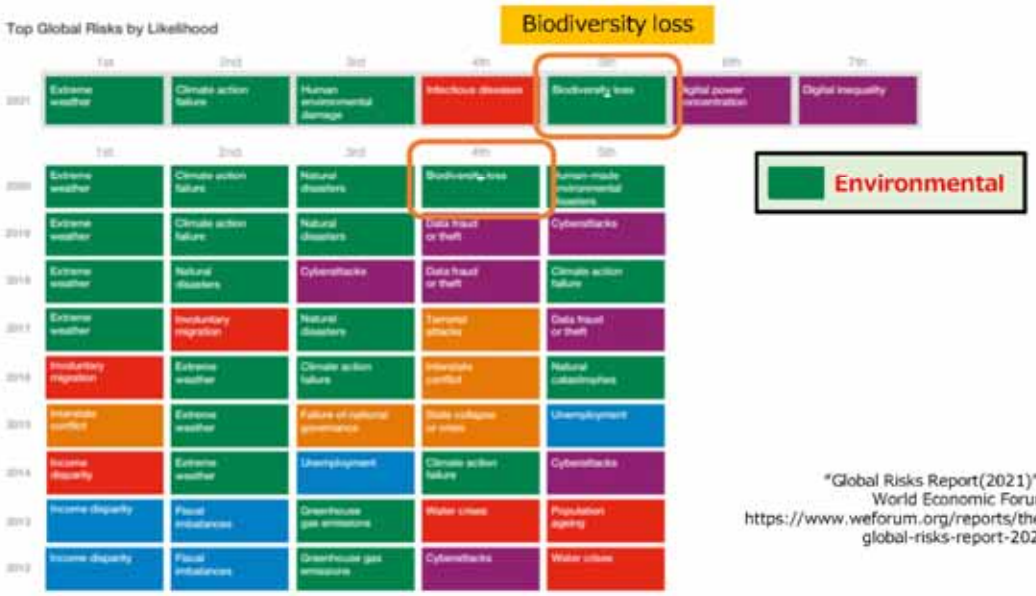
Trajectories of the Earth System in the Anthropocene. *Proceedings of the National Academy of Sciences (USA) Steffen et al. 2018*

8

Global leaders consider the global environmental issues as the top risk for the business

Evolving Risks Landscape

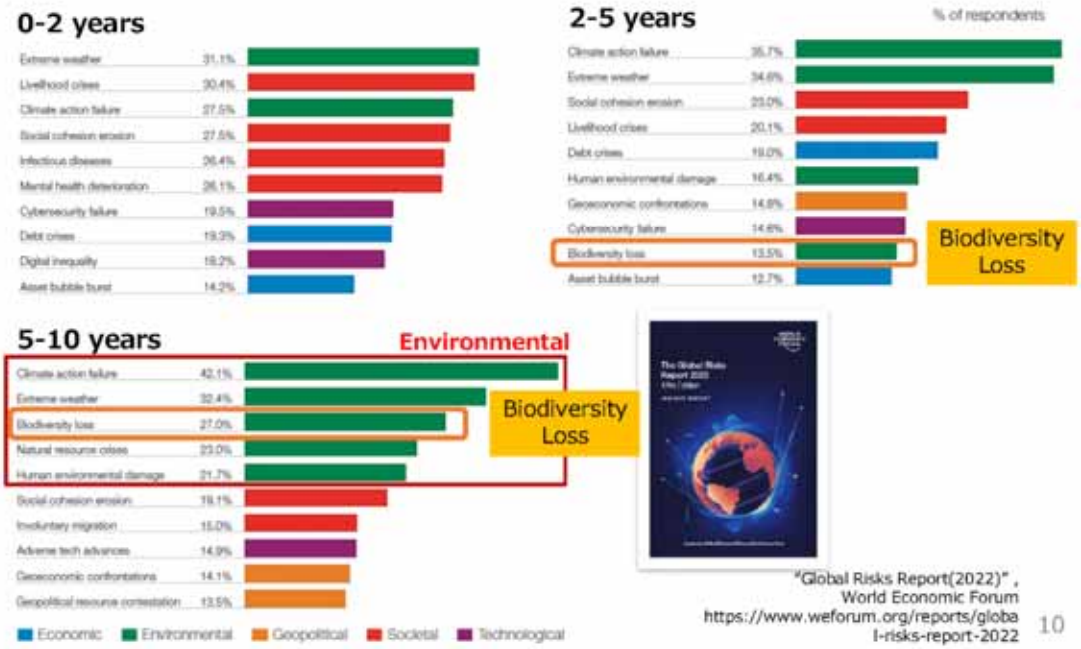
Top Global Risks by Likelihood



"Global Risks Report(2021)", World Economic Forum
https://www.weforum.org/reports/the-global-risks-report-2021

Global Risks Report 2022

When will risks become a critical threat to the world?



"Global Risks Report(2022)", World Economic Forum
https://www.weforum.org/reports/global-risks-report-2022

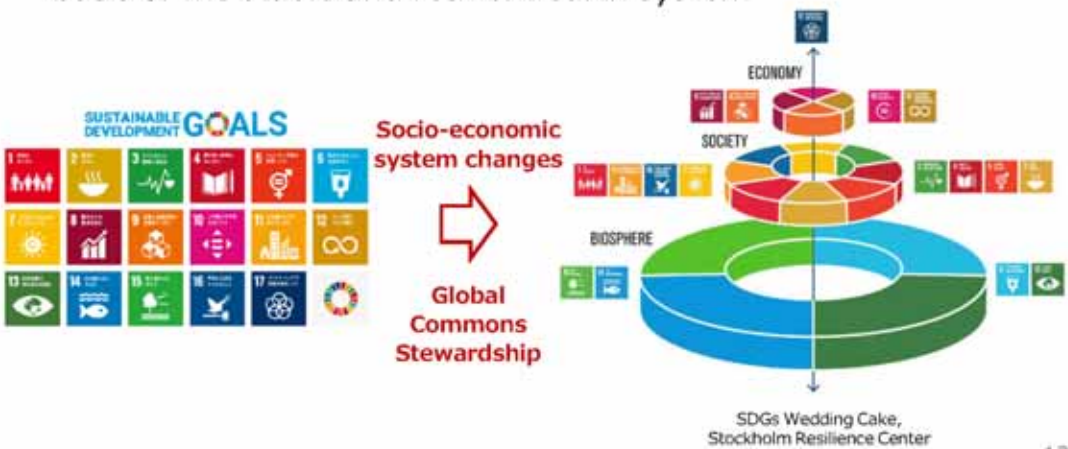
"Socio-economic system change" for sustainable future of humanity

- Human economic system is in the collision course with the earth system.
- The fundamental socio-economic system change is required to put our future on the sustainable pathway.
- Only 10 years left to set the system changes on track
- Social transformation to enable them

Transformation through 2030 to 2050

Sustainable earth, society, and economy

- Earth=Biosphere as the non-negotiable and hard-wired basis for the social and economic prosperity
- Global Commons Stewardship makes SDGs achievable on the basis of the stable and resilient earth system



SDGs Wedding Cake, Stockholm Resilience Center

https://www.stockholmresilience.org/research/research-news/2016-06-14-the-sdgs-wedding-cake.html

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Selected systems to be transformed: The World in 2050

The World in 2050, IIASA

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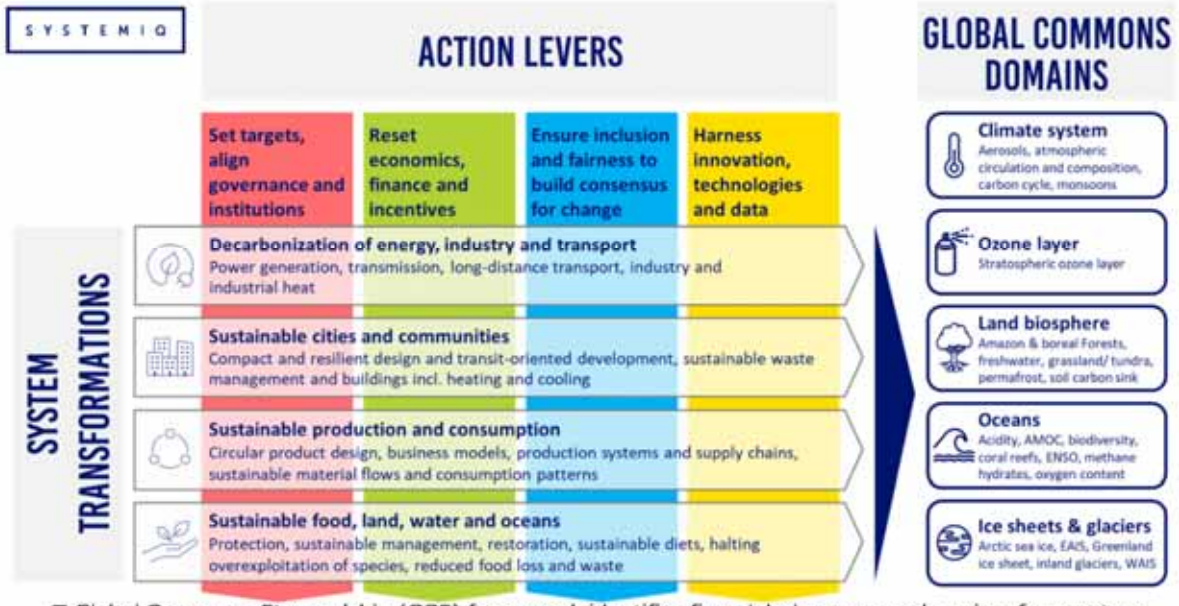
GCS Initiative

A strategic framework for driving socioeconomic system transformation



- Global Commons Stewardship (GCS) framework identifies five global commons domains, four system transformations that needs to take place to sustain these global commons and four action levers to ignite the systemic change.
- Published after going through consultation with various leaders across the globe

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Global Commons Stewardship Index

GCS Index for behavioral change

- GCS Index 2021
- 100 countries evaluated using 33 indicators
- Added a new indicator to assess which countries will succeed at meeting interim sustainability thresholds by 2030 and more ambitious thresholds by 2050. The pace of progress turned out to be too slow, and most countries were not on the track.

Dashboard	Score	Description
	95–100	No or limited negative impacts on the GC
	90–95	Low negative impacts on the GC
	80–90	Medium-low negative impacts on the GC
	70–80	Medium-high negative impacts on the GC
	50–70	High negative impacts on the GC
	30–50	Very high negative impact on the GC
	0–30	Extreme negative impacts on the GC

Arrow	Meaning
↑	Projected to meet 2050 Threshold
↗	Projected to meet only 2030 Threshold
→	Insufficient progress toward thresholds
↓	Trajectory headed in wrong direction

15

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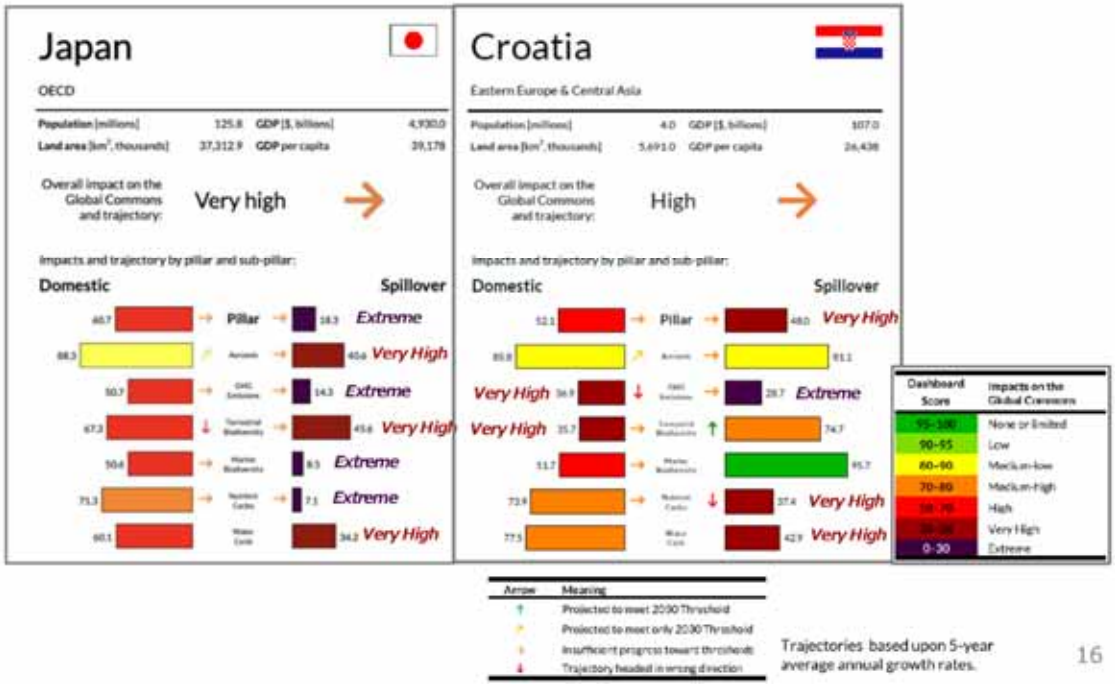
GCS Index

Scorecard of Japan and Croatia



Trajectories based upon 5-year average annual growth rates.

16

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GCS Index

Four key findings:

1. **Major transformations are urgently needed** in all countries to address negative impacts on the Global Commons generated by unsustainable production and consumption.
2. **Smaller, richer countries** tend to perform better in terms of domestic impacts, but they generate **the largest share of the international spillovers** that needs to be addressed.
3. **Ambitious actions** to protect and restore the Global Commons domestically and internationally must go hand-in-hand with efforts to **improve living standards everywhere**.
4. **G20 countries** bear a special responsibility in reforming the governance of the Global Commons.

17

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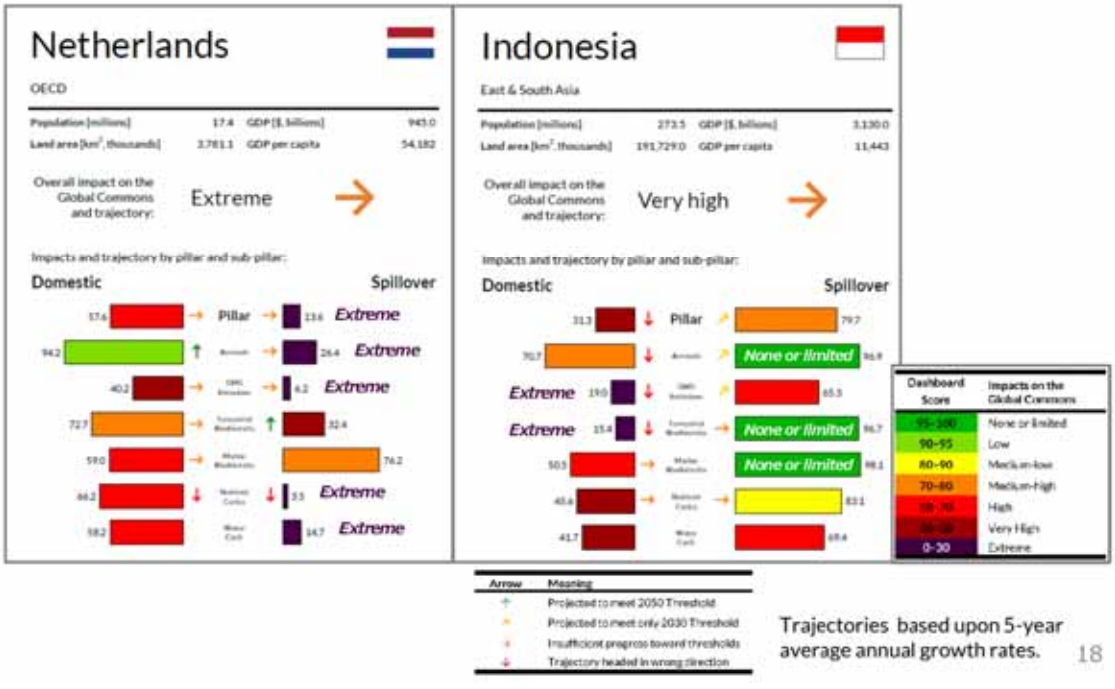
GCS Initiative: Achievements (Cont)

Comparing the spillover impacts of the global north and south



Trajectories based upon 5-year average annual growth rates.

18

COP26

Carbon Neutral Nature Positive

- General disappointment over official outcome document
- Positive outcomes
  1. 1.5℃ and 2050 carbon neutral targets were cemented
  2. Integrated approach
     - Rise of nature agenda
     - Discussion to integrate natural capital into the market
     - standardization of international accounting standards
  3. Discussion focus shifted to establishing pathways
     - Coalitions of the Willing (First Movers Coalition, value chain scope 3, Zero-emission automobile, finance, deforestation)

Uncertainty drives movements to create coalitions to create pathways together.

19

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COP26

Agreements made at the COP26 venue outside of the official negotiation process

Name of the agreement	Summary	Parties involved
Global Coal to Clean Power Transition Statement	Major economies will transition from unabated coal power generation in the 2030s, and the rest of the world in the 2040s.	• 46 countries including South Korea, Indonesia (with condition attached)and Vietnam joined • Japan, US, China and India did not join
100% Zero Emission Cars and Vans Declaration	Leading markets to sell only zero-emission vehicles by 2035 and rest of the world by 2050.	• 28 countries, cities and companies joined • Japan, US, China, Germany, France and South Korea did not join
Glasgow Leaders' Declaration on Forests and Land Use	Stop and reverse deforestation and soil degradation by 2030, and promote sustainable development and inclusive transformation of local communities.	• 141 countries including Japan joined
Global Methane Pledge	Reduce global methane emissions by 30 percent below 2020 levels by 2030	• 103 countries including Japan joined • China, Russia, and India, which emit large amounts of CO2, did not join

20

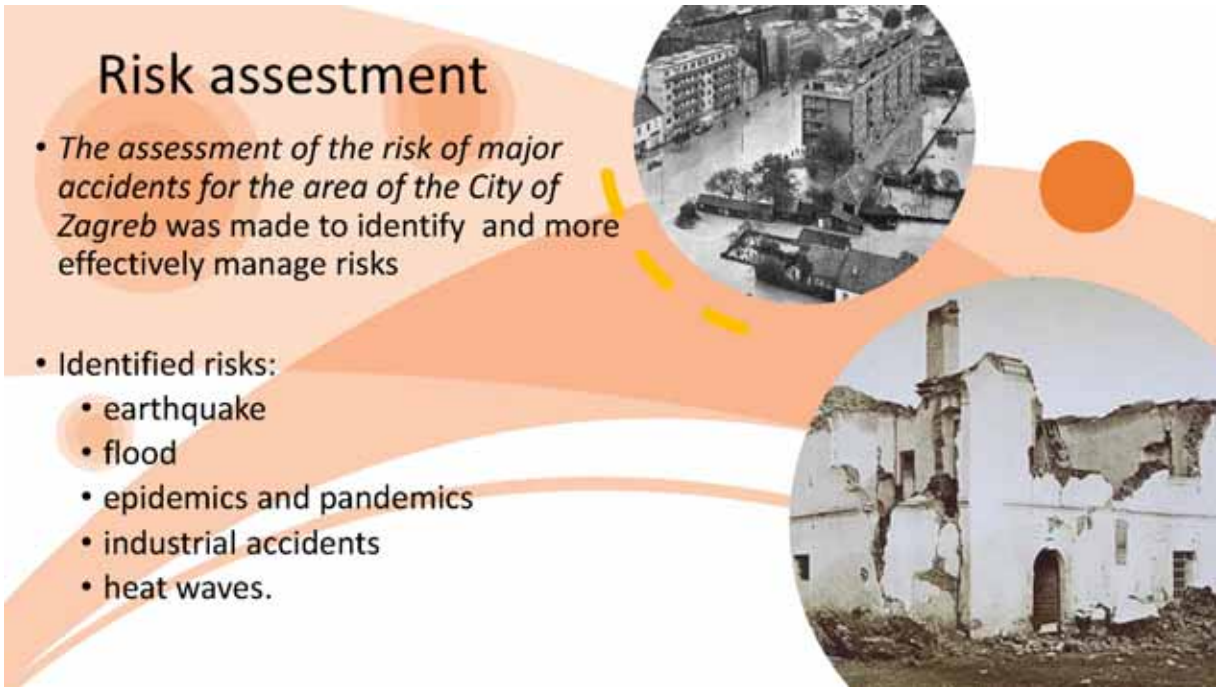
COP26

Agreements made at the COP26 venue outside of the official negotiation process

Name of the coalitions	Summary
First Movers Coalition	• Members will use their global purchasing power to create new markets for emerging technologies to realize net-zero by 2050. • Downstream industry commits to purchase zero-emission goods to create demand in hard-to-abate industries by 2030. Such demand will drive investment from the upstream industry. • The World Economic Forum provides support to industries in the US and EU. Starting from steel, trucking, shipping, and aviation sectors.
International Sustainability Standards Board (ISSB)	• IFRS Foundation establishes ISSB to provide high quality climate and sustainability-related disclosures to financial markets • Develop standards based on existing frameworks such as TCFD • Within the IFRS, the ISSB is aligned with the IASB, which makes IFRS accounting standards.
Glasgow Financial Alliance for Net Zero (GFANZ)	• More than 450 financial institutions with total assets of $130 trillion committed to net zero, with an interim target of 2030. • Science-based guidelines • Alliance of alliances
Net Zero Standard Science Based Targets initiative (SBTi)	• Announced the Net Zero target program in addition to the existing 2.0°C and 1.5°C targets

Earthquake risk for the City of Zagreb

Ms. Kristina Martinović, Emergency Management of the City of Zagreb Office



Risk scenarios

- Scenarios have been developed for each individual risk
- The scenario describes each selected threat, its occurrence and consequences in order to plan preventive measures, promote public awarennes, educate the population and and to increase responsiveness to identified risks and major disaster.
- Scenario shall take account of the worst possible situation with very low probability of occurrence but the greatest consequences and detecte critical points
- The scenario represents the foundation for preventive planning and operational strengthening of civil protection in the City of Zagreb.

Risk	The scenario	Consequences
Earthquake	**Earthquake measuring IX ° MCS scale**	**Extremely endangered large part of the building stock. Significant number of dead. Great influence on social stability and politics, since the General Assembly is the political center of the Republic of Croatia, and many buildings of the seat of political institutions of interest to the entire territory of the Republic of Croatia are endangered.**
Flood	Flood caused by the bursting of the Sava embankment.	In addition to the great damage to the housing stock, the quality of life in the flooded areas will be degraded, and there will be a significant number of long-term displaced persons.
Technical - technological accident with hazardous substances	Occurrence of the domino effect in the area of the Žitnjak industrial zone due to the explosion of liquefied petroleum gas	The worst consequences in the case of industrial accidents are expected in the area of GČ Peščenica-Žitnjak.
Extreme weather events	Long-term heat wave in the area of the City of Zagreb	Extreme temperatures can cause health problems and an increased number of deaths.
Epidemics and pandemics	**Influenza pandemic**	**Human health is primarily endangered, especially if the population has not been vaccinated or if the vaccine does not exist due to a mutation in the virus. The consequences for the economy can be seen in the reduced number of tourist arrivals and the increased number of sick**

- 5.5. magnitude earthquake struck Zagreb and its surroundings in the midst of COVID-19 pandemic in March 2020.

- 2022. the epidemia is still ongoing
- 2022. eartquacke recovery is still ongoing

Earthquake risk for the city of Zagreb - a strategic EU project

- European Structural and Investment Funds
- Competitiveness and Cohesion Operational Program 2014-2020
- Priority Axis 5- Climate change and risk management
- 5b - Encouraging investments related to specific risks, ensuring disaster resilience and developing disaster management systems
- 5b1 - specific objective to strengthen the disaster management system

The project consists of:

1. Multisensor aerial imaging of the Republic of Croatia
2. **Earthquake risk in the area of the City of Zagreb**

Coordinator:
SGA - State Geodetic Administration -
Partners:
Faculty of Geodesy, University of Zagreb
City of Zagreb

Project co-financier
Croatian Waters for Part 1

- The grant agreement was signed on May 11, 2020.
- The total estimated value of the Project is up to HRK 135,045,851.70
- The total amount of eligible costs is up to HRK 135,045,851.70
- 85% up to a maximum of HRK 114,788,973.95 is financed from EU funds

- **City of Zagreb for "Earthquake risk" up to a maximum of HRK 30,901.2015.40**
- **85% is financed from EU funds up to a maximum of HRK 26,266,033.09**
- **The rest up to 15% from the budget of the City of Zagreb up to a maximum of HRK 4,635,182.31**

Project goals

General goal:

- ✓To develope a methodology for Earthquake risk assessment applicable to all major cities in the Republic of Croatia
- ✓To define seismic hazard
- ✓To identify risk to Earthquake buildings and people:
  - buildings: residential, business, public, infrastructure, cultural heritage...
  - people: with regard to consequences: casuality for housing

- ✓To create a complete database of buildings and population
- ✓**Earthquake** risk assessment for the city of Zagreb - mathematical calculation of seismic hazard, exposure and vulnerability, using the methodology and seismic risk assessment by sectors
- ✓Transfer of **Earthquake** risk knowledge

Specific goals

- ✓Provide data to emergency services and civil protection to prepare an effective response immediately after an earthquake but also in their day-to-day tasks
- ✓Provide data on damaged buildings and infrastructure
- ✓Document the basis of economically acceptable renovation of existing buildings and construction of new safe buildings
- ✓Preparation of measures for the rapid recovery of the earthquake-affected community

https://potresnirizik.zagreb.hr/

Multisenzorsko
zračno snimanje Republike Hrvatske
Potresni rizik Grada Zagreba

Hvala na pažnji!

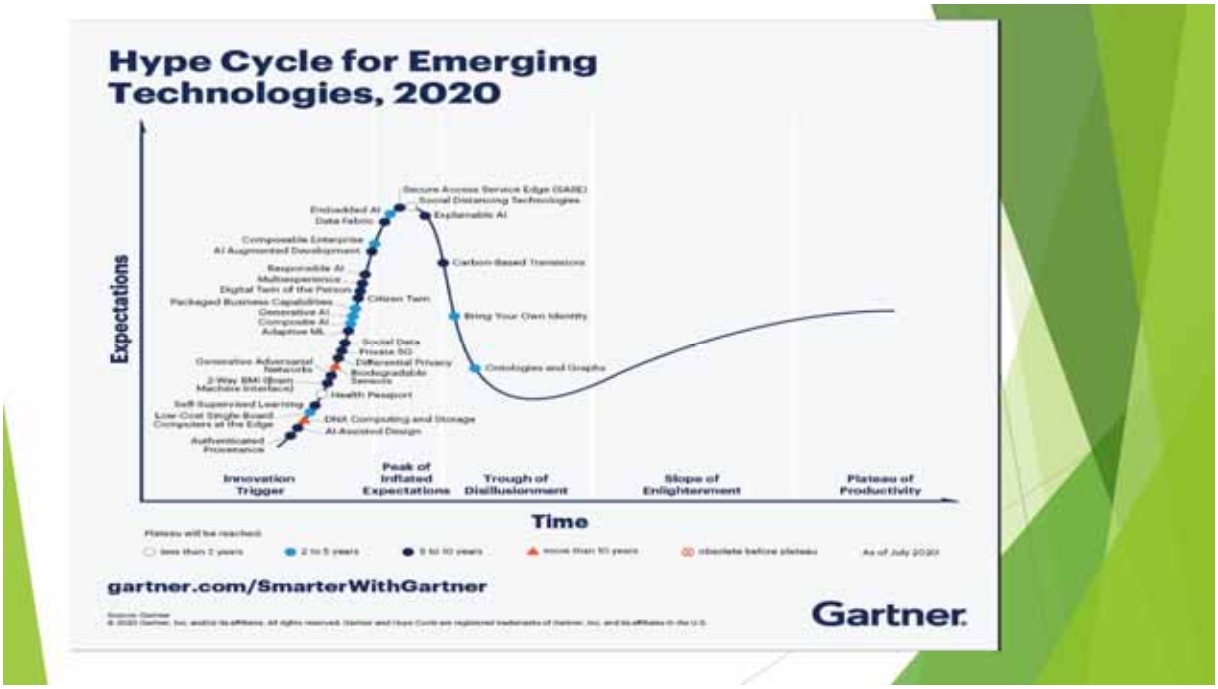
https://potresnirizik.zagreb.hr/

REPUBLIKA HRVATSKA
Državna geodetska uprava

Projekt je sufinancirala Europska unija iz Europskog fonda za regionalni razvoj.

EU AI NLF – New Legislative Framework

Ms. Marijana Šarolić Robić, President of the Professional Women's Network (PWMN Croatia)



AI "made in Europe"

- EU initiative on AI in spring 2018
- 10 April 2018 25 European countries signed a Declaration of cooperation on Artificial Intelligence (Croatia signed on 16 July 2018)
- The Commission has selected 52 experts for the High-level Expert Group on Artificial Intelligence (AI HLEG) giving them a mandate to deliver:

1. Ethics guidelines for trustworthy AI on 8 April 2019
2. Policy and investment recommendations for trustworthy Artificial Intelligence June 2019
3. WHITE PAPER February 2020 (*eco system of trust and ecosystem of excellence*)
4. Draft AI ACT (Regulation) 21 April 2021

AI ethics guidelines

TRUSTWORTHY AI:

1. it should be **lawful**, complying with all applicable laws and regulations;
2. it should be **ethical**, ensuring adherence to ethical principles and values; and
3. it should be **robust**, both from a technical and social perspective, since, even with good intentions, AI systems can cause unintentional harm.

7 key requirements that AI systems should meet in order to be deemed TRUSTWORTHY

- Human agency and oversight
- Technical Robustness and safety
- Privacy and data governance
- Transparency
- Diversity, non-discrimination and fairness
- Societal and environmental well-being
- Accountability

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DRAFT REGULATION ON AI

- NLF
- AI definition
- RISK BASED APPROACH
- EU and member states national bodies (education and capacity?)
- EU HR AI SYSTEMS APPLICATION register
- Additional expensive obligations (compliance AI)

https://www.hansonrobotics.com/sophia/

„By 2025, AI is expected to enable over 30% of smart city applications, among which urban mobility solutions, significantly contributing to resilience, sustainability, social welfare and vitality of urban life. AI applications in smart cities can be categorised in the following seven dimensions.

- 1, • ***AI for governance*** e.g.: urban planning, tailored subsidy provision, **disaster prevention** and management.
- • ***AI for living and liveability, safety, security and healthcare*** e.g.: smart policing, personalised healthcare, noise and nuisance management and **improved cyber security**.
- • ***AI for education and citizen participation*** e.g.: locally accurate, validated and actionable knowledge supporting decision-making.
- • ***AI for economy*** e.g.: resource (cost and time) efficiency and improved competitiveness through, sharing services, efficient supply chains and customer tailored solutions.
- • ***AI for mobility and logistics*** e.g.: autonomous and sustainable mobility, smart routing and parking assistance, supply chain resiliency and traffic management.
- • ***AI for infrastructure*** e.g.: optimised infrastructure deployment, use and maintenance, including waste and water management, transportation, energy grids, and urban lighting.
- • ***AI for the environment*** e.g.: biodiversity preservation, urban farming and air quality management. „ .

* Source:
https://www.europarl.europa.eu/RegData/etudes/BRIE/2021/662937/IPOL_BRI(2021)662937_EN.pdf

The European Green Deal *

AI Potentials:

- ***analysis of large amounts of data to increase knowledge base, allowing to better understand and tackle environmental challenges*** e.g. the combination of **Earth observation data** with AI offers more effective, efficient and timely monitoring of environmental impacts and trends; help **consumers as well as businesses** to adapt towards more sustainable behaviour; predictive maintenance will increasingly optimise a **safe operation of infrastructures**...
- ***monitor and optimise energy consumption can support the integration of renewable energies in the electricity grids and has the potential to support key priorities of the Green Deal in the buildings sector***. Applications in **agriculture** may allow for more efficient use of water, pesticides and fertilisers and thus could mitigate environmental impacts. For the **transport sector**: improved planning of transport systems and infrastructure, to increase engine efficiency, optimise charging of electric vehicles, for the coordination of different transport modes or the control and management of railway systems. Opportunities to strengthen **the circular economy...**

*The role of artificial intelligence in the European Green Deal - Publications Office of the EU (europa.eu)

The European Green Deal *

AI Threats:

- ***Direct negative environmental effects of AI result from the use of digital hardware and infrastructures such as data centres and networks.*** ***Data traffic*** *in digital networks and other ICT consume* ***about 7% of the world's electricity today****, and the share is projected to* ***increase to 13% by 2030****. It has been estimated that* ***5-9% of the world's total electricity use is caused by ICT****, which* ***may rise to 20% in 2030****.* ***Greenhouse gas emissions (GHG)*** *from global data centres and communications networks are estimated* ***at 1.1 to 1.3 Gt CO2eq in 2020****. The future contribution of AI to GHG emissions will depend on the energy efficiency of data centres and their operation with renewable energies.*
- ***Systemic effects,*** *e.g. rebound effects, evolve as consequences of intended or unintended changes in the* ***behaviour of consumers, users or producers****.*
- ***Draft AI regulation needs further research and development of methods and institutional procedures for assessing and controlling environmental risks caused by AI.***
- ***AI-based research with potential to contribute to a green transition may not be prioritised if their expected economic benefit is not high. It is important that EU research programmes provide resources for potential AI applications in environmental areas.***

Thank you

marijana.sarolic@msrlegal.hr

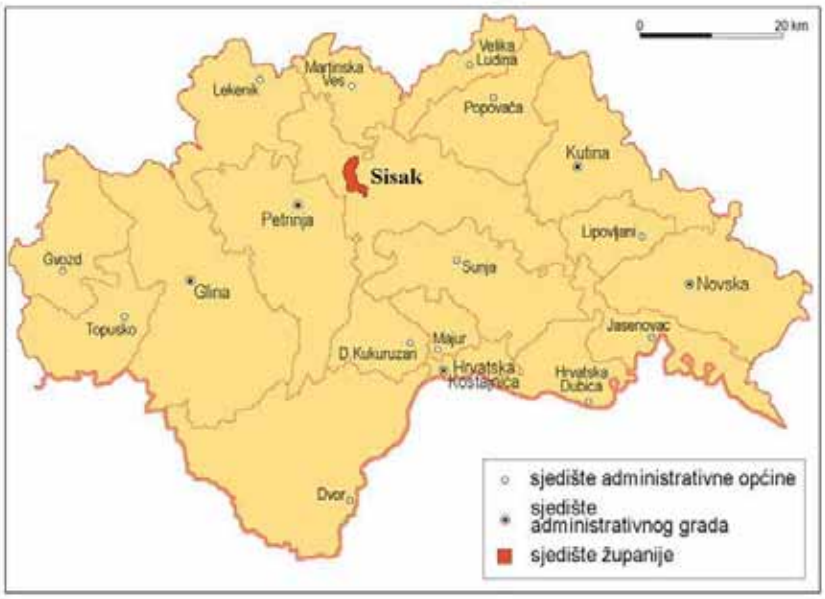
The long-term Banija development vision

Mr. Velibor Mačkić, Special Adviser to the President of the Republic of Croatia for the Economy

Economic Council of the President of the Republic of Croatia
Banija Working Group

THE LONG-TERM BANIJA DEVELOPMENT VISION

SISAK-MOSLAVINA COUNTY



Methodology for creating a development vision based on growth scenarios

The development scenario method applied here is useful in establishing a long-term vision for development. Even so, it is essential to think strategically about the future outside the existing frameworks and to keep in mind that the future is to a great extent uncertain. Scenarios are useful complements to common strategic planning tools, especially in the context of long-term planning and setting long-term visions for development.

The following steps comprise the scenario and vision development process:

- Identifying factors of change (PESTEC method)
- Analysis and classification of factors of change (importance – uncertainty)
- Selection of factors for scenario development
- Discussion of scenarios (brainstorming, in the context of development extremes)
- Selection of scenarios for the long-term development vision of Banija (description)
- Determining the development VISION (short statement)
- List of recommendations for development in the short, medium and long-term (post-workshop)

Methodology for creating a development vision based on growth scenarios

- A **variation of the PEST / EC method** (Political, Economic, Social, Technological, Environmental, Civic) was used to discuss the factors of change.

- The factors of change were formulated neutrally, without value judgments, so that depending on the developmental context they can be discussed in individual development scenarios. Most of the factors were formulated as generalized supra-concepts that can be defined in more detail in the developmental context.

- The factors of change for determining the development scenarios were selected by singling out the MOST IMPORTANT AND MOST UNCERTAIN ones from the set of factors in the PESTEC table.

- Next, 7 factors were selected for each scenario and then the two least related factors were singled out. Thus, a developmental context was established for the discussion on development scenarios.

- This was a creative process and not necessarily based on the current situation; it considers what the situation should look like in the future, if development is brainstormed based on the most realistic assessment of the possible effects of the selected factors of change.

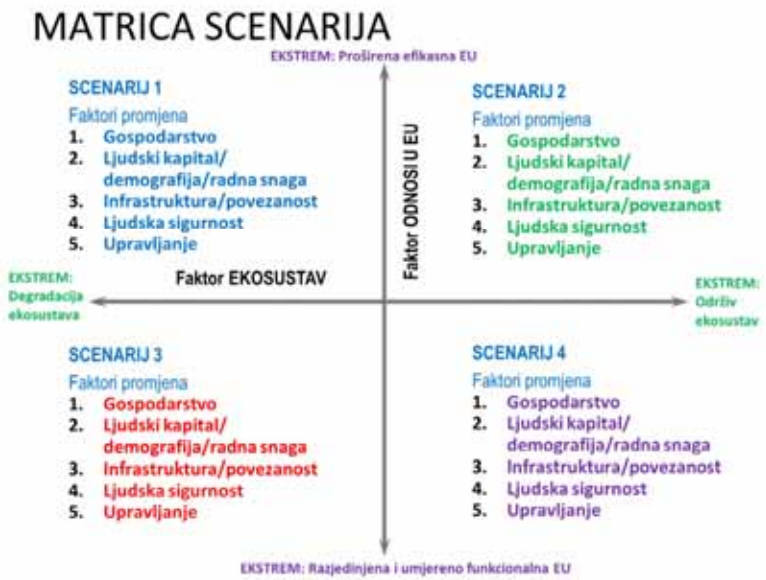
Methodology for creating a development vision based on growth scenarios

The following most important and most uncertain factors of change were selected:

- Relations in the EU / EU expansion
- Changes in the ecosystem
- Economy
- Human capital / demography / labor force
- Infrastructure / connectivity
- Human security
- Development management

- As the next step, the impact of the selected factors of change on the development of Banija in 2041 was assessed

Scenario matrix for the Banija area



The vision of Banija – A green space of opportunities

”Banija is a demographically renewed green area of Croatia with distinctive developmental characteristics and a high degree of self-sufficiency in food production and energy supply. Agriculture and the food processing industry are at the forefront of innovative, highly structured, high value-added production. Banija’s economy is focused on meeting the market demand of tomorrow and provides its inhabitants with conditions for a sustainable and quality life in a preserved and inspiring environment.”

Proposals for key development initiatives

I. Green economy

1. Specialization of Top Terme Topusko health spa resort for wellness and health treatments using industrial hemp
2. Agricultural cultivation and processing of industrial hemp
3. Using sustainable energy sources (SES) to drive economic development
4. Production of plant based meat / vegetarian meat substitutes

Proposals for key development initiatives

I. Green economy

5. System of commercialization of local agricultural products – „Made in Banija“
6. Wood industry – from semi-finished products to high value products
7. Good Food Academy

Proposals for key development initiatives

II. Community renewal

8. ”Banija – an area centered on people“ – integration models
9. ”A Green House in Banija“ – social entrepreneurship, from tradition to innovation
10. ”Academy of solidarity“ – International Joint Security and Mutual Assistance Center
11. ”Banija – A Green Sanctuary“ – an environmental protection model

Proposals for key development initiatives

III. Infrastructure and connectivity

12. Business infrastructure
13. Local accessibility and mobility
14. Optimization of the Zagreb-Sisak railway line
15. Urban revitalization of Sisak – the New European Bauhaus
16. Rural laboratories

Proposals for key development initiatives

IV. Administration and security

17. Amendments to the 2021 Census and a systematic spatial and social analysis of Banija
18. Providing conditions for an agriculture-based economy
19. Empowering small towns
20. New villages for the 21st century
21. Agricultural land management
22. Clearing mine suspected areas in Sisak-Moslavina County
23. Digital transition centers

Sustainable society – Role of business sector

Mr. Kensuke Tsuchiya, President/CEO of Toyota Adria

Sustainable society

Role of business sector

Toyota Adria
1.3.2022

TOYOTA GLOBAL PRIORITY: LEAVE NO ONE BEHIND

TOYOTA ENVIRONMENTAL CHALLENGE 2050

- New vehicle zero emissions
- Life cycle zero emissions (raw materials, parts & manufacturing, use, recycling)
- Plant zero emissions
- Minimizing and optimizing water usage
- Establishing a re-cycling based society
- Establishing a future society in harmony with nature 2050

BEYOND ZERO

LQ (Autonomous + BEV)

E-pallet (MaaS)

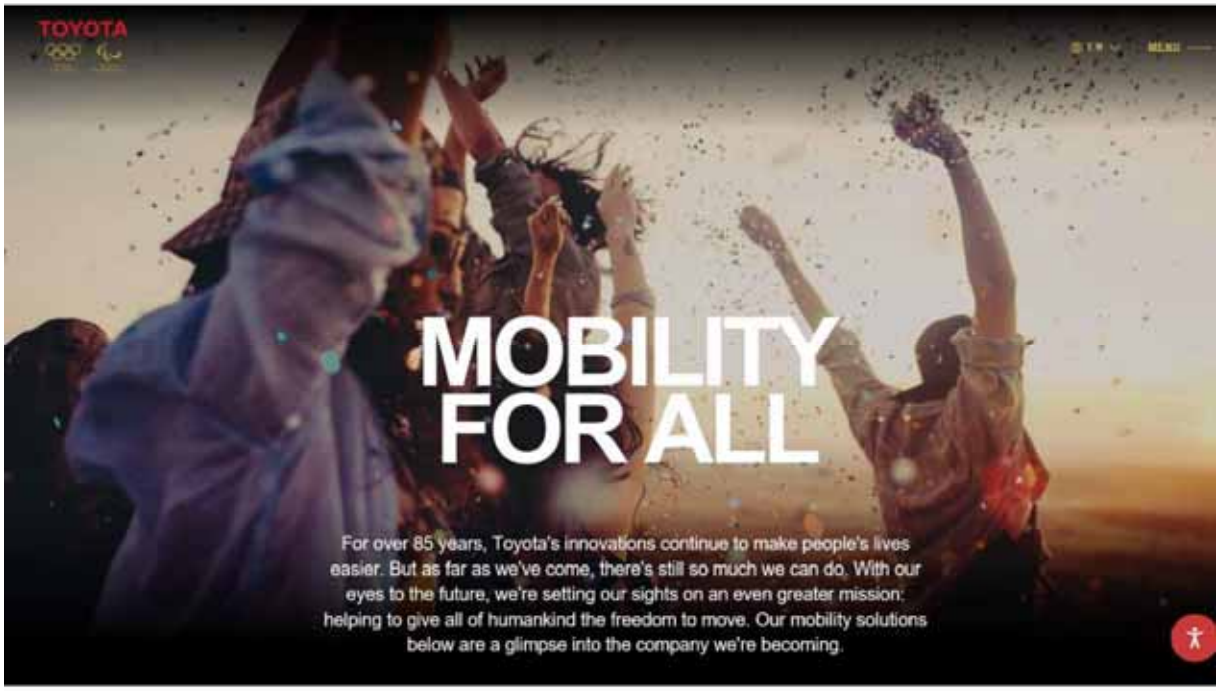
Robotics

Jaxa Lunar Cruiser (FC)

Toyota Woven city (Hydrogen society)

Energy observer (FC)

START YOUR
IMPOSSIBLE
TOYOTA
Toyota Olympics &
Paralympics Partnership


TOYOTA
MOBILITY
FOR ALL
For over 85 years, Toyota's innovations continue to make people's lives easier. But as far as we've come, there's still so much we can do. With our eyes to the future, we're setting our sights on an even greater mission: helping to give all of humankind the freedom to move. Our mobility solutions below are a glimpse into the company we're becoming.

CORPORATE AND SOCIAL RESPONSABILITY

TOYOTA CROATIA ACTIVITIES - CORPORATE SOCIAL RESPONSABILITY

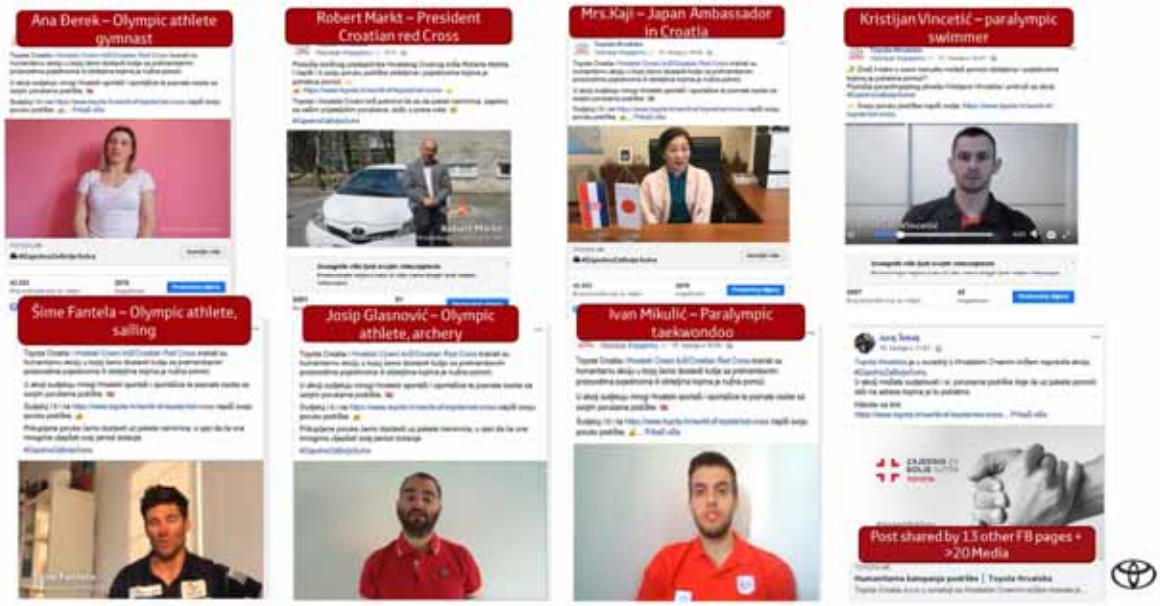
April 2020

#ZajednoZaBoljeSutra

Toyota Campaign " Together for better tomorrow" engaged partners from Olympic, Paralympic committee, Red Cross and also Japan Ambassador in Croatia. Partners recorded videos for facebook / Instagram campaign in order to promote donation and to invite people to write messages and letters to the unknown person, those letters will be distributed with food packages.

(Food for one month
600 pcs.)

#ZajednoZaBoljeSutra



TOYOTA CROATIA ACTIVITIES - CORPORATE SOCIAL RESPONSABILITY

FEBRUARY 2021

1 HILUX DELIVERY TO CITY PETRINJA
THAT WAS DESTROYED IN AN EARTHQUAKE dec '20

Usage of a vehicle during 12month period
will help reach people that live in a secluded area, and distribute supplies and repair material

TOYOTA CROATIA ACTIVITIES - CORPORATE SOCIAL RESPONSABILITY
SAFETY IN TRAFFIC

July 2020

COROLLA HYBRID TREK displayed on event promoting road safety for children,
Outdoor event, popular Zagreb lake JARUN
Topic: Safety in traffic, learning kids to read road signs and stay safe

TOYOTA CROATIA ACTIVITIES - CORPORATE SOCIAL RESPONSABILITY
PLANTING TREES AND FOLWERS

July 2020

„Flowers and Trees" Family ECO event powered by Toyota Hybrid
Families invited to learn about importance of recycling, planting greenery, and preserving environment . Childrens book author Rosie Kugli read from her book "Little fish and the boy" – ecology topic. Organized planting workshop

TOYOTA CROATIA ACTIVITIES
PLANTING - ONE HYBRID ONE TREE
March 2020

JAPANESE GARDEN
Continuation of the cooperation with JTI and Croatian Japanese cultural and economic association.
Provided Japanese maples and planted in the park Bundek

SOCIAL MEDIA HIGHLIGHTS – SOCIAL CONTRIBUTION
EXHIBITION FOR CHILDREN IN HOSPITAL

NOVEMBER 26 - 30. Social media activation with partners

Inviting public, Toyota fans, partners, press to engage at home with their children in order to prepare drawings for Holliday exhibition in children hospital in Zagreb.

We invited and engaged partners: Cro Olympic and Paralympic committee , media and influencers to raise awareness and invite public to engage.

'+1000 drawings and "GET WELL" wishes collected and will be used to organize exhibition during holidays in a hospital.

TOYOTA CROATIA ACTIVITIES - SOCIAL CONTRIBUTION

04. December 2020

Celebrating St. Nicolas with New Yaris and friends for children in Zagreb city hospital

Organized social activation, invited our Sponsorship partners to join;
Olympic medalist Damir Martin
Toyota GTTA ambassador, Paralympic swimmer Kristijan Vincetić
Rally Driver and Influencer Toyota partner Juraj Šebalj
team took New Yaris on its first drive
Team drove ' St Nicolas ' with many gifts to a children hospital in Zagreb

START YOUR IMPOSSIBLE
OLYMPIC PARALYMPIC SPONSORSHIP

Zagreb
Motorshow
April '18

START YOUR IMPOSSIBLE - CRO PARALYMPIC COMMITTEE PROMOTION

JAN 2020
SUPPORTING AWARD CEREMONIES FOR BEST ATHLETES

START YOUR IMPOSSIBLE - CRO PARALYMPIC COMMITTEE ACTIVATION

MAY 2020

Campaign on Social media Facebook and Instagram

to promote Toyota partnership with Paralympic athlete Kristijan Vincetić para swimmer

START YOUR IMPOSSIBLE - CRO PARALYMPIC COMMITTEE PROMOTION

July 2020

Extending partnership and support 1 year to Paralympic games in Tokyo

Promoting Toyota sponsorship to Paralympic committee

New Corolla TS 1,8 Hybrid to Croatian Paralympic Committee

START YOUR IMPOSSIBLE - CRO OLYMPIC COMMITTEE ACTIVATION

August 2020

Social media content prepared in August - featuring our partnership with Croatian Olympic committee :

1) We initiated promotion on Croatian Olympic committee Facebook profile "HAPPY BIRTHDAY TOYOTA"

- prepared and published Video greeting card to TOYOTA (83.birthday)
- Video features Croatian gymnast Ana Đerek and Golden Olympic medalist - archer Josip Glasnović
- TTL reach 6k views

START YOUR IMPOSSIBLE - MOBILITY FOR ALL

SOCIAL MEDIA HIGHLIGHTS

September 2020

Social media content supporting TOYOTA MOTOR EUROPE 16.-22.September in :
"European mobility week"

Croatian athletes Olympic (Kristina Tomić, Franko Grgić) and paralympic - Kristijan Vincetić recorded Video stories for FB/IG promoting message
"importance of mobility" inviting general public to concisely spend Week to move more than usual.

#MOBILITYFORALL #TOYOTA_HR #TOYOTA EUROPE

START YOUR IMPOSSIBLE - CRO OLYMPIC COMMITTEE ACTIVATION

September 2020

September 10. ceremony in organization of Croatian Olympic committee
" Award Dražen Petrović " for Best Young athlete of Croatia
Dražen Petrović was one of the most successful and popular Croatian athletes of all time

https://www.facebook.com/Hrvatskiolimpijskiodbor/videos/3327972720616353/UzpfSTM1NDE2Mzk0Mzk4MTkxMDE1OTA4NTAyNTL1ODk4Mg/

START YOUR IMPOSSIBLE - CRO OLYMPIC COMMITTEE ACTIVATION

October 2020

October 16. – SPORT FEST conference , Poreč Croatia

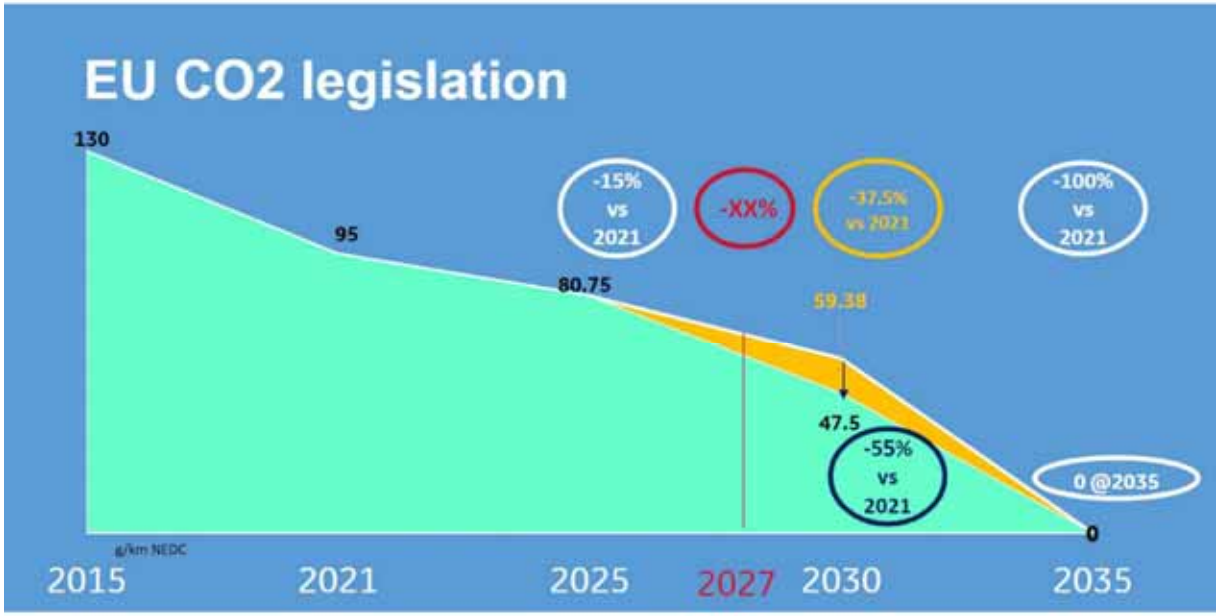
Organized panel "TOYOTA TALK " green and responsible on the way to Tokyo" hosted: Olympic medalist Sara Kolak, Cro Paralympic athlete Ivana Kartanušić, Cro rally driving 11x national champion Juraj Šebalj

Main Message: New technologies are cleaner and improving quality of life, Toyota is a pioneer to showcase many different mobility solutions in Tokyo Para/Olympics 2020+1.

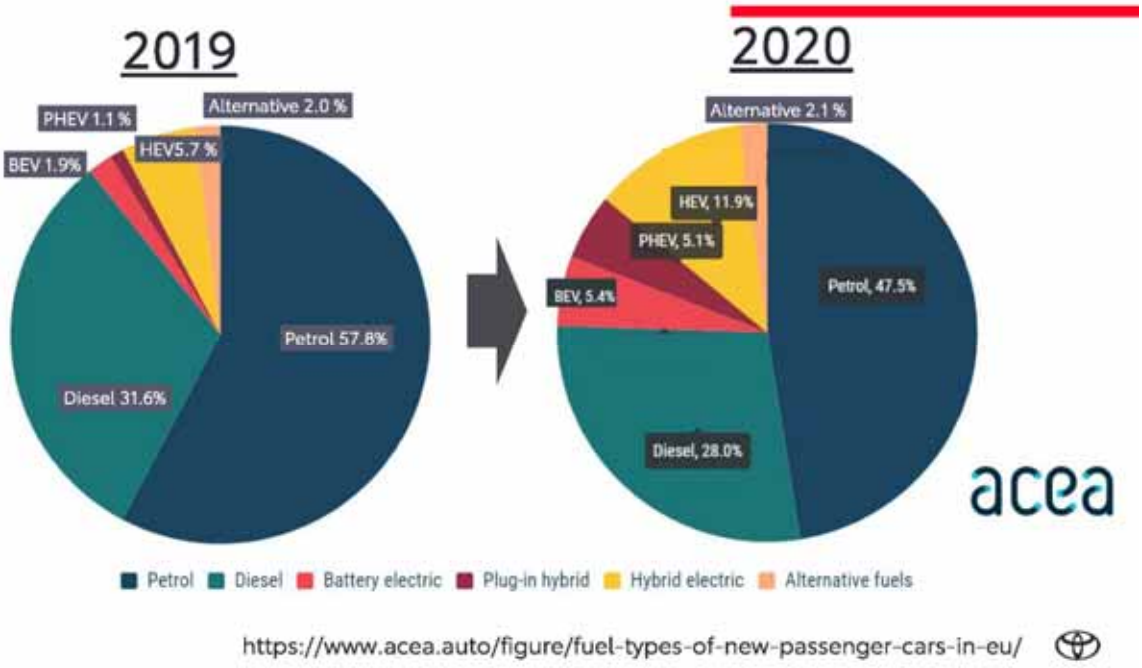
TOYOTA TALK Zeleno i odgovorno prema Tokyu održana je još jedna konferencija Sport fest sa zanimljivim tribinom. Predstavili smo Toyotine zelene tehnologije s kojima će se naši sportaši Sara Kolak i Ivan Kartanušić vrsti uživo na Olimpijskim i Paraolimpijskim igrama tijekom ljeta 2021, a više o svojim iskustvima u vožnji napredniih tehnologija s okupljenima je podijelio Juraj Šebalj. Olimpijske Igre i Paraolimpijske igre Tokio 2020+1 bit će zasigurno «najzelenije» do sada te najinovativnije igre u povijesti olimpizma. Pa je tako čak 6.21 milijun starih mobitela iz cijelog svijeta je reciklirano za izradu medalja!

Toyota Talk "Zeleno i odgovorno prema Tokyu"

ENVIRONMENT



ALL TECHNOLOGIES ARE NEEDED TOWARDS CARBON NEUTRALITY



https://www.acea.auto/figure/fuel-types-of-new-passenger-cars-in-eu/

(1) Decarbonized Electricity Varies across European Countries

Carbon Intensity of Electricity per kWh, 2020:

- 0g CO_2 – 100g CO_2
- 100g CO_2 – 200g CO_2
- 200g CO_2 – 300g CO_2
- 300g CO_2 – 400g CO_2
- 400g CO_2 – 500g CO_2
- >500g CO_2

Source: Our World in Data

TOYOTA MOTOR EUROPE

SUSTAINABLE DEVELOPMENT GOALS | TOYOTA

(2) Charging Infrastructure

70% OF CURRENT CHARGING INFRASTRUCTURE LOCATED IN 3 COUNTRIES WITHIN THE EU

Number of Charging Points:

- 0 - 500
- 500 - 1000
- 1000 - 5000
- 5000 – 10,000
- 10,000 – 35,000
- >35,000

70%
in France, Germany & the Netherlands

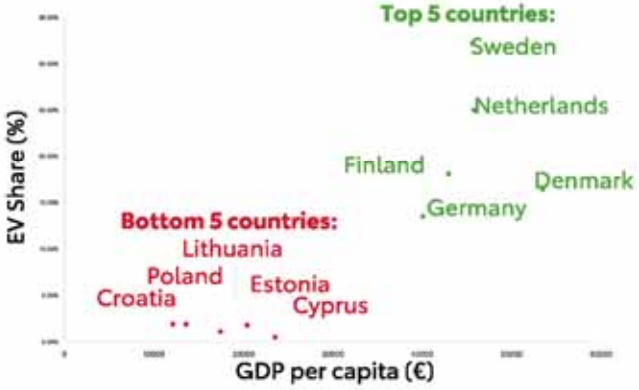
Source: ACEA

TOYOTA MOTOR EUROPE

SUSTAINABLE DEVELOPMENT GOALS | TOYOTA

(3) Affordability

BEV UPTAKE LINKED TO GDP PER CAPITA IN THE EU

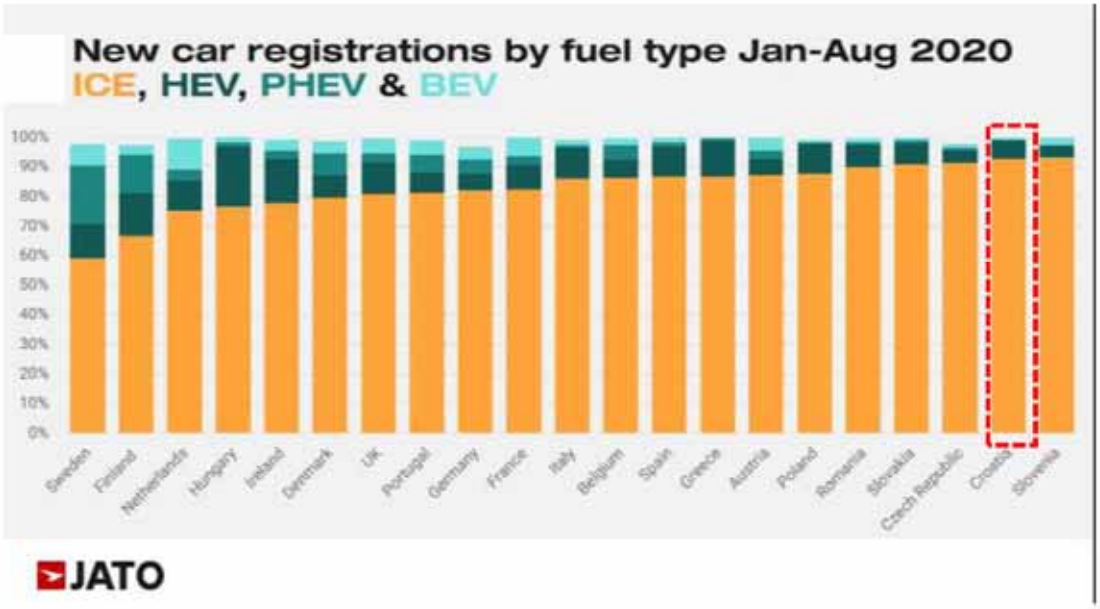


Source: ACEA

TOYOTA MOTOR EUROPE

SUSTAINABLE DEVELOPMENT GOALS | TOYOTA

(4) SUBSIDY FROM GOVERNMENT

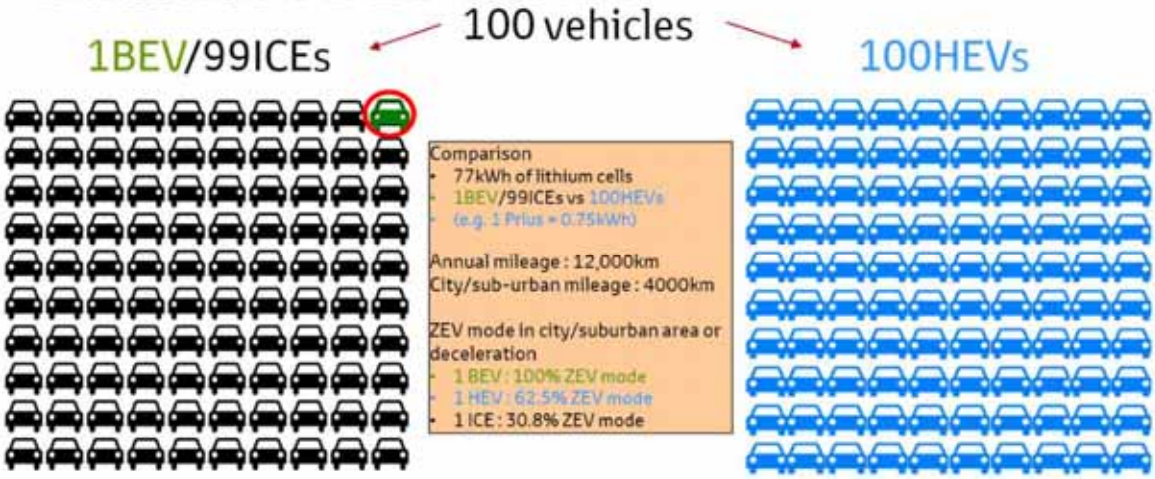


(5) RAW MATERIAL AVAILABILITY

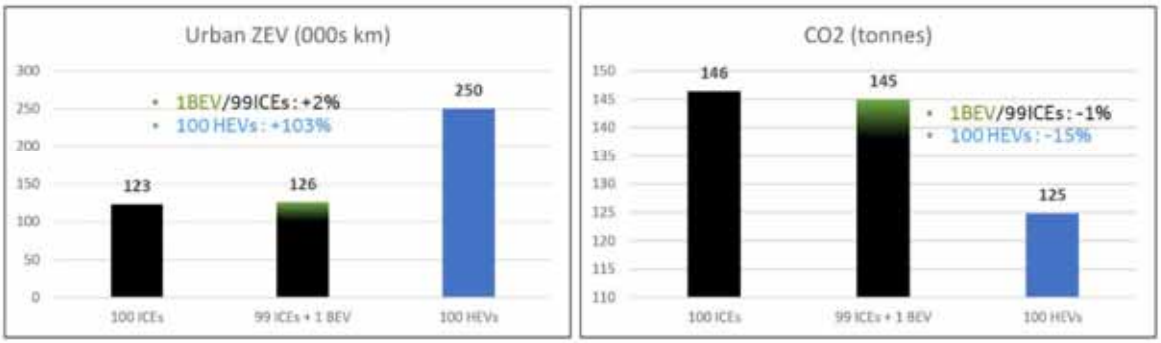
LITHIUM, COBALT & NICKEL

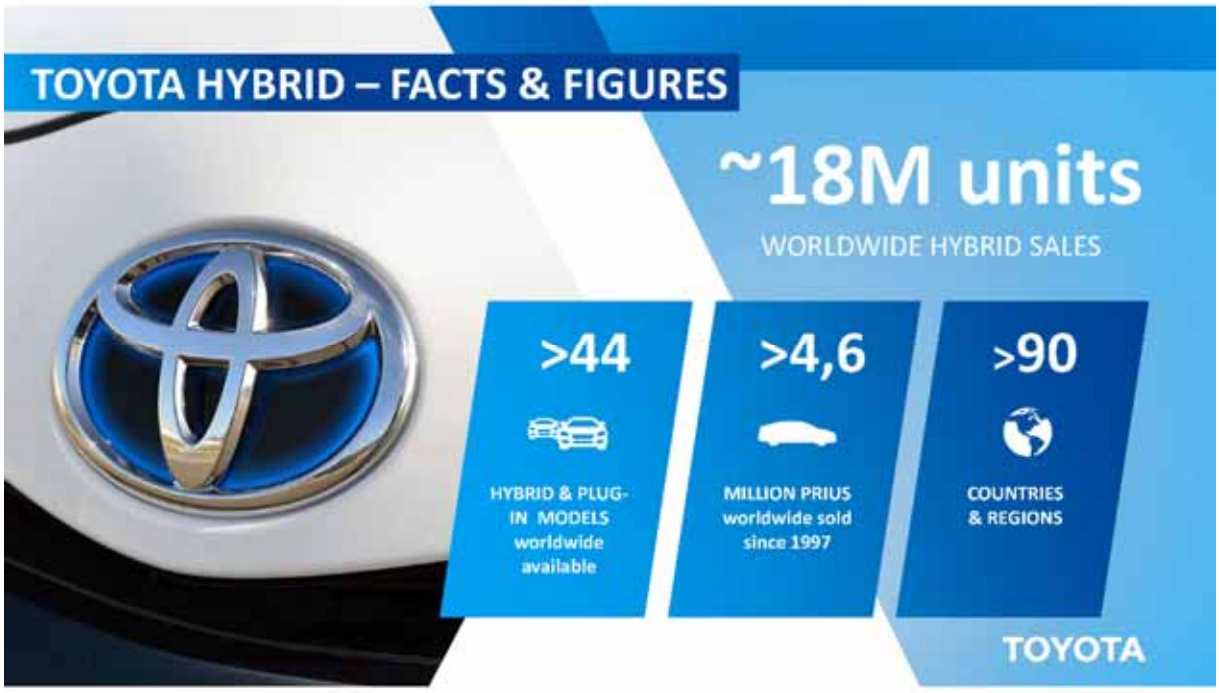
HYBRID	PLUG-IN HYBRID	BATTERY ELECTRIC
~1kWh	~18kWh	~70k – 100kWh

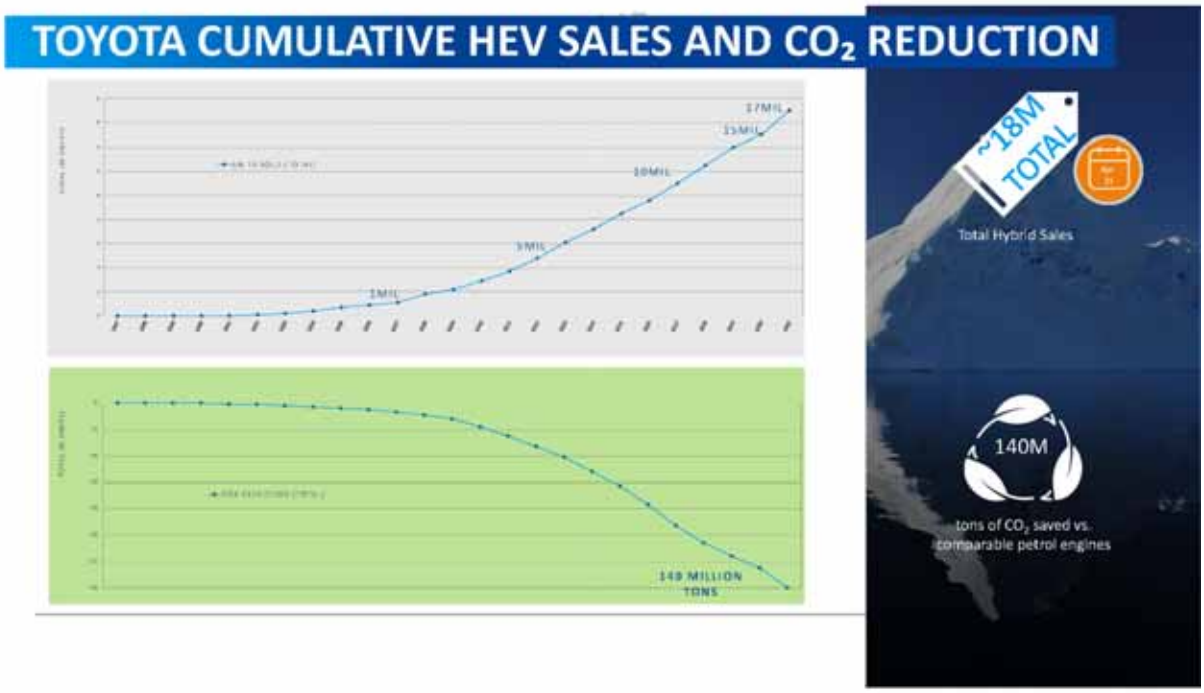
Batteries : BEV vs HEV



Batteries : BEV vs HEV

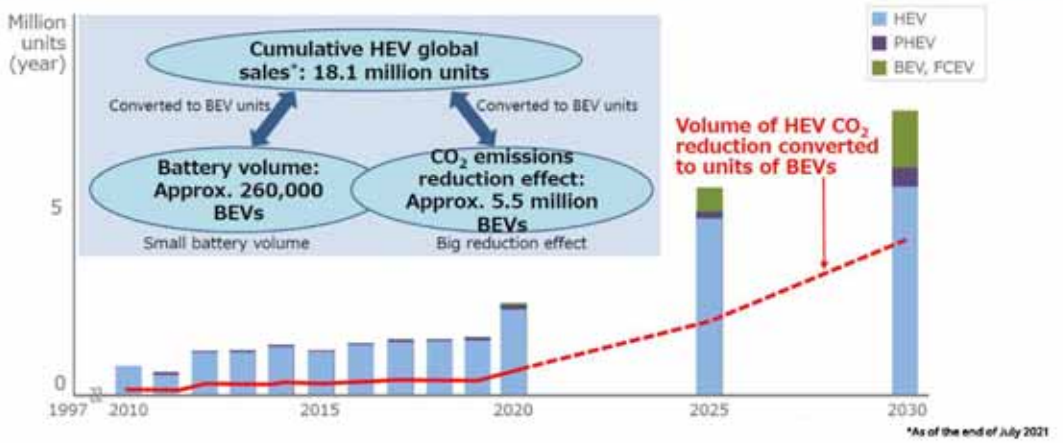


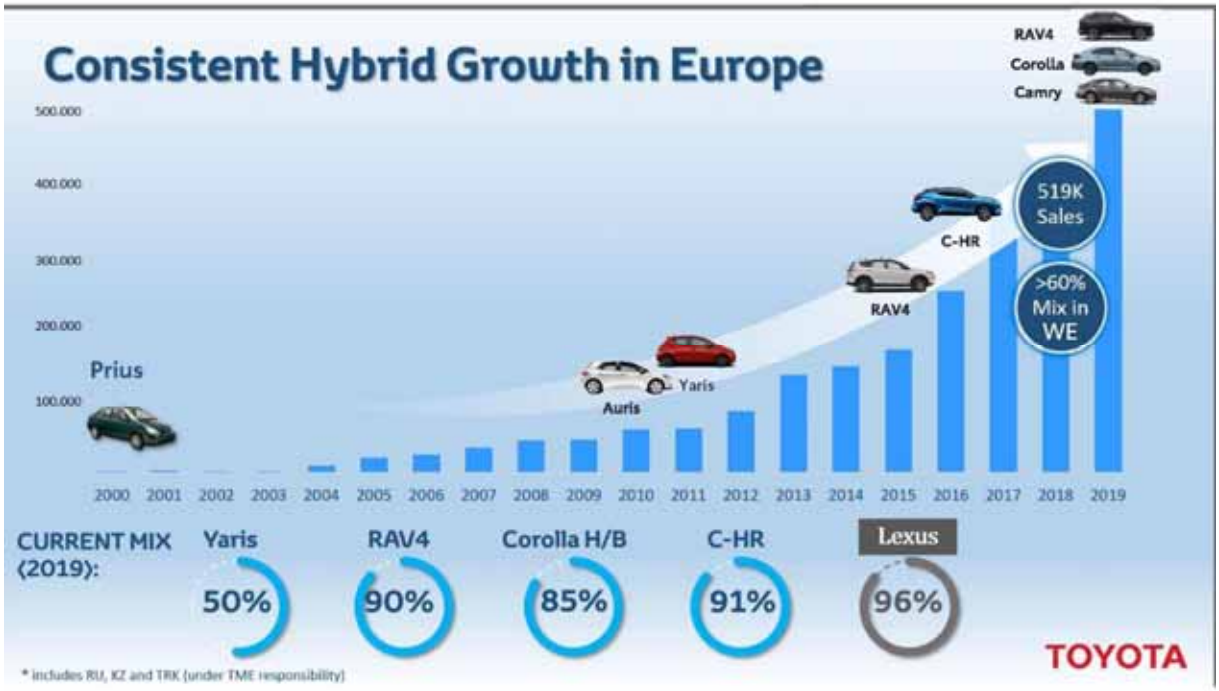

TOYOTA HYBRID – FACTS & FIGURES
~18M units
WORLDWIDE HYBRID SALES
>44
HYBRID & PLUG-IN MODELS worldwide available
>4,6
MILLION PRIUS worldwide sold since 1997
>90
COUNTRIES & REGIONS
TOYOTA


TOYOTA CUMULATIVE HEV SALES AND CO_2 REDUCTION
1MIL
5MIL
10MIL
15MIL
17MIL
149 MILLION TONS
~18M TOTAL
Total Hybrid Sales
140M
tons of CO_2 saved vs. comparable petrol engines

RAW MATERIAL AVAILABILITY

EFFECTIVE HYBRID CONTRIBUTION TO CO_2 REDUCTION





· PUBLIC 公開

TOYOTA HYBRID – LINE-UP

EUROPE 2020

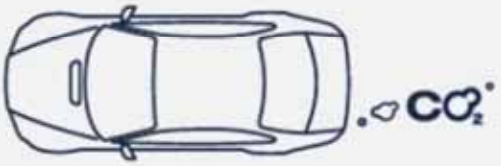
>535,000 HEV Sales in 2020

62% HEV Sales Mix 2020 in EUROPE

20 HEV Models already today available

TOYOTA

Volume Weighted Average CO_2 emissions (g/km) by Pool*. NEDC Correlated. Passenger Cars Registrations 2020 Europe-21



BMW Group	110.3
Daimler Group	117.0
Fiat-Chrysler	105.6
Geely Group	105.1
Hyundai-Kia	103.2
Jaguar-Land Rover	147.9
PSA Group	97.8
Renault-Nissan-Mitsubishi	104.2
Subaru	155.3
Suzuki	102.5
Toyota	97.5
Volkswagen Group	110.8

* Pools include BMW (BMW brand, Mini, Rolls-Royce), Daimler (Mercedes, Smart), Fiat Chrysler (Abarth, Alfa Romeo, Fiat, Honda, Jeep, Lancia, Maserati, Tesla), Geely Group (Ford, Lotus, Polestar, Volvo), Hyundai-Kia (Hyundai, Kia), PSA (Citroen, DS, Opel, Peugeot, Vauxhall), Renault-Nissan-Mitsubishi (Alpine, Dacia, Infiniti, Lada, Mitsubishi, Nissan, Renault), Subaru (Subaru), Suzuki (Suzuki brand), JLR (Jaguar, Land Rover), Toyota (Lexus, Mazda, Toyota), Volkswagen Group (Audi, Bentley, Cupra, MG, Porsche, Seat, Skoda, Volkswagen)

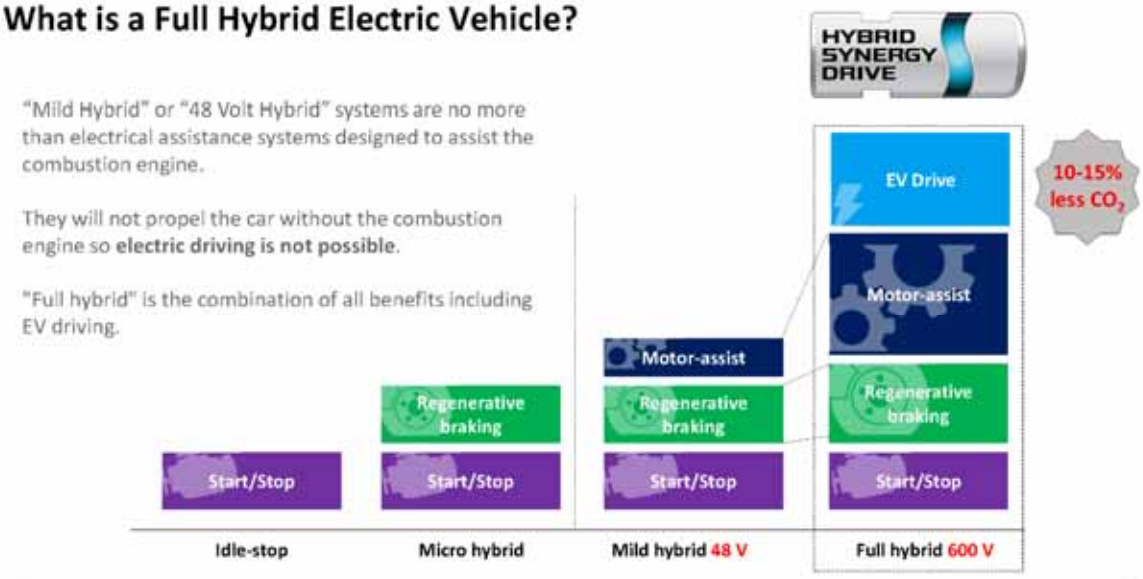
JATO

What is a Full Hybrid Electric Vehicle?

"Mild Hybrid" or "48 Volt Hybrid" systems are no more than electrical assistance systems designed to assist the combustion engine.

They will not propel the car without the combustion engine so **electric driving is not possible**.

"Full hybrid" is the combination of all benefits including EV driving.



TOYOTA

Hybrid is Making a Difference Now

DRIVECO

TOYOTA HEV European Customers Test Drive (2014 - September 2019)

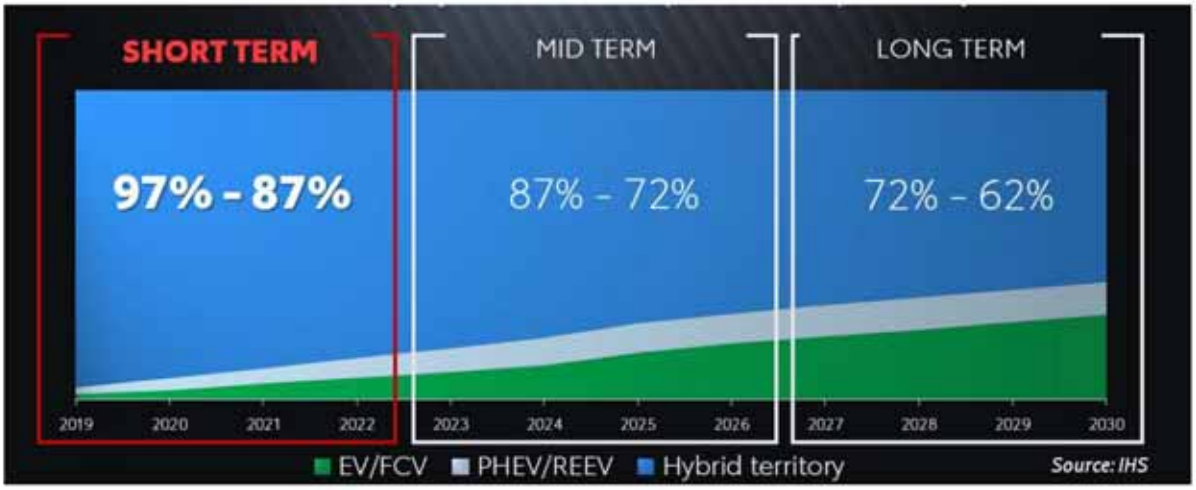
Test drives so far across Europe	Distance driven across Europe	Avg. time driving in ZEV mode
>1,085,000	>20,670,000 km	54.0%

Key messages
Hybrid helps ensure no one is left behind

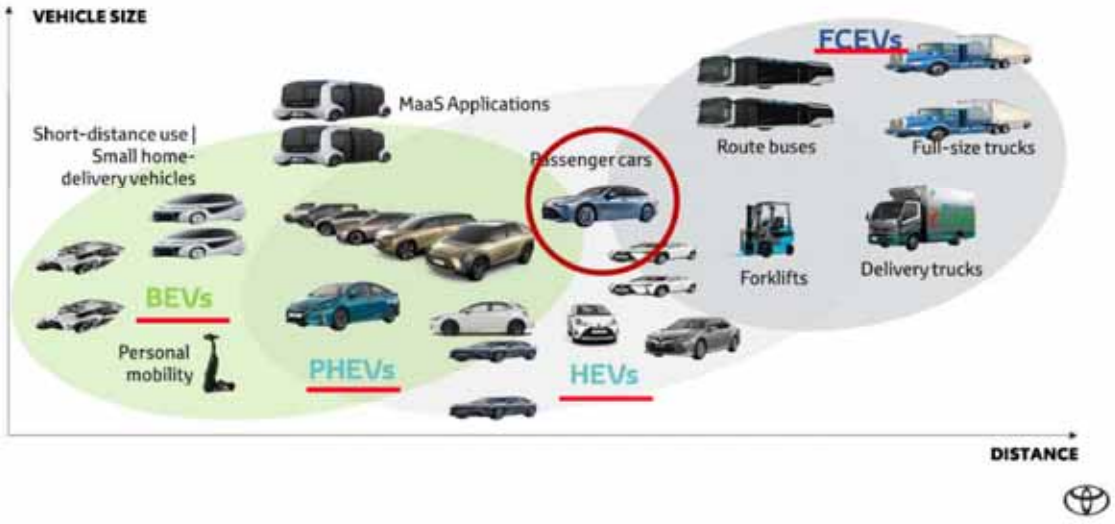
- **Hybrid is affordable**
- **Hybrid requires no charging infrastructure, practical in regions or places where this may take more time**
- **Hybrid is a steppingstone to electrification**
- **Hybrid requires no government incentives**

Hybrids are accessible – affordable, convenient, encourage electrification. Require no costly subsidy

EV POWERTRAIN FORECAST BY IHS

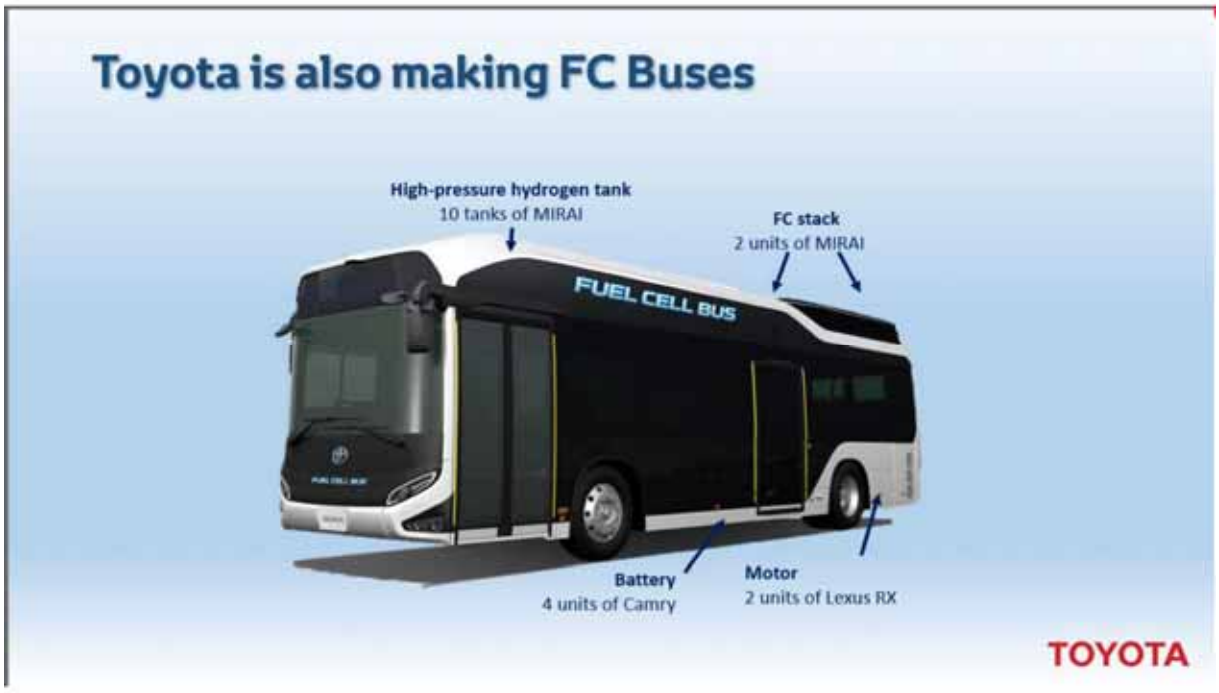


Different technology for different category



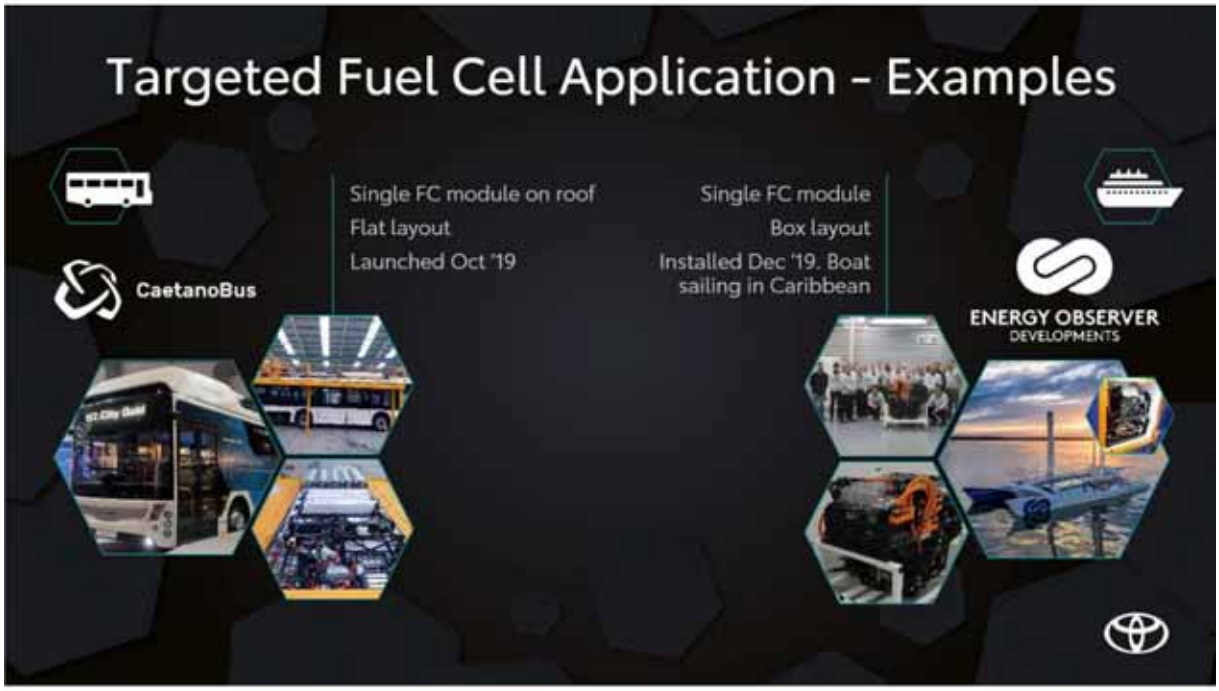
NEW MIRAI
650 KM*
PER REFILL
3–5 MINS
100%
REFUELLING

We make and use Hydrogen Forklifts
TOYOTA
FUEL CELL
TOYOTA


Toyota is also making FC Buses
High-pressure hydrogen tank
10 tanks of MIRAI
FC stack
2 units of MIRAI
FUEL CELL BUS
Battery
4 units of Camry
Motor
2 units of Lexus RX
TOYOTA

TOYOTA OPENED A PORTAL TO THE FUTURE OF ZERO EMISSION TRUCKING IN US
TOYOTA

JR EAST, HITACHI AND TOYOTA TO DEVELOP HYBRID (FUEL CELL) RAILWAY VEHICLES POWERED BY HYDROGEN

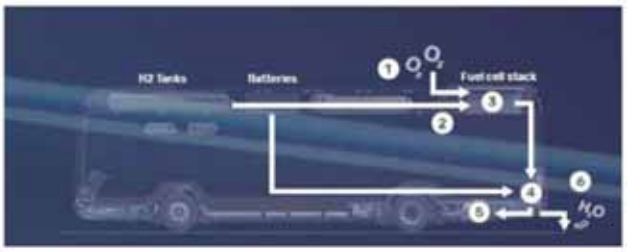


H2.CityGold

Main data

- 10.7m RHD & 12m LHD / 2 doors or 3 doors
- Range 400km
- Maximum Power 180 kW SIEMENS motor
- 60 kW Fuelcell Nominal Power (Toyota FC stuck)
- 37.5 kg (5x H2 tanks type 4)
- 29 kWh battery pack (LTO) solution
- Fuelling time < 9minutes

CaetanoBus



CROATIA MIRAI CHALLANGE

SEPTEMBER 2019

Promoting new technology - Hydrogen vehicle MIRAI

The team of Croatia MIRAI Challange has 3 drivers: Doc. dr. cc. Ankica Kovač, Journalist Vedran Flajnik (*Jutarnji list, Auto Klub*) and Journalist and influencer Juraj Šebalj (*TV Automarket*)

Best wishes and support received from her excellency Ambassador of japan Mrs.Misako Kaji and University of Mechanical Engineering dean Mr.Majetić

The route is set for 2 days: Zagreb – Brussels, following European map of available hydrogen charging stations

TOYOTA WOVEN CITY

- 175-acre site at the base of Mt. Fuji in Japan
- Fully connected ecosystem powered by hydrogen fuel cells.

TOYOTA
WOVEN CITY

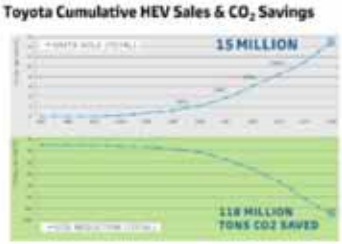
Key messages

Toyota's 20-year approach to sustainable mobility

1 Use all available energy sources; reduce fossil fuel use and develop alternatives (electricity and H2)

2 Electrification at the core of low- and zero-emission vehicles

3 Sell eco vehicles in large numbers, adapted to specific uses



Hybrid is a core technology to enable the greater popularisation of electrification - and to deliver emissions reductions today

Building together the Hydrogen Society

TOYOTA MOTOR EUROPE

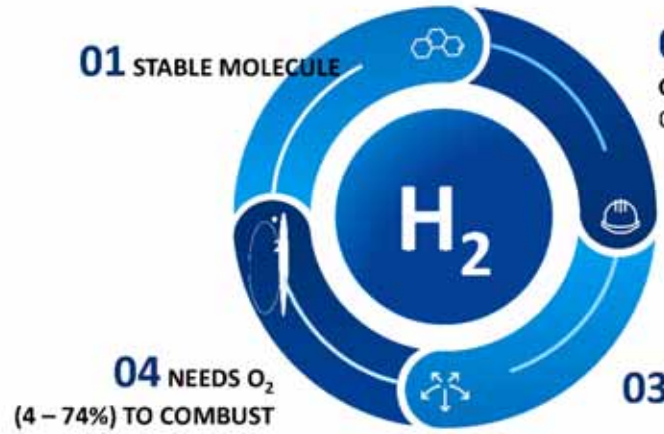
SUSTAINABLE DEVELOPMENT GOALS | TOYOTA

7 SAFETY SECTION

TOYOTA

PUBLIC 公開

SAFETY ASPECTS OF HYDROGEN



01 STABLE MOLECULE

02 LESS ENERGY CONTENT THAN LPG OR CNG

03 DISPERSES QUICKLY

04 NEEDS O_2 (4 – 74%) TO COMBUST

TOYOTA

SAFETY ASPECTS OF HYDROGEN

- NOT HAZARDOUS TO WATER
- NON CARCINOGENIC
- NOT SELF-IGNITING
- NON-OXIDISING NON-INCENDIARY
- NON TOXIC
- NOT RADIOACTIVE

OFTEN REGARDED AS DANGEROUS

- ✓ does not detonate in open air
- ✓ burns with an **invisible flame** that radiates **very little** heat
- ✓ is flammable – **like all other fuels!**

TOYOTA

STATUS 01/2021 - PLEASE CHECK New Figures Available?

SAFETY FACTS OF HYDROGEN

SAFETY FACTS OF HYDROGEN

SAFETY FIRST – PROPERTIES OF HYDROGEN

INDUSTRY

HYDROGEN WAS USED AS AN INDUSTRIAL GAS FOR OVER 100 YEARS

HYDROGEN EVEN HAS SAFETY ADVANTAGES OVER OTHER FUELS

NO SMOKE OR FUMES ARE PRODUCED UNLESS OTHER SUBSTANCES ARE BURNED

TOYOTA