

Diesel smoke removal from Tehran (Iran) air: A case of policy/decision making and execution for a multi- stakeholders process to achieve to reach SDGs and to protect public health

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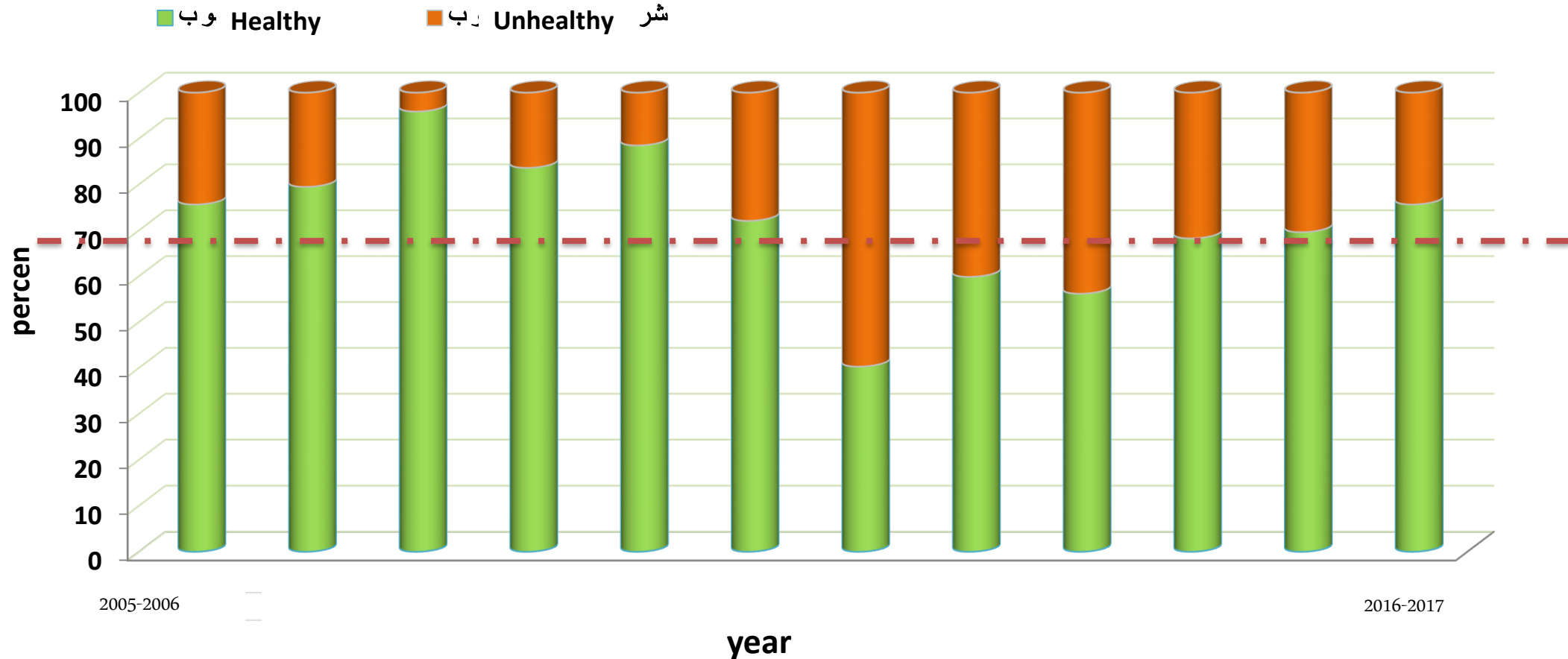
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Nairobi, Kenya, UN Office at Nairobi, Gigiri Complex

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Tehran air pollution at a glance

Percentage of unhealthy days according to air quality index for the last 12 years



- On average 1/3 of the days of a given year is accounted as unhealthy in the city of Tehran with more than 8.5 million inhabit
- Direct cause of air pollution in Tehran is estimated at 4500-6000 mortalities per year
- The economic cost is in the order of 4-5 billion USD

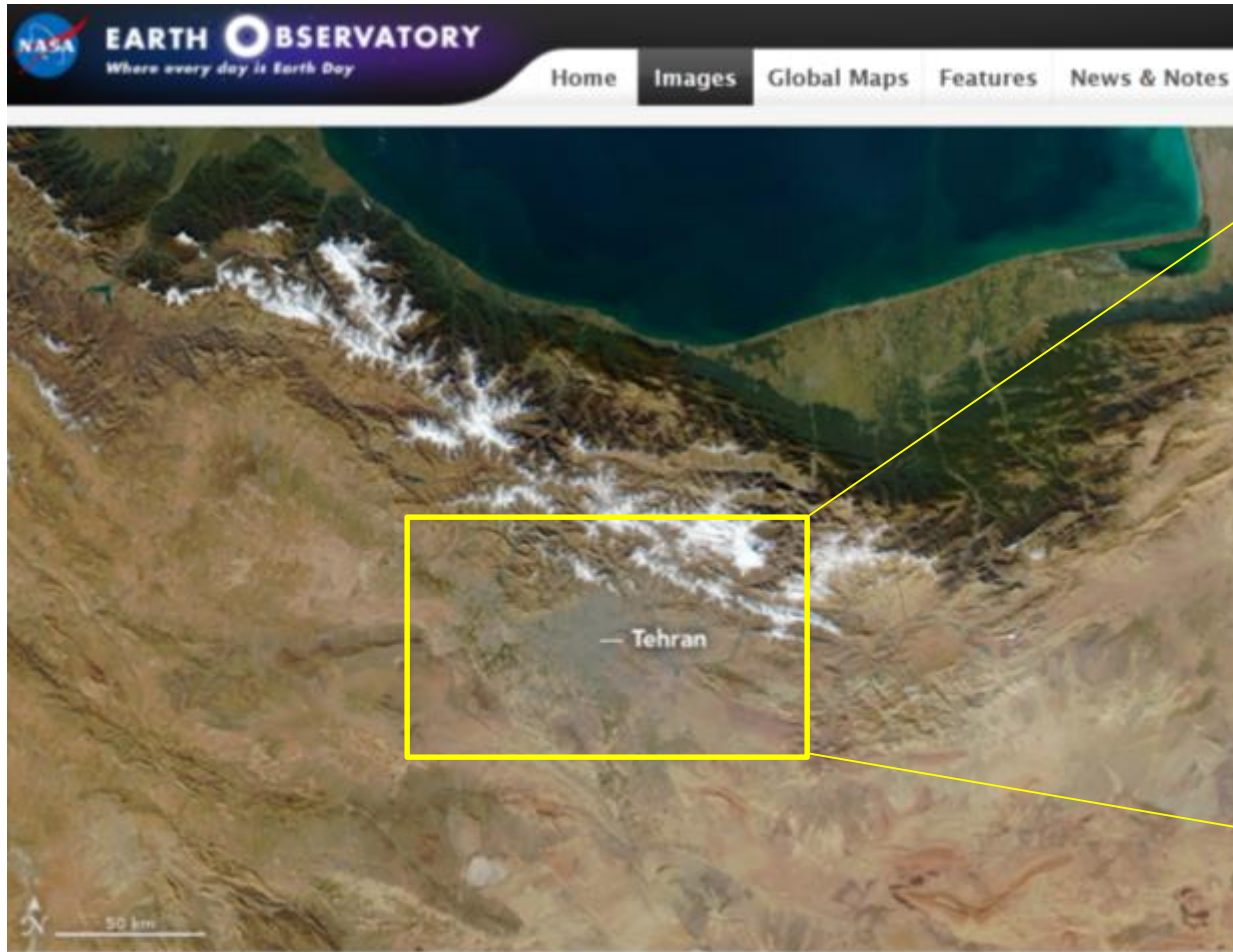
The key messages from presenting a case-study

Importance of integrated approaches at the pollution/environment/health NEXUS

- It is important to have aligned and integrated policies at the national and local levels, with the coherent messages from international organizations.
- Communications between stakeholders at all levels is a key factor.

Tehran air pollution in pictures:

NASA picture of day, November 9, 2016



[download large image \(7 MB, JPEG, 2853x2853\)](#)

acquired November 9, 2016

Heavy smog in Tehran broke records this week, reportedly causing hundreds of deaths, and prompting school closings in the region.

Tehran air pollution in pictures: Both blue and gray sky on the same frame



Tehran air pollution in pictures: photochemical smog (brown color)



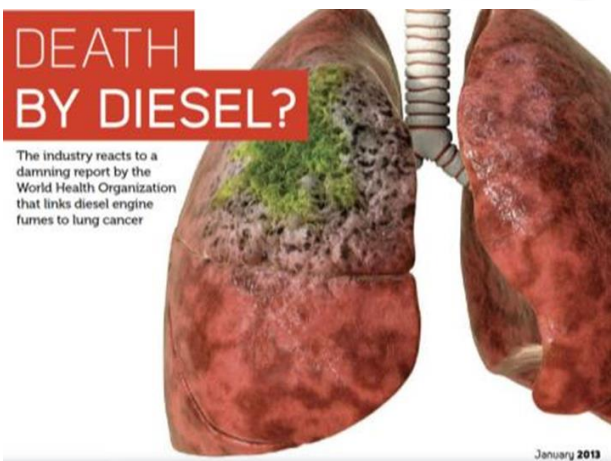
Tehran air pollution in pictures: photochemical smog (brown color)



Tehran air pollution in pictures



Diesel smoke (black carbon, ultra-fine particles, heavy metals, PAHs, ...)

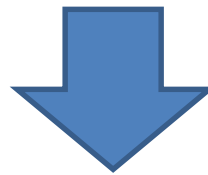


- Diesel smoke is carcinogen according to WHO
- (http://www.iarc.fr/en/media-centre/pr/2012/pdfs/pr213_e.pdf)
- Tehran air pollution is driven by particles
- Large fraction of particles comes from heavy duty diesels



The need for a major policy change and project execution to remove diesel smoke from air

- Diesel smoke includes particles that are dangerous for human **HEALTH**.
- Tehran air pollution causes large number of mortalities, it is also affected by diesel smoke.
- Heavy duty commercial diesel vehicles are essential part of urban transportation (from public transit to garbage collection and construction) and an important element for **SUSTAINABLE TRANSPORTATION**, they cannot be removed from cities, but they can be cleaned.
- There are many stakeholders from public and private sectors that have great deal of interest in diesel vehicles from making, to maintenance, operation, services



A policy development for both in-use and new diesel vehicles was needed both at the national and local levels

Making sure to understand problem/solution

- AQCC has contacted VERT association of best available filter technologies Switzerland for consultation.
- Meetings, visits were taken place and many documents were exchanged.
- Contacts were made to European Union (emission legislation).
- World experiences for removing diesel exhaust particles were reviewed carefully (cases of Switzerland, Berlin, London, many cities in US, China, Columbia, Chile, South Korea, etc.)
- A policy paper for local government (municipality and city council) was developed and put forward, which included cost/benefit analyses, health effects, effects on industry and urban development.

Diesel particulates filters (DPFs) on diesel engines are used everywhere

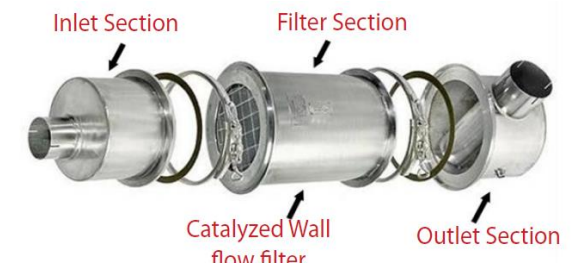


The solution – part 1

- All heavy-duty vehicles that are over their legal age are prohibited from operating in the city.
 - More than 40% of the fleet are affected.
 - It needs legal framework, infrastructure, enforcement.
 - It has social and economical consequences.

The solution – part 2

- All heavy-duty diesel vehicles that are under their legal age must be retrofitted to filter (diesel particulate filter, DPF in short)
 - DPF is state of the art technology and widely used in the world.
 - There is no DPF available in Iran.
 - Technology is not known, there is no proven experiences of using it.
 - Compatibility of available products with Iranian conditions are not known.
 - Legal frame work is needed.
 - Budget and finance is needed.
 - It must be executed in a timely manner, starting from public vehicles.
 - A local technology solution is needed due to presence of sulfur in Iranian diesel fuel.

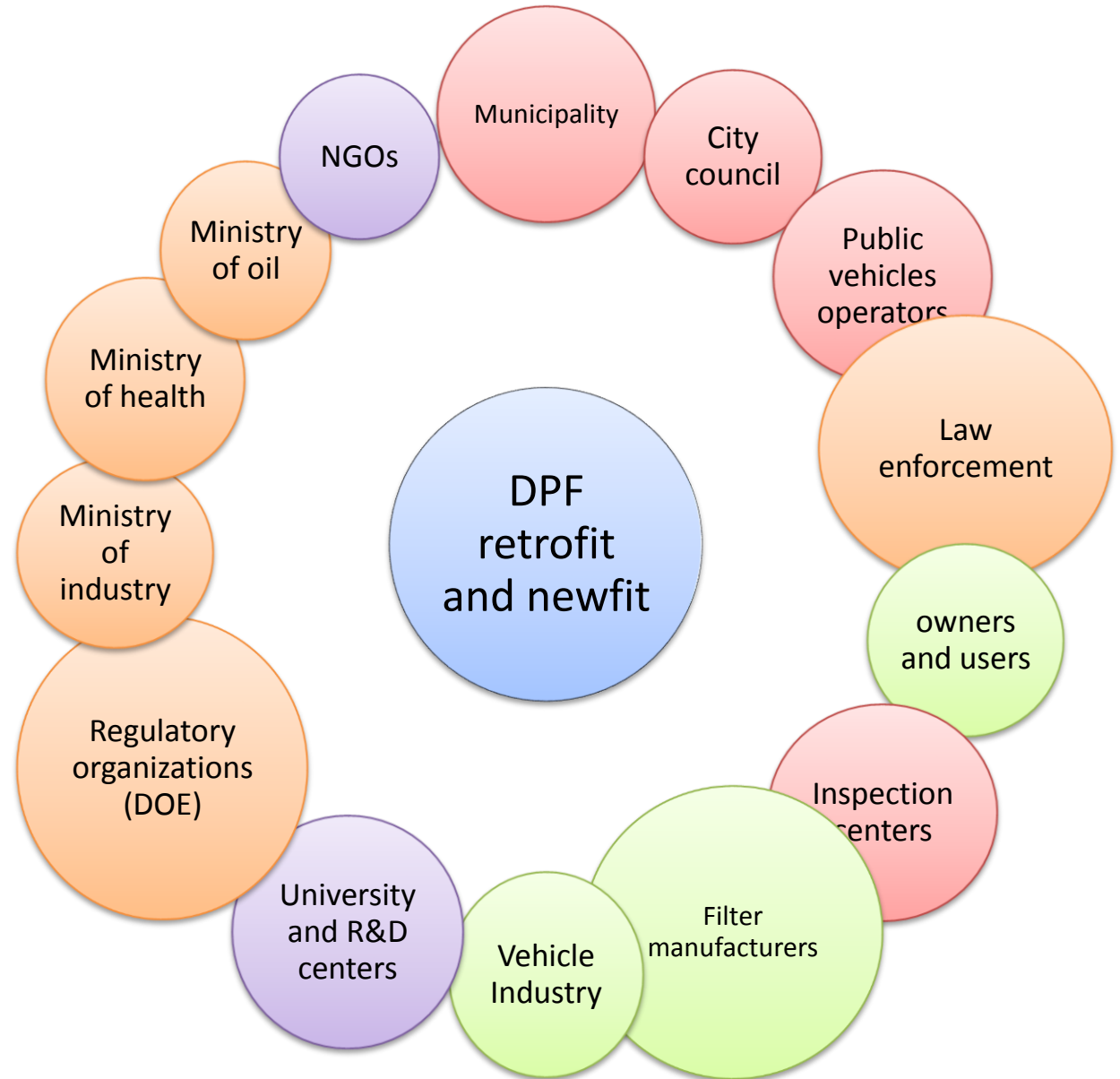
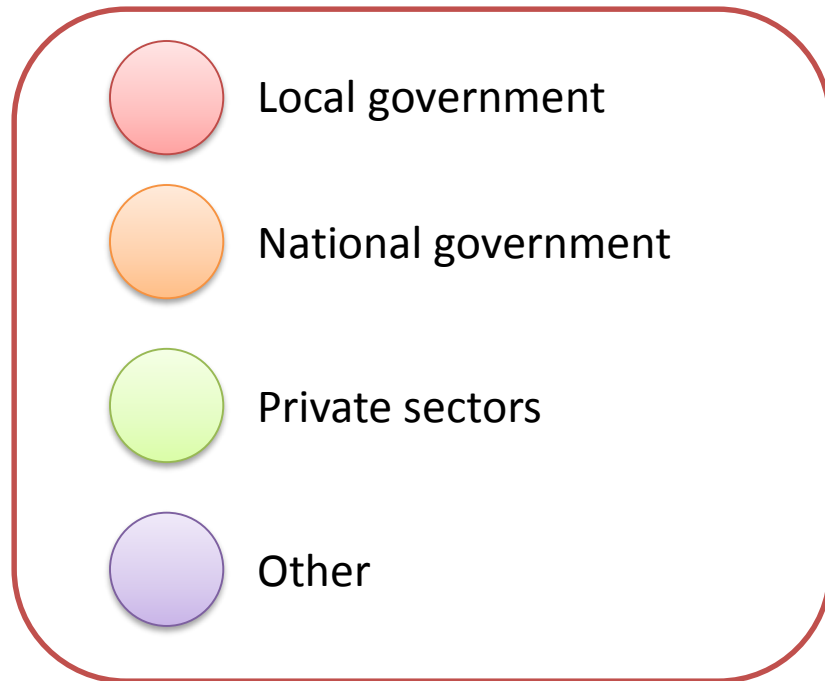


The solution – part 3

- All heavy-duty diesel vehicles coming to the market as new vehicles must have DPF.
 - There is no DPF available in Iran.
 - Technology is not known for automotive manufacturers.
 - It increases the price of the vehicles, fleet renewal becomes harder.
 - Manufacturers need enough time lag to comply.
 - Vehicle inspection centers are not equipped to check the filters.



Stakeholders



Achievements

- An action at local level, affected an action at the national level.
- From zero to the point that we have filters actually on our diesel buses and many pieces of legislations were approved took only less than 3 years (10~15 years in some parts of the world).
- Technology is known in Iran, localizations were done, domestic production is triggered.
- The question is not “what is the solution?” anymore, it is “how to do it?”

The result of 3 years coordinated efforts

- A pilot run is completed for the city of Tehran.
 - Several products were tested.
- Municipality of Tehran accepted retrofitting 2000 city buses, only 50 were achieved.
 - There exists a city council legislation, budgeting and finance available.
 - The city public transit (bus) company is not cooperating.
 - There is no enforcement in place
- National emission standard for diesel vehicles includes DPF since 2013
 - Pressure from industry for not complying with the legislations until 2016
 - Still not much compliance, weak inspection and enforcement
 - Strong lobby of foreign and domestic manufacturers
 - Resistance by the owners and operators

Major challenges

- Budgeting and financing
- Conflicts of interests between stakeholders
 - e.g. ministry of industry is looking for investment of foreign companies, DPF legislation is on the way
 - e.g. European vehicle manufacturers (Daimler Benz, MAN, Volvo, etc.) strongly opposed the legislation as they did not have the product and did not want to invest, selling a ready-made product was easier, they lobbied for introduction of Euro 5 EEV standard that does not have DPF requirement in it.
- Institutions have other priorities
 - e.g. Tehran bus company is mandated to transport people, DPF is a headache along the way
- Lack of public awareness and advocacy
- Lack of communication at local, national and international levels

Conclusions

- The case of Tehran shows the process of influencing national policies and legislations through local actions.
- Coherent messages from international organizations are much needed to affect national institutions.
- Coherent messaging of international organizations to policy makers need to be enhanced.



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سازمان حفاظت محیط زیست

Islamic Republic of Iran
Department of Environment



Fuel, Combustion, and Emission Research
Center, Sharif University



VERT Association of best available technology
filters



معاونت حمل و نقل و ترافیک
دفتر محیط زیست

Tehran Municipality
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