"Capacity Building and Strengthening Institutional Arrangement / Data Yearbook"

Workshop: "Environmental Indicators and their use for indicator-based reporting activities"

Working group

Exercise n°1 - Solution

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APAT

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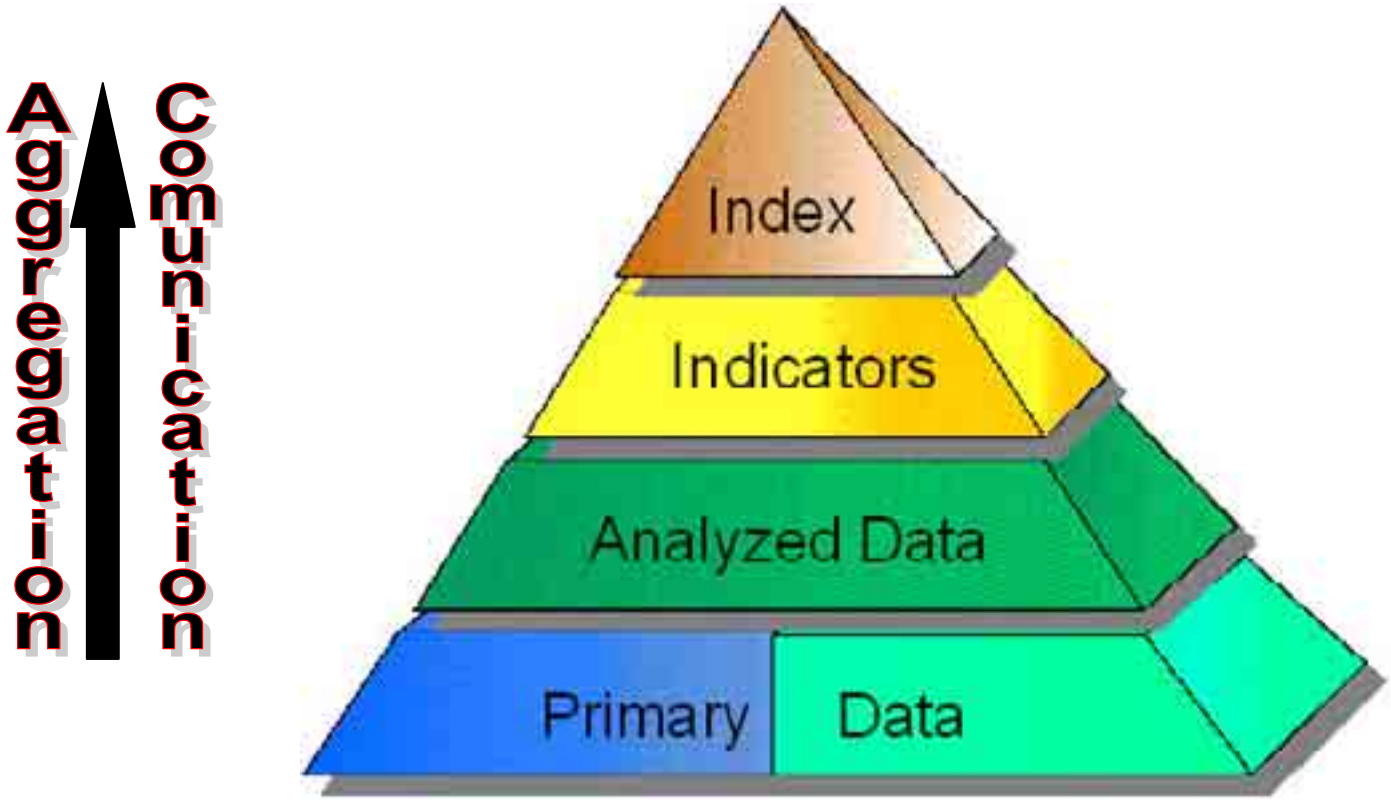
1) INFORMATIVE ELEMENTS

Exercise 1
Mark the following informative elements with numbers according to their grade of aggregation/communication (increasing order)

Protected terrestrial areas	
The level of human (civil and agricultural) contamination of bathing waters	
Ambient Air quality: PM10 particulate matter	

The Information Pyramid



1) INFORMATIVE ELEMENTS

Exercise 1

Mark the following informative elements with numbers according to their grade of aggregation/communication (increasing order)

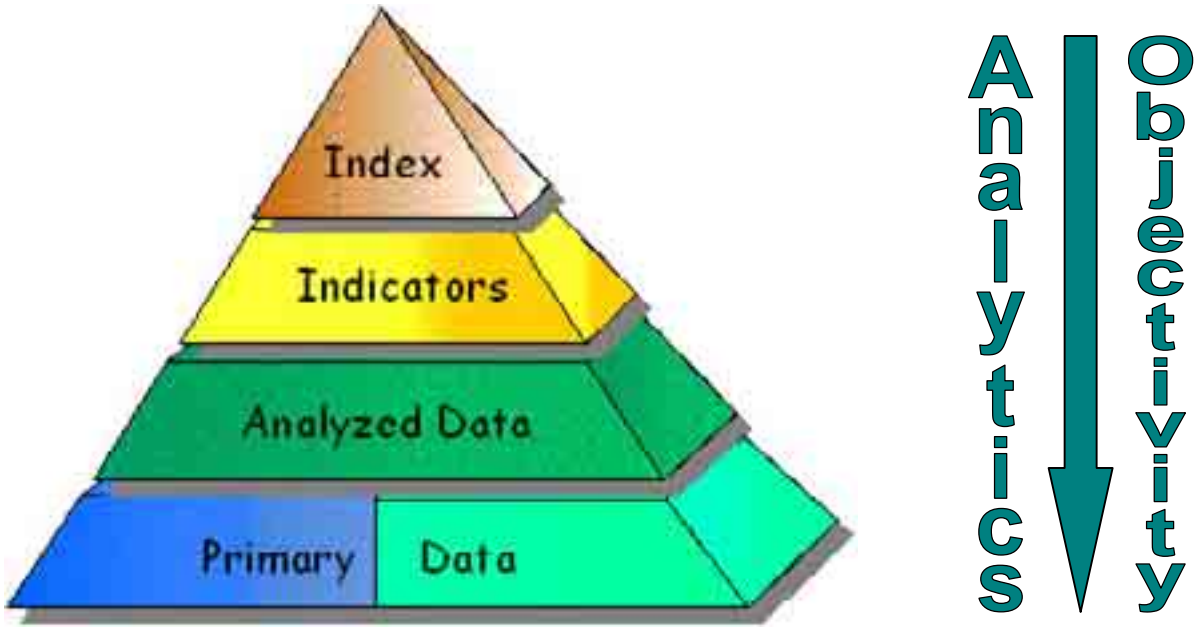
Protected terrestrial areas	**1**
The level of human (civil and agricultural) contamination of bathing waters	**3**
Ambient Air quality: PM10 particulate matter	**2**

Exercise 2

Mark the following informative elements with numbers according to their grade of analytic/objectivity (increasing order)

Road accident number	
Marine trophic index (TRIX) (To determine the trophic index of coastal seawater)	
Municipal waste pro-capite	

The Information Pyramid



1) INFORMATIVE ELEMENTS

Exercise 1

Mark the following informative elements with numbers according to their grade of aggregation/communication (increasing order)

Protected terrestrial areas	1
The level of human (civil and agricultural) contamination of bathing waters	3
Ambient Air quality: PM10 particulate matter	2

Exercise 2

Mark the following informative elements with numbers according to their grade of analytic/objectivity (increasing order)

Road accident number	3
Marine trophic index (TRIX) (To determine the trophic index of coastal seawater)	1
Municipal waste pro-capite	2

Exercise 3

Choose the category of following informative elements:

	Informative Elements	Parameter	Indicator	Index
1	Number of daily overcomings of alarm limit of Ozone concentration			
2	CO_2 concentration in atmosphere			
3	Greenhouses gas emissions (CO_2, CH_4, N_2O, HFC_S, PFC_S, SF_6)			
4	Use of pesticides			
5	Number of livestock breeding farms			
6	Number of farms implementing ecologically oriented			
7	Eco-efficiency in agriculture			
8	Final energy intensity (Amount of energy per GDP)			
9	Gross electricity production from renewable sources			
10	Energy product prices			
11	Passenger transport demand and intensity			
12	Tourist intensity			
13	Proportion of vehicle fleet meeting certain emission standards			
14	Air temperature			
15	Number of tourist arrivals per population			

Informative base Elements

Parameter: Objective measure of property

Indicator: In a very general way, an indicator can be defined as a parameter or a value derived from parameters, which provides information about a phenomenon. The indicator has significance that extends beyond the properties directly associated with the parameter value Indicators possess a synthetic meaning and are developed for a specific purpose

Index: Aggregation of two or more indicators to monitor or represent a complex phenomena

Exercise 3
Choose the category of following informative elements:

	Informative Elements	Parameter	Indicator	Index
1	Number of daily overcomings of alarm limit of Ozone concentration		X	
2	CO_2 concentration in atmosphere	X		
3	Greenhouses gas emissions (CO_2, CH_4, N_2O, HFC_S, PFC_S, SF_6)		X	
4	Use of pesticides		X	
5	Number of livestock breeding farms	X		
6	Number of farms implementing ecologically oriented	X		
7	Eco-efficiency in agriculture		X	X
8	Final energy intensity (Amount of energy per GDP)		X	
9	Gross electricity production from renewable sources		X	
10	Energy product prices	X		
11	Passenger transport demand and intensity		X	
12	Tourist intensity		X	
13	Proportion of vehicle fleet meeting certain emission standards		X	
14	Air temperature	X		
15	Number of tourist arrivals per population		X	

Exercise 3
Choose the category of following informative elements:

	Informative Elements	Parameter	Indicator	Index
16	State of approval of the municipal noise abatement plans		X	
17	Index of bacteriological quality (IQB)			X
18	Number of NUNI-EN-ISO 14001 certifications	X		
19	Number of network laboratories for environmental controls	X		
20	Bathing water quality			X
21	Number of environmental-related publications	X		
22	Radon indoor concentration	X		
23	Chemical state of underground waters (CSUW)		X	
24	Potential years of life lost (PYLL) for road accidents		X	
25	Level of threat for animal species		X	
26	Protected terrestrial areas	X		
27	Human pressure on wetlands of international importance			X
28	Number of forests fires	X		
29	Defoliation of the tree canopies of forest species		X	
30	Number of landfills	X		

Exercise 4

Find and underline the informative elements contained in the following article

With the increase in Egypt's population by more than a double and a half over the last forty years, the increase in population density in urban areas, especially in metropolitan cities, and the change in the consumption patterns in urban and rural areas alike, many pressures on the environment and public health have exacerbated, including the solid waste problem, whose harmful symptoms became clearly evident throughout the country. Existing conventional waste management methods have become incapable of meeting society needs with its different groups, in terms of maintaining a reasonable level of cleanliness, controlling health hazards and adverse environmental impact and providing a generally civilized appearance for the country. Total waste quantities collected never exceeded in the best scenarios 77% of the wastes generated. Large amounts of wastes piled up in streets and vacant areas between buildings, in addition to the spread of informal dumpsites in a number of central areas. Open burning as a means of waste disposal has become one of the main sources of air pollution in Egypt.
The government had, therefore, to take action to find a suitable solution for this aggravating problem and to implement the integrated waste management initiated in 2001.

DPSIR

The causal framework for describing the interactions between society and the environment

Driving force indicators are related to underlying causes influencing a variety of relevant variables

Pressure indicators relate to the factors taht cause environmental problems

State indicators describes the current state of the environment

Impact indicators are related to the ultimate effects due to changes in the state of the environment

Responses indicators monitor the effort of society to counteract environmental problems

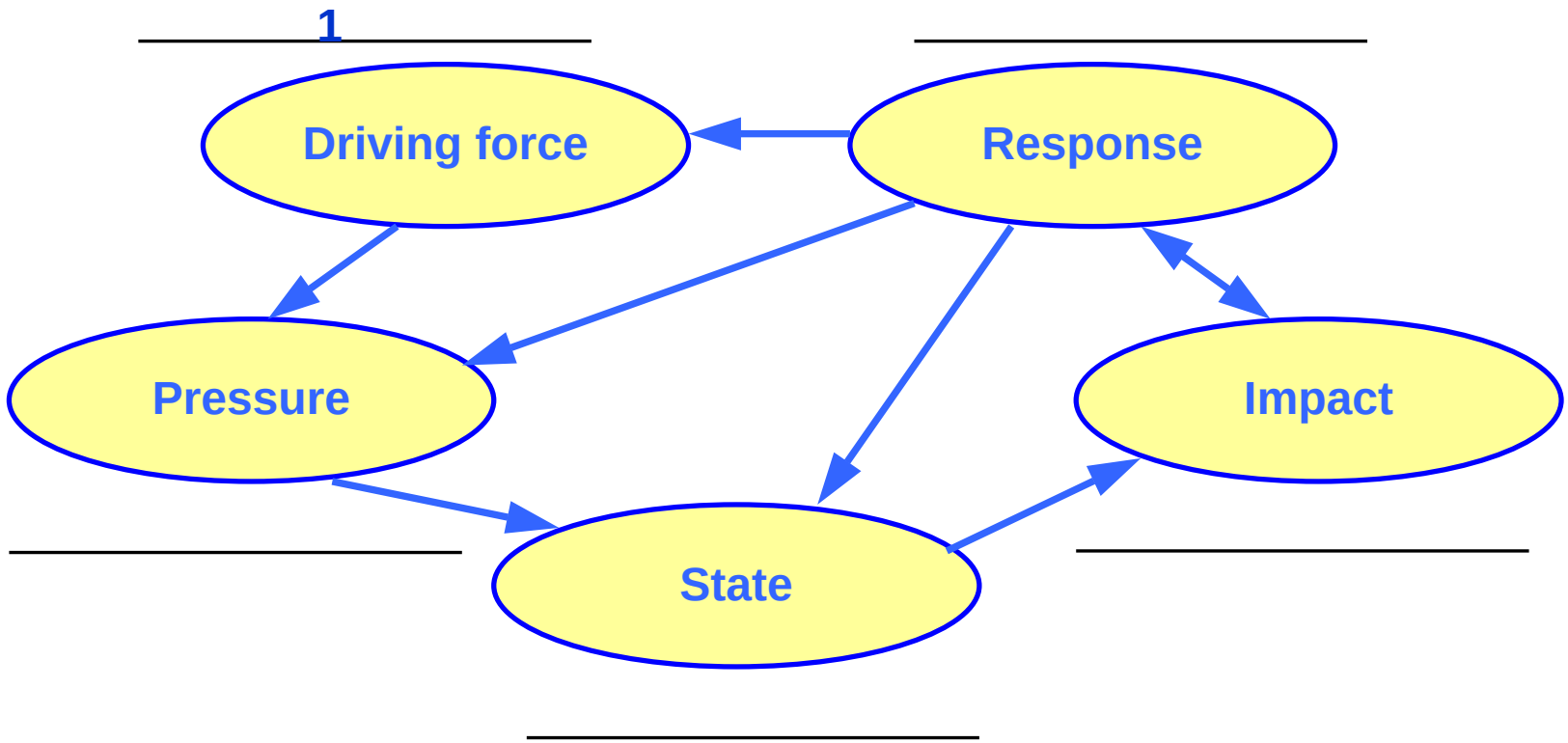
2) IDICATORS FRAMEWORK

Exercise 5

Build the scheme DPSIR to represent the integration factors between the environment and industry sector, using the elements written in ANNEX 1

Comment on your choices

a) Identify the main causal factors



ANNEX 1

1	Production
2	Climatic Change
3	State of environmental matrix
4	Consume
5	Impact on Health
6	Change of land use
7	Official regulations, legal rules, incentives
8	Transport of freight and passenger
9	Pollutant emissions
10	Change of biodiversity
11	International convention

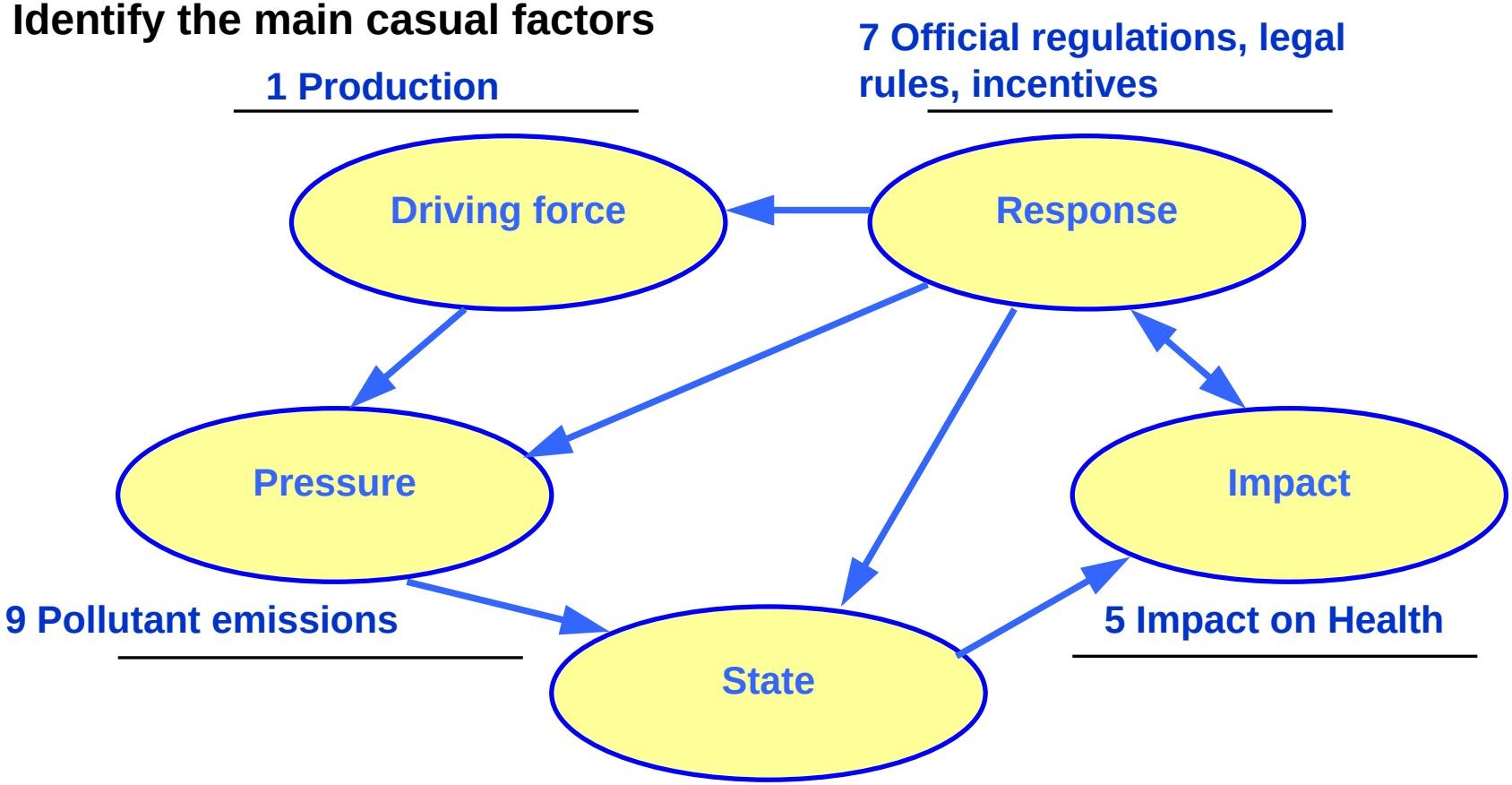
2) INDICATORS FRAMEWORK

Exercise 5

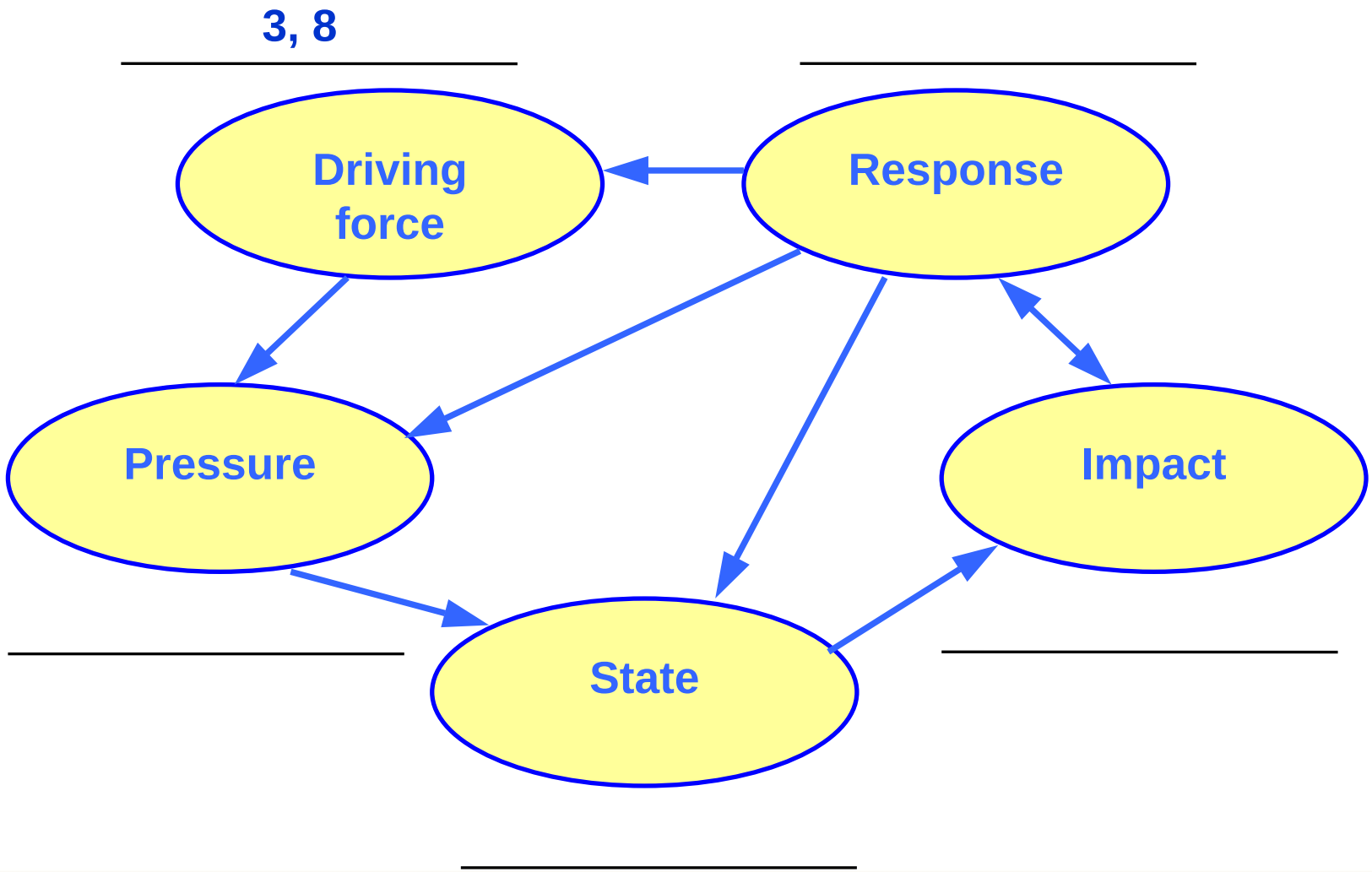
Build the scheme DPSIR to represent the integration factors between the environment and industry sector, using the elements written in ANNEX 1

Comment on your choices

a) Identify the main casual factors



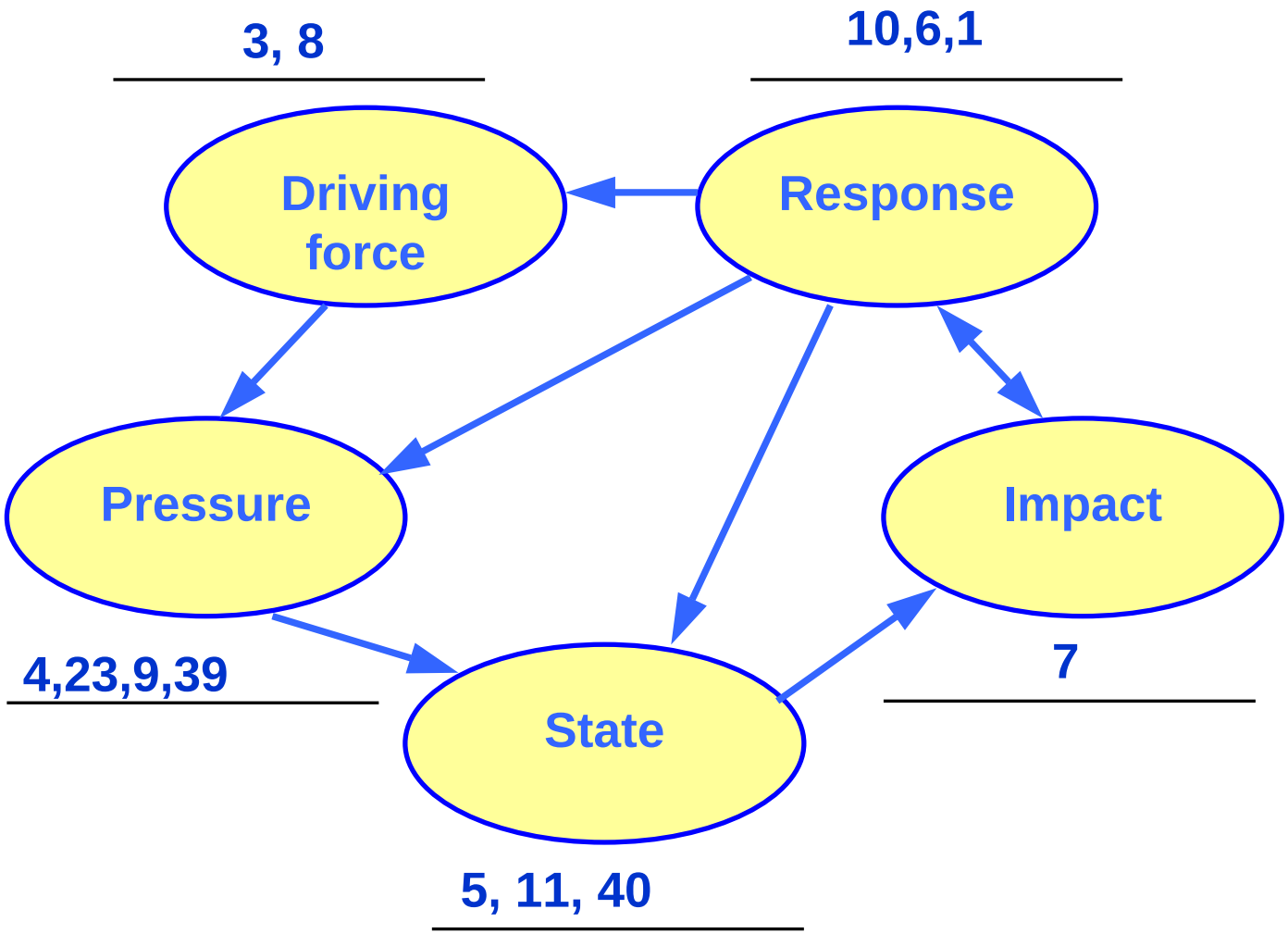
b) Associate the indicators put in ANNEX 2 with these factors (using their number) and put them in decreasing order of importance



ANNEX 2

1	Research and Development expenditure in the manufacturing industry	21	Increasing of desertification areas
2	Traffic noise: exposure and disturbance	22	Passenger Transport demand
3	Industrial production by sector	23	Hazardous and non hazardous waste generation
4	Specific emissions in the chemical industry	24	Total Energy Electric production
5	Water quality	25	Sulphur dioxide emissions, in total and from energy-related processes
6	INES register: number of plants and IPPC activities	26	Percentage of energy produced by Acolian power plant
7	Lost of biodiversity	27	Greenhouse gas emissions produced by energy processes
8	National Industrial production on GDP	28	Temperature of big rivers
9	SOx Emissions in the iron and steel industry	29	Extent of forest fires
10	Energetic efficiency of industry sector	30	Nitrogen oxide emissions, in total and from energy-related processes
11	Air quality: benzene concentration	31	External energy production costs
12	Vehicle fleet size	32	Air quality in neighbouring areas to energy plants
13	Proportion of vehicle fleet meeting certain emission standards	33	Gross electricity production from renewable sources
14	Freight Transport demand	34	Percentage of commune whit noise zoning plants
15	Advancing of glacier fronts	35	Total energy consumption
16	Impact of Sickness caused by PM10 exposure	36	Air polluting emissions by the transport sector
17	Access to transport services	37	Air quality: PM10 concentration
18	Greenhouse gas emissions produced by transport	38	Defoliation of the tree canopies of forest species
19	Reduction of the use of pesticides	39	Packaging production
20	Tourist intensity	40	Areas of contaminated sites

b) Associate the indicators put in ANNEX 2 with these factors (using their number) and put them in decreasing order of importance

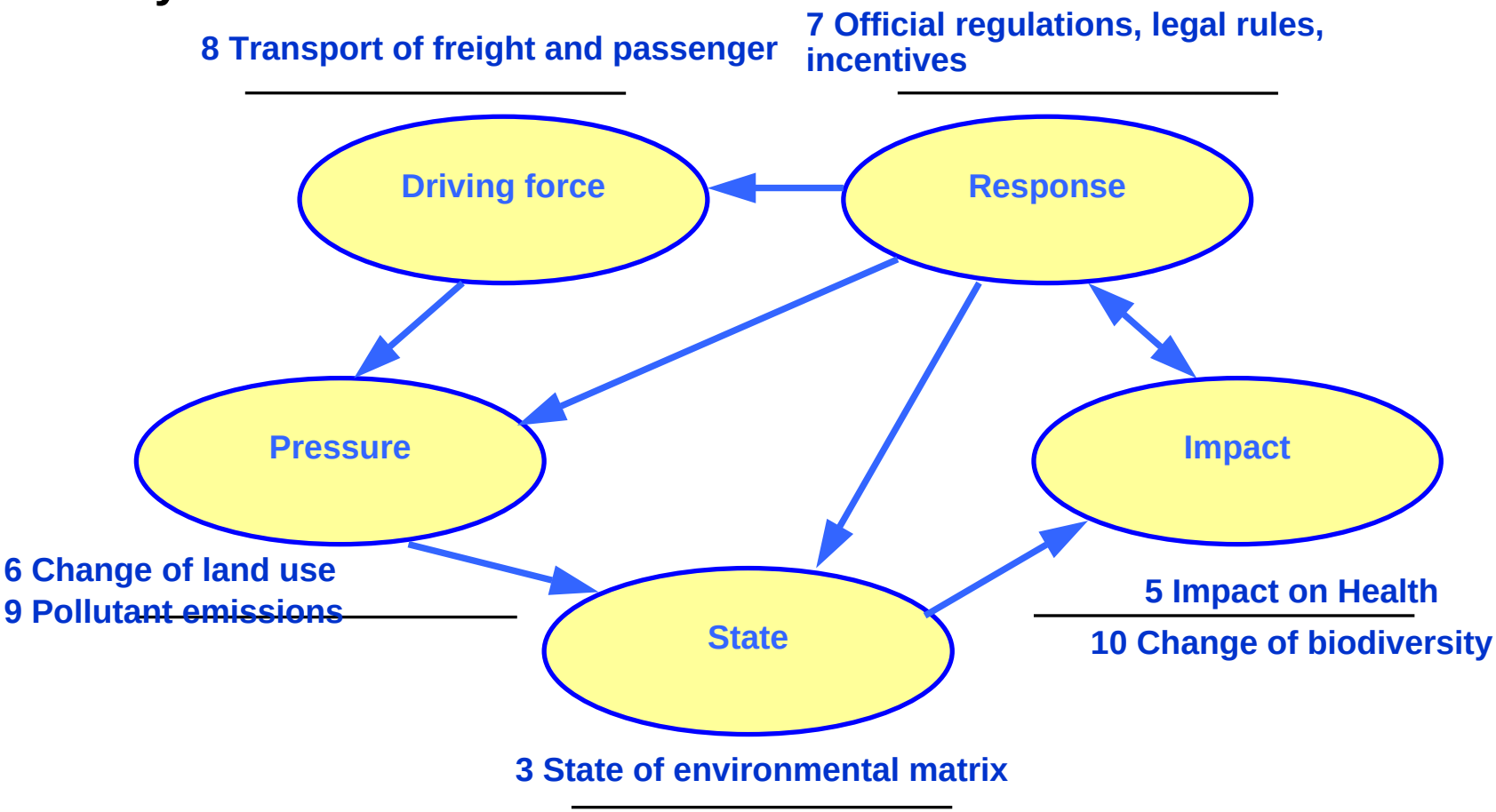


Exercise 6

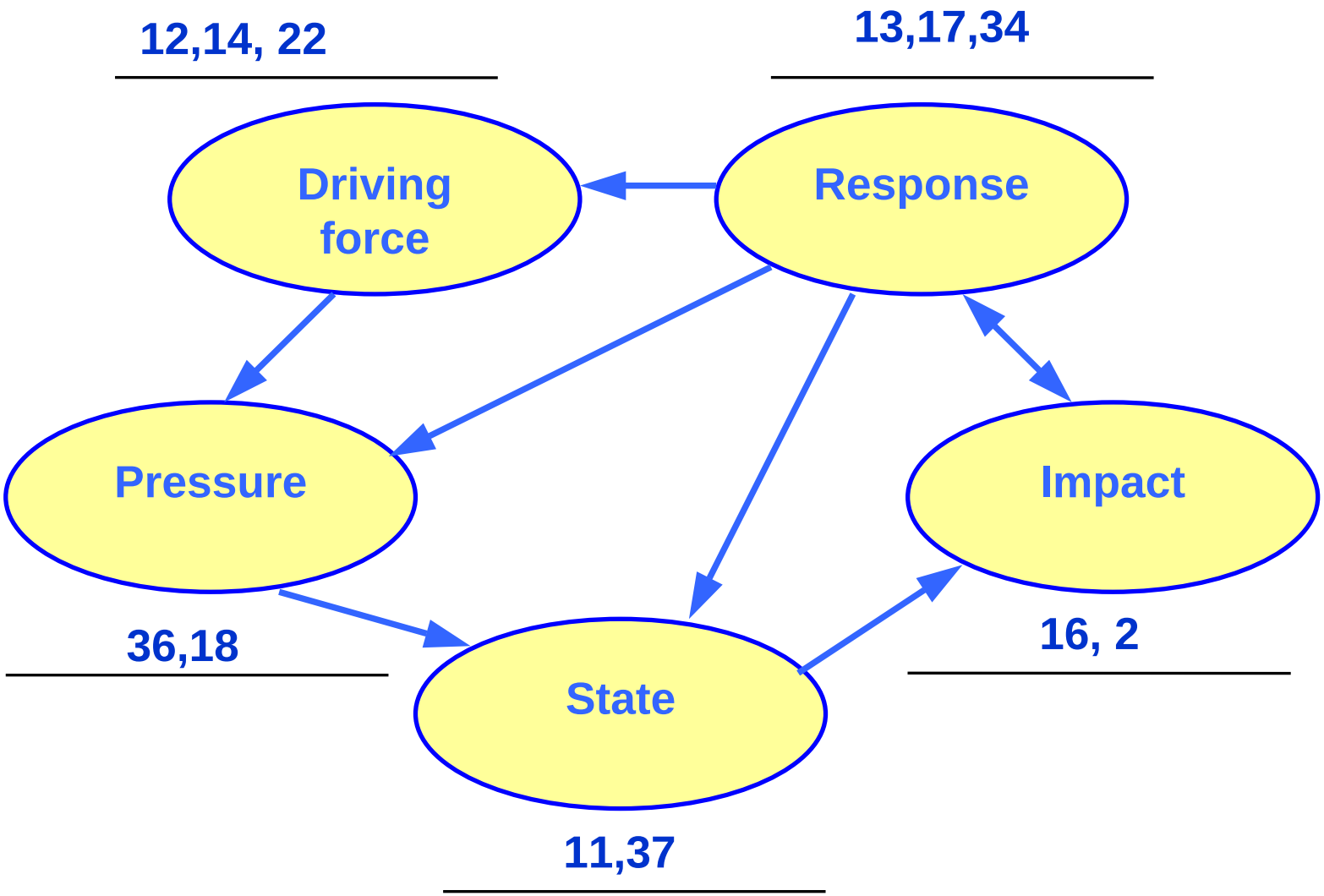
Build the scheme DPSIR to represent the integration factors between the environment and transport, using the elements written in ANNEX 1

Comment on your choices

a) Identify the main causal factors



b) Associate the indicators put in ANNEX 2 with these factors (using their number) and put them in decreasing order of importance

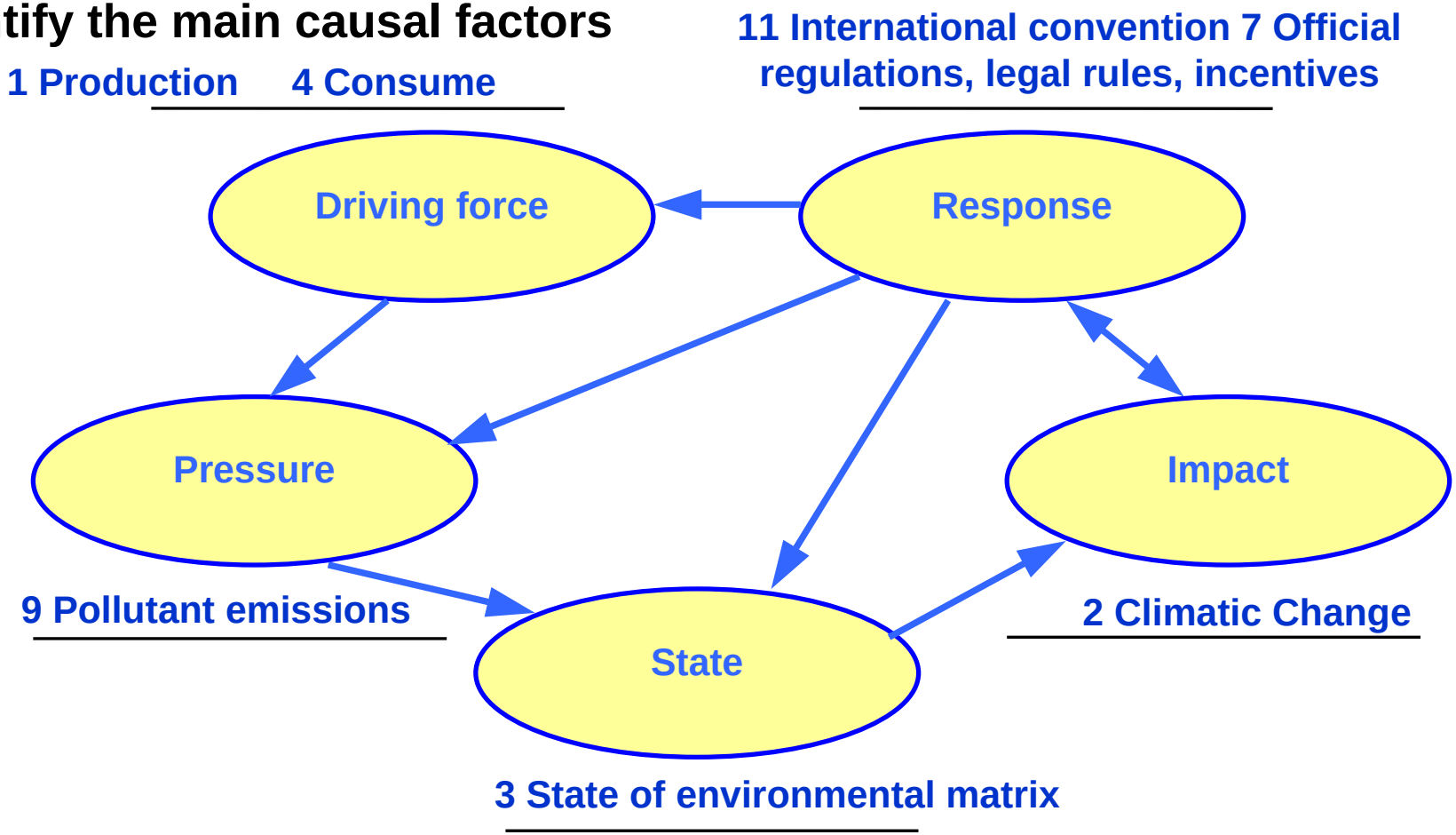


Exercise 7

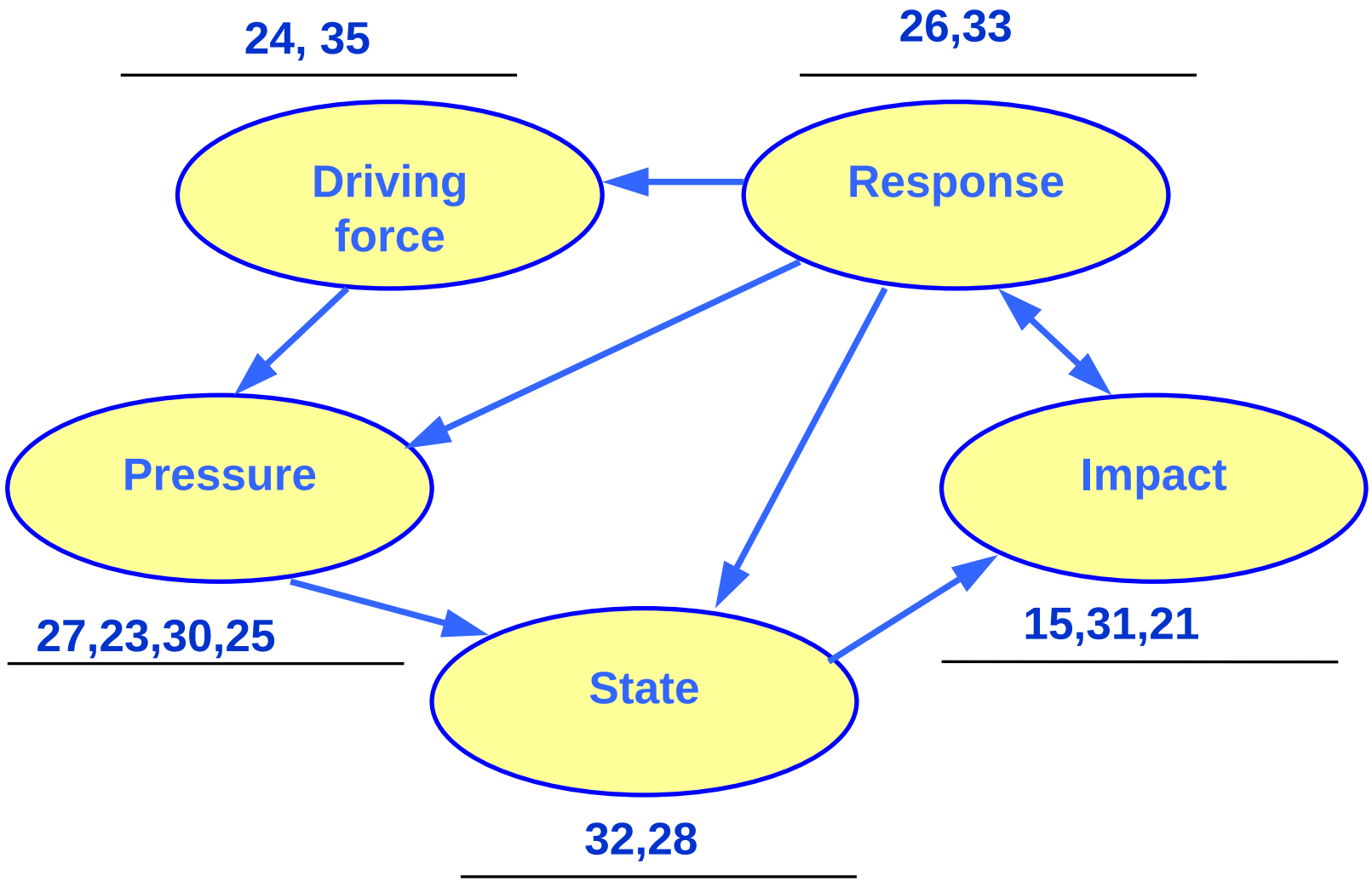
Build the scheme DPSIR to represent the integration factors between the environment and energy sector, using the elements written in ANNEX 1

Comment on your choices

a) Identify the main causal factors



b) Associate the indicators put in ANNEX 2 with these factors (using their number) and put them in decreasing order of importance



Exercise 8

Give to each indicator the respective category (multiple answers possible)

	Indicators	Driving force	Pressure	State	Impact	Response
1	Number of daily overcomings of alarm limit of Ozone concentration			X		X
2	CO_2 concentration in atmosphere			X		
3	Greenhouse gas emissions (CO_2, CH_4, N_2O, HFC_s, PFC_s, SF_6)		X			
4	Bathing water quality			X		X
5	Reduction of the use of pesticides		X			X
6	Number of livestock breeding farms		X			
7	Number of farms implementing ecologically oriented					X
8	Eco-efficiency in agriculture					X
9	Gross electricity production from renewable sources					X
10	Energy product prices			X		
11	Passenger transport demand and intensity	X				
12	Tourist intensity	X				
13	Proportion of vehicle fleet meeting certain emission standards	X				X
14	Air temperature			X		
15	State of approval of the municipal noise abatement plans					X

Exercise 8

Give to each indicator the respective category (multiple answers possible)

	Indicators	Driving force	Pressure	State	Impact	Response
16	Number of NUNI-EN-ISO 14001 certifications					X
17	Number of network laboratories for environmental controls					X
18	Number of environmental-related publications					X
19	Chemical state of underground waters (CSUW)			X		
20	Quality required for shellfish waters			X		
21	Radon indoor concentration			X		
22	Ecological state of rivers (ESR)			X		
23	Potential years of life lost (PYLL) for road accidents				X	
24	Level of threat for animal species			X	X	
25	Protected terrestrial areas based on Law quadro 394/91			X		X
26	Human pressure on wetlands of international importance		X			
27	Number of forests fires		X			
28	Extent of forest fires				X	
29	Defoliation of the tree canopies of forest species				X	
30	Municipal waste generation		X			

Exercise 8

Give to each indicator the respective category (multiple answers possible)

	Indicators	Driving force	Pressure	State	Impact	Response
31	Number of landfills		X			
32	Number of waste incineration plants		X			
33	Total waste generation and by GDP unit		X			
34	Separate collection of municipal waste					X
35	Recovery of packaging waste by type of material					X
36	Power lines found to exceed the statutory electric and magnetic field limits, and relevant remedial actions			X		X
37	Protected marine areas			X		X
38	Fishing pressure		X			
39	Specific emissions in the chemical industry		X			
40	Hazardous and non hazardous waste generation		X			

Exercise 9

Give each indicator according about topic "Road transport" an element of DPSIR model. (Comment your choice)

1	Greenhouse gas emissions	P
2	Overall energy consumption	
3	Number of establishments liable to be affected by a major accident hazard	
4	PM10 concentration in air	S
5	Monitoring of environmental radioactivity	
6	Freight transport demand and intensity	D
7	Contaminated sites	
8	Environmental noise	S
9	Population exposed to traffic noise	I
10	Access to service	R

Exercise 10

For each indicator select the corresponding typology (Descriptive, Performance, Efficiency)

	Indicators	Descriptive	Performance	Efficiency
1	Number of daily overcomings of alarm limit of Ozone concentration	X		
2	Greenhouse gas emissions (CO_2, CH_4, N_2O, HFC_S, PFC_S, SF_6)		X	
3	Bathing, Valuation of the quality of bathing waters based on the applicable statutory regulations		X	
4	Use of pesticides	X		
5	The assent of farms to ecologically measures oriented			X
6	Eco-efficiency in agriculture			X
7	Final energy intensity (Amount of energy per unit of GDP)			X
8	Passenger transport demand and intensity	X		
9	Tourist intensity	X		X
10	Proportion of vehicle fleet meeting certain emission standards		X	
11	State of approval of the municipal noise abatement plans		X	
12	Specific emissions in the chemical industry			X
13	Quality of waters needing protection to support the fish life	X		

Exercise 10

For each indicator select the corresponding typology (Descriptive, Performance, Efficiency)

	Indicators	Descriptive	Performance	Efficiency
14	Chemical state of underground waters (CSUW)	X		
15	Potential years of life lost (PYLL) for road accidents	X		
16	Acidifying substance (SO_x, NO_X, NH_3) emissions: trends correlated to national reducing target			X
17	Potential use of underground waters			X
18	Extent of forest fires	X		
19	Number of forests fires	X		
20	Defoliation of the tree canopies of forest species	X		
21	Waste generation per unit of GDP			X
22	Separate collection of municipal waste: achievement of targets established by D.Lgs. 22/97		X	
23	Power lines found to exceed the statutory electric and magnetic field		X	
24	Recovery of packaging waste by type of material: achievement of targets established by European normative		X	X
25	Hazardous and non hazardous waste generation	X		