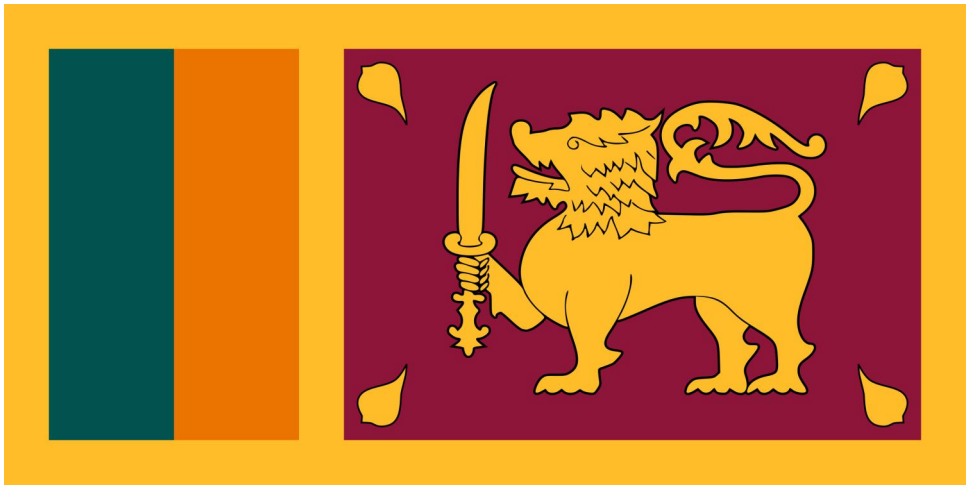


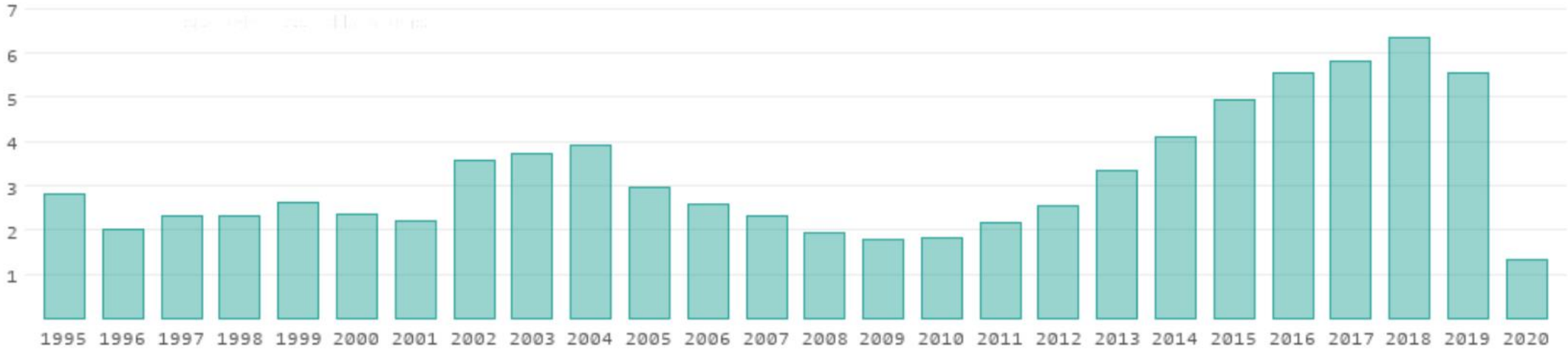
Sri Lanka crisis 2022

Area	
• Total	65,610 km^2 (25,330 sq mi) (120th)
• Water (%)	4.4
Population	
• 2020 estimate	▲ 22,156,000[9] (57th)
• 2012 census	20,277,597[10]
• Density	337.7/km^2 (874.6/sq mi) (24th)
GDP (PPP)	2021 estimate
• Total	▲ $306.997 billion[11] (56th)
• Per capita	▲ $13,909[11] (88th)
GDP (nominal)	2021 estimate
• Total	▲ $84.532 billion[11] (64th)
• Per capita	▲ $3,830[11] (113th)

2020 Exports	**11.3 G US$**
Tea	**1.27 G US$**
2020 Imports	**16.2 G US$**
Refined Petroleum	**1.27 G US$**
Crude Petroleum	**0.384 G US$**

Revenues in tourism

In 1995, tourism revenues amounted to 367.00 million USD, or about 2.8 percent of the gross national product. This corresponded to about 414,000 tourists at that time and roughly 886 USD per person. Within 25 years, the country's dependence on tourism has decreased substantially. In the last year of the survey, the revenue now amounts to 1.08 billion USD, accounting for 1.3 percent of the gross national product. Each visitor now spends an average of 1,993 USD for his holiday in Sri Lanka.



Home

Vehicle Population

Year	2015	2016	2017	2018	2019
Motor Cars	672,502	717,674	756,856	837,636	875,864
Motor Tricycle	1,059,042	1,115,987	1,139,524	1,159,158	1,175,077
Motor Cycles	3,359,501	3,699,630	4,044,010	4,383,182	4,668,074
Buses	101,419	104,104	107,435	110,392	112,005
Dual purpose vehicles	365,001	391,888	408,630	425,895	439,020
Motor Lorries	341,911	349,474	352,275	361,294	375,500
Land Vehicles-Tractors	343,339	353,624	362,445	369,948	375,601
Land Vehicles-Trailers	59,426	63,088	75,947	78,841	72,108
Quadricycle	-	-	-	645	1,972
Motor Home	-	-	-	02	3
Total	6,302,141	6,795,469	7,247,122	7,727,411	8,095,224

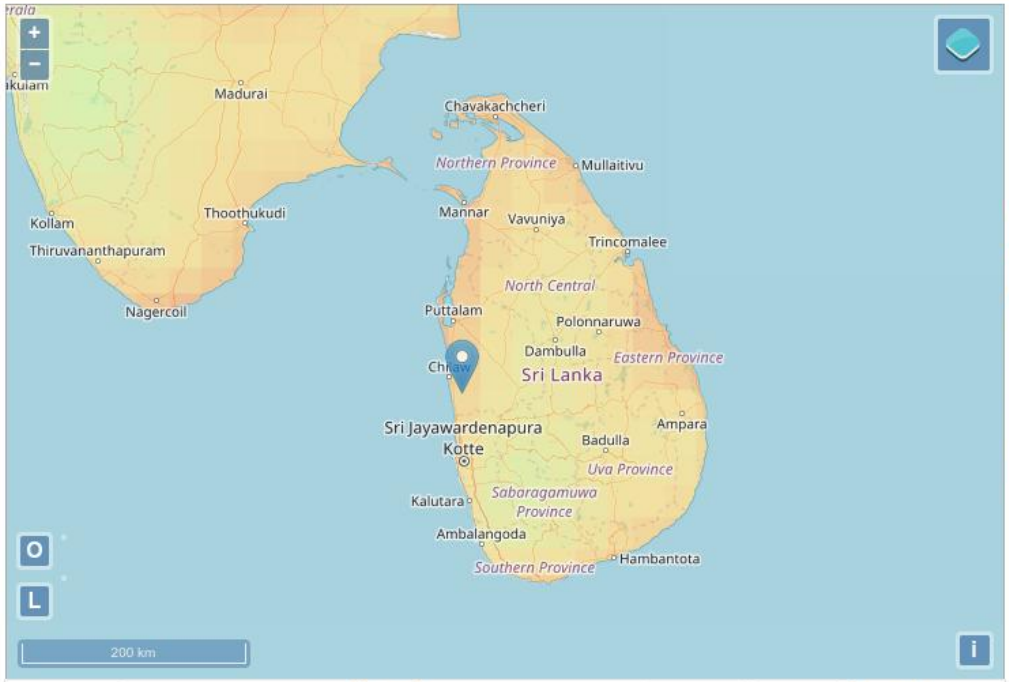
15,282 GWh / 22 Millionen Einwohner = 695 kWh

Installed generation capacity by year (in megawatts)

Source	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018
Hydropower	1,293	1,316	1,326	1,357	1,379	1,382	1,401	1,584	1,628	1,665	1,684	1,726	1,745	1,793
Fuel oil	1,115	1,115	1,115	1,285	1,290	1,390	1,390	1,338	1,335	1,215	1,115	1,215	1,233	1,137
Coal	0	0	0	0	0	0	300	300	300	900	900	900	900	900
Other renewables	3	3	3	3	15	45	50	90	99	152	148	176	208	216
Total capacity	**2,411**	**2,434**	**2,444**	**2,645**	**2,684**	**2,817**	**3,141**	**3,312**	**3,362**	**3,932**	**3,847**	**4,017**	**4,086**	**4,046**

Annual generation by year (in gigawatt-hours)

Source	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	
Hydropower	3,453	4,636	3,948	4,135	3,905	5,634	4,622	3,292	6,926	4,534	5,969	4,220	4,004	6,381
Fuel oil	5,314	4,751	5,865	5,763	5,975	4,994	5,748	6,935	3,303	4,306	2,275	4,461	5,045	3,626
Coal	0	0	0	0	0	0	1,038	1,404	1,469	3,202	4,443	5,047	5,103	4,764
Other renewables	2	2	2	3	27	86	121	171	262	315	402	421	519	511
Total generation	**8,769**	**9,389**	**9,815**	**9,901**	**9,907**	**10,714**	**11,529**	**11,802**	**11,960**	**12,357**	**13,089**	**14,149**	**14,671**	**15,282**



Address: Eg.Ispra, Italy Go! Lat/Lon: Eg. 45.815 Eg. 8.611 Go!

Cursor:

Selected: **7.444, 79.898**

Elevation (m): 24

PVGIS ver. **5.2**

Use terrain shadows:

☑ Calculated horizon

☐ Upload horizon file

Swicth to version 5.1

csv json

Choose File No file chosen

GRID CONNECTED

TRACKING PV

OFF-GRID

MONTHLY DATA

DAILY DATA

HOURLY DATA

TMY

PERFORMANCE OF GRID-CONNECTED PV

Solar radiation database*: PVGIS-SARAH

PV technology*: Crystalline silicon

Installed peak PV power [kWp]*: 1

System loss [%]*: 14

Fixed mounting options

Mounting position *: Free-standing

Slope [°]*: 10 ☐ Optimize slope

Azimuth [°]*: 0 ☐ Optimize slope and azimuth

☐ **PV electricity price**

PV system cost (your currency)

Interest [%/year]

Lifetime [years]

Visualize results csv json

PERFORMANCE OF GRID-CONNECTED PV: RESULTS

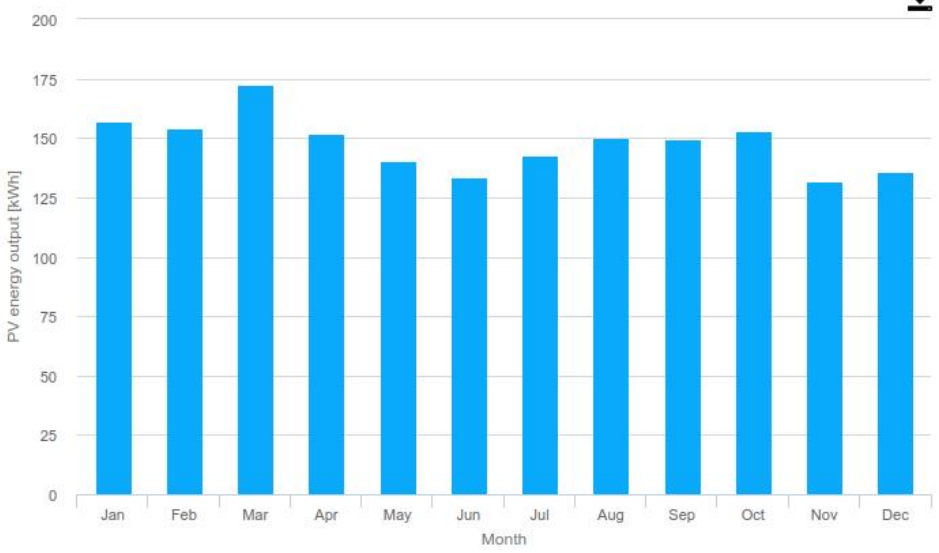
PV output | Radiation | Info | PDF

Summary

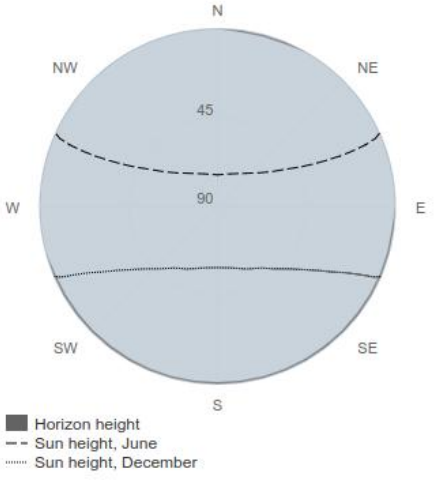
Provided inputs:	
Location [Lat/Lon]:	7.444,79.898
Horizon:	Calculated
Database used:	PVGIS-SARAH
PV technology:	Crystalline silicon
PV installed [kWp]:	1
System loss [%]:	14

Simulation outputs:	
Slope angle [°]:	10
Azimuth angle [°]:	0
Yearly PV energy production [kWh]:	1772.85
Yearly in-plane irradiation [kWh/m^2]:	2135.75
Year-to-year variability [kWh]:	54.28
Changes in output due to:	
Angle of incidence [%]:	-2.66
Spectral effects [%]:	0.62
Temperature and low irradiance [%]:	-1.45
Total loss [%]:	-16.99

Monthly energy output from fix-angle PV system



Outline of horizon



“When we allow the import of vehicles in the future, we hope to give priority to electric vehicles. Accordingly, we should plan to use renewable energy sources as much as possible when supplying electricity to vehicles,” he said.

The president also noted that about 20 percent of Sri Lanka’s annual import expenditure is allocated for oil imports.

“When the total export earnings are less than 1,000 million US dollars a month, we have to spend about 350 million a month on oil alone. About 70 percent of the imported fuel is used as fuel for vehicles. It costs about 21 percent to generate electricity. Only 4 percent is used for industry,” he said.

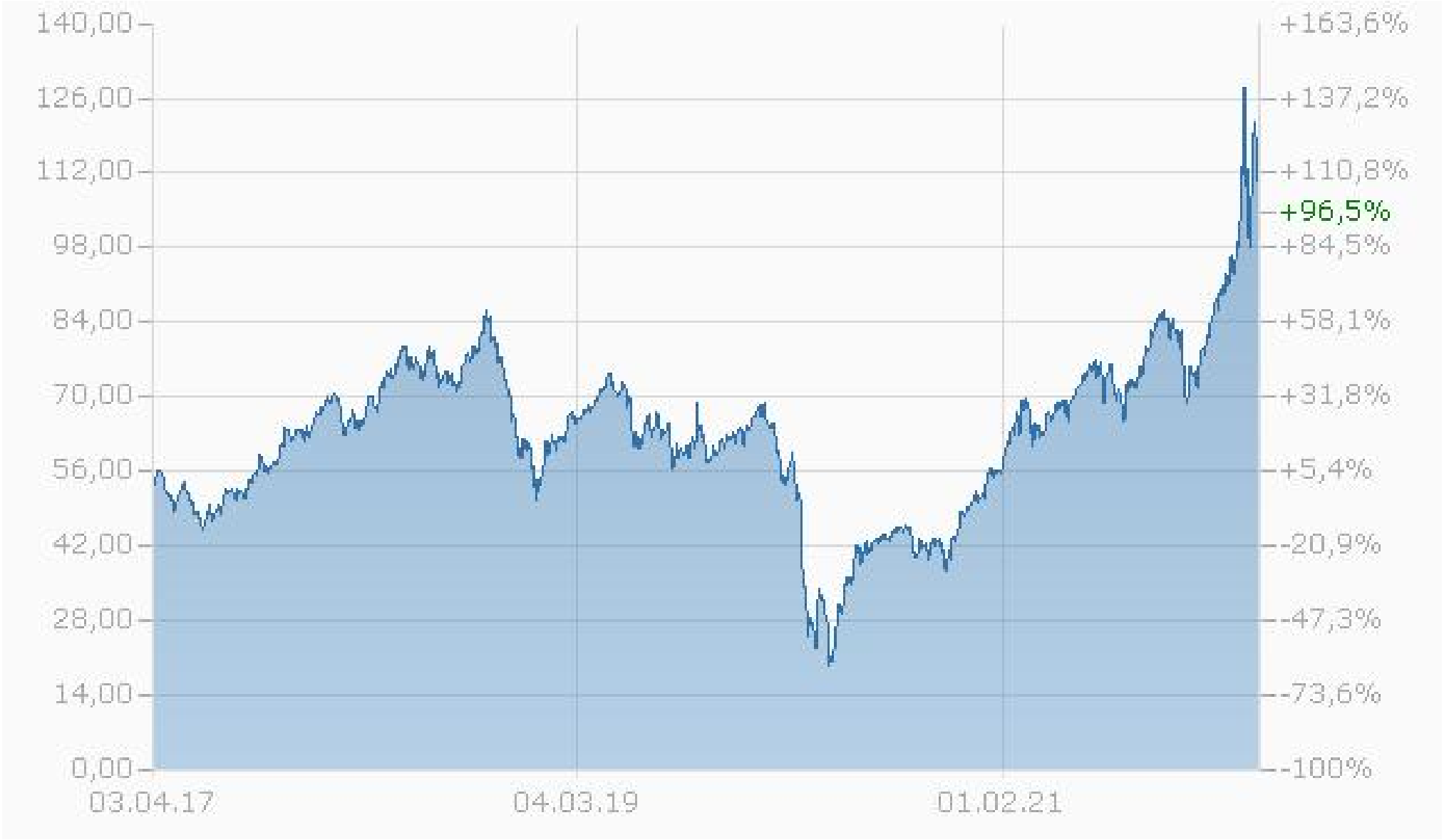

140,00
126,00
112,00
98,00
84,00
70,00
56,00
42,00
28,00
14,00
0,00
+163,6%
+137,2%
+110,8%
+96,5%
+84,5%
+58,1%
+31,8%
+5,4%
-20,9%
-47,3%
-73,6%
-100%
03.04.17
04.03.19
01.02.21

Bild der Wissenschaft August 1, 1997

Traktions-Prototypen existieren bislang nur als einzelne Zellen mit teurem Kobalt als Elektrodenmaterial. Forscher wie Peter G. Bruce von der schottischen St. Andrews University verfolgen aber das Ziel, das Kobalt durch billigeres Manganoxid zu ersetzen. In frühestens vier Jahren könnten die ersten Lithium-Ionen-Traktionsbatterien auf den Markt kommen – zu Kosten von 300 Mark pro Kilowattstunde. Das ließe einen Batteriesatz mit der Kapazität eines Blei-Akkus (30 kWh) etwa 9000 Mark kosten.

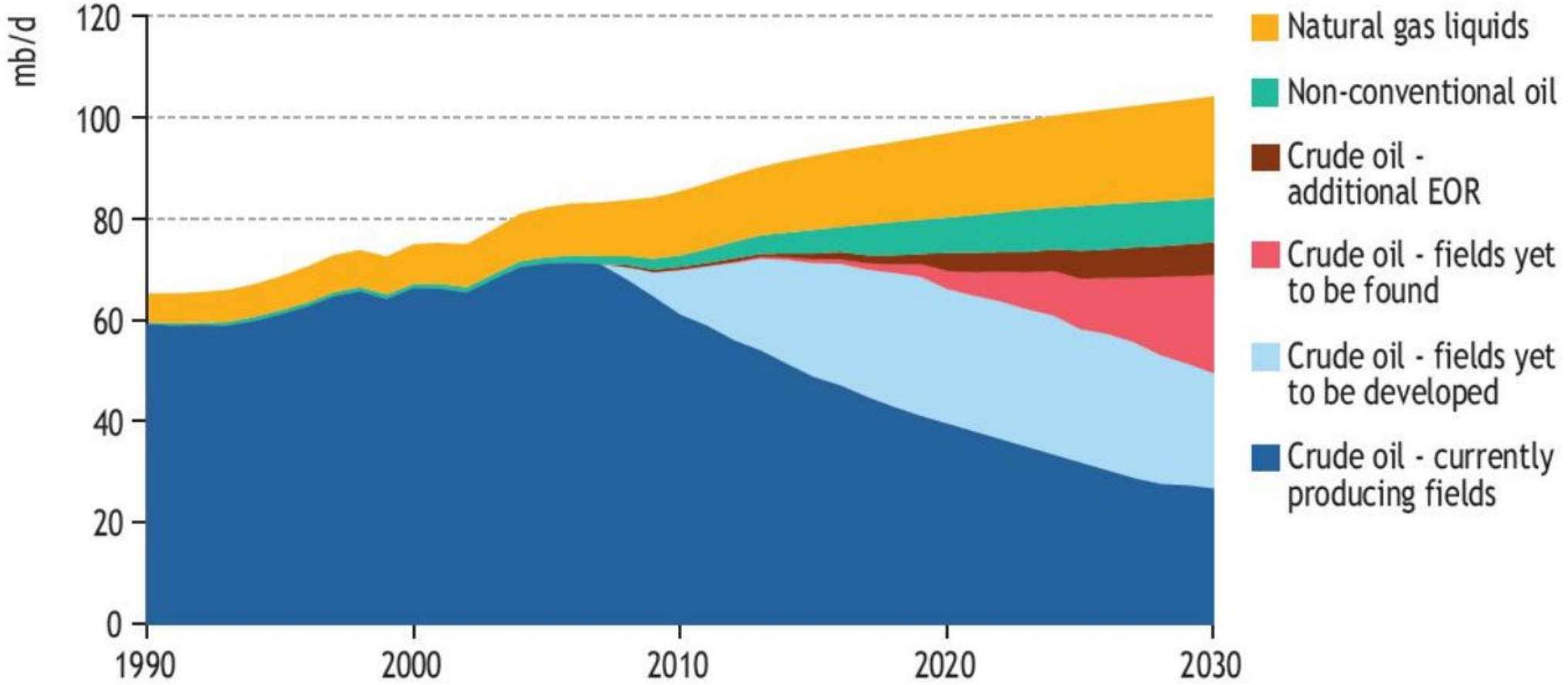
So far, traction prototypes exist only as single cells with expensive cobalt as electrode material. However, researchers like Peter G. Bruce of St. Andrews University in Scotland are pursuing the goal of replacing the cobalt with cheaper manganese oxide. The first lithium-ion traction batteries could be on the market in four years at the earliest - at a cost of 300 marks per kilowatt hour. That would make a battery set with the capacity of a lead battery (30 kWh) cost about 9000 marks.

Planetary Engineering Group Earth

Independent think - tank established by me - Roland Mösl 1991 in Europe, Austria, Salzburg

We need an international organization for the oil exit

Figure 11.1 • World oil production by source in the Reference Scenario



Yet to be developed – yet to be found

The WEO – World Energy Outlook - 2008 figure predicts that there is a need to find and develop oil fields that produce at last 5 times of what Saudi Arabia produces now until 2030.

But, as things stand now, it seems it will be very hard to comply with this demand because we will not find oil fields able to produce 5 times Saudi Arabia. There is only the chance to exploit the most difficult, most dangerously, most expensively accessible oil fields ever.

Failure to exploit additional oil resources equaling 5 times the Saudi Arabian oil production by 2030 will bring about instability to the world's economy resulting from extremely high oil prices and delivery shortages.

The time where economy could be based on cheap oil consumption has ended 2008.

Where would the oil price be today with the same economic growth like in spring 2008?

We find there is a US$ 20 price elasticity per million barrels a day. This means:

1 million more demand than supply;
the price rises by US$ 20.

1 million more supply than demand;
the price falls by US$ 20.

If the economic growth in the western world would have continued at the same rate as it was in spring 2008, We would face now 3 million barrels more demand and today's oil price would be way above US$ 147.27.

International organization for the oil exit

The target:

Extinguish an oil demand of 5 times the Saudi Arabian oil production until 2030.

The method:

Replace the demand for oil by using electric power, mainly from sun and wind.

The basic calculation:

The daily demand for oil is today approx. 90 million barrels.

1 million barrels less demand means US$ 20 lower price.

This saves worldwide:

US$ **1.8** billion a day
US$ **657** billion a year
US$ **6,570** billion over 10 years


To reduce an oil demand of
1 million barrels a day requires
SunCarrier
cellcube+
ELECTRIC
200 million more electric scooters =
400 GWh lithium batteries =
80 TWh electric power per year


To reduce an oil demand of
1 million barrels a day requires
40 million electric cars =
1200 GWh lithium batteries =
100 TWh electric power per year


1 million barrels less oil demand
can be generated by
1 liter fuel oil, replaced by 1 kWh
electric power, required for a heat pump,
combined with better insulation and
air exchange with heat recovery
25 million apartments or small houses =
50 TWh electric power per year

Proposed basic capital demand for an international oil exit organization:

2% of the annual worldwide oil cost as budget.

Thus, based on the current oil consumption and price, this is calculated as:

90 million barrels a day *
US$ 95 (oil price per barrel)*
365 day *
2% =
_____
US$ 62 billion a year

The cheapest method: Policy Change

The cheapest available method for the oil exit is to promote policy changes in all member countries,
funding the organization.

But this method faces 2 limitations:

1.) The production capacity of the industry producing photovoltaic, buffer batteries, electric vehicles – everything required for the oil exit

2.) People have to be empowered to follow new policies. This especially applies to consumer financing tools in support of the new technologies.

Main task credits and investment

1.) Investment in research & development

2.) Investment in building up the necessary production capacity of the oil replacing industry.

3.) Investment in building up the necessary mining capacity for all the necessary raw materials.

4.) Credits for consumers for replacing oil consumption by purchasing products of the oil replacing industry.

An International Oil Exit Organization stabilizes World Economy

It’s not only about supporting measures to stabilize the oil price.

It’s also an investment in all industries facing the energy challenges of the 21st century.

The minimum investment here is 2% of the oil cost, the return is having a share in the oil replacing industry.

Policy: Back Stop

In 2008, the oil price decreased from US$ 147.27 by US$ 114.87 to US$ 32.40 caused by an economic crisis.

But cheap oil in an economic crisis stops only the necessary oil exit and creates the illusion, that it's not necessary to escape oil dependence.

Back Stop by increasing taxes on oil

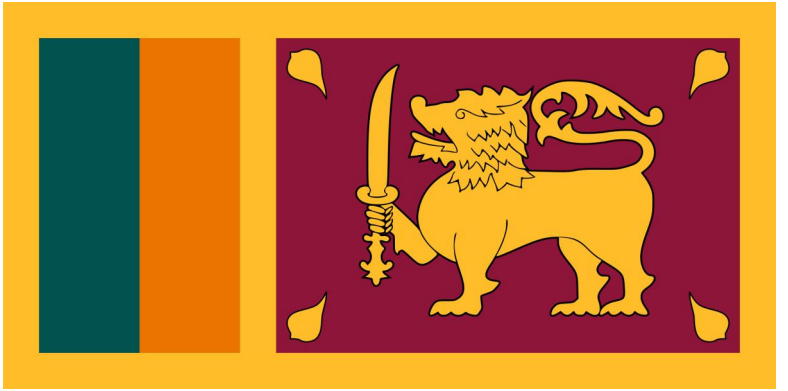
Reduce budget deficit

Subsidies for oil exit technology

Reduction of dues based on human work

As soon as the oil demand reduces
because of being replaced by
electric power
from sun and wind,
humanity will realize, it is still possible
to solve the whole CO2 problem
and the climate-change.

The oil exit is the first big step towards
a stable durable harmonic world civilization.



Sri Lanka crisis 2022