Engineering and the future of food security

« Why do we need to look at the food systems ? »

Dr. Marion Guillou
Board Chair Agreenium

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Latest productions (2016-2017) of the French Academy of Technologies about Food Systems:

-Comment bien se nourrir en respectant la planète et notre santé (P.Feillet, EDP Sciences) [*How to eat well while respecting the planet and our health*]

-*Position paper :* Libérer l'innovation au sein des systèmes agricoles et alimentaires [*unleash innovation within agricultural and food systems]*

-Avis sur Alimentation-Santé, implications pour l'industrie [*Opinion on relation between nutrition and health, implications for the industry]*

-Avis sur la règlementation des mutagenèses ciblées en amélioration des plantes [*Opinion on the regulation of mutagenesis for plant improvement]*

-Agriculture, Forêts et Sols dans Technologies et Changement Climatique [*Agriculture, forests and soils* in *Technologies and Climate Change* (published report)]

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1) Why should we have such a system approach for sustainable food security ?

2) Drivers of food systems are changing

3) Food system Innovation for sustainability

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A food system considers all the elements and activities that relate to primary producing, processing, distributing, preparing, and consuming food ; as well as environmental outcomes of these activities

(Committee on World Food Security H.L.P.E, 2014)

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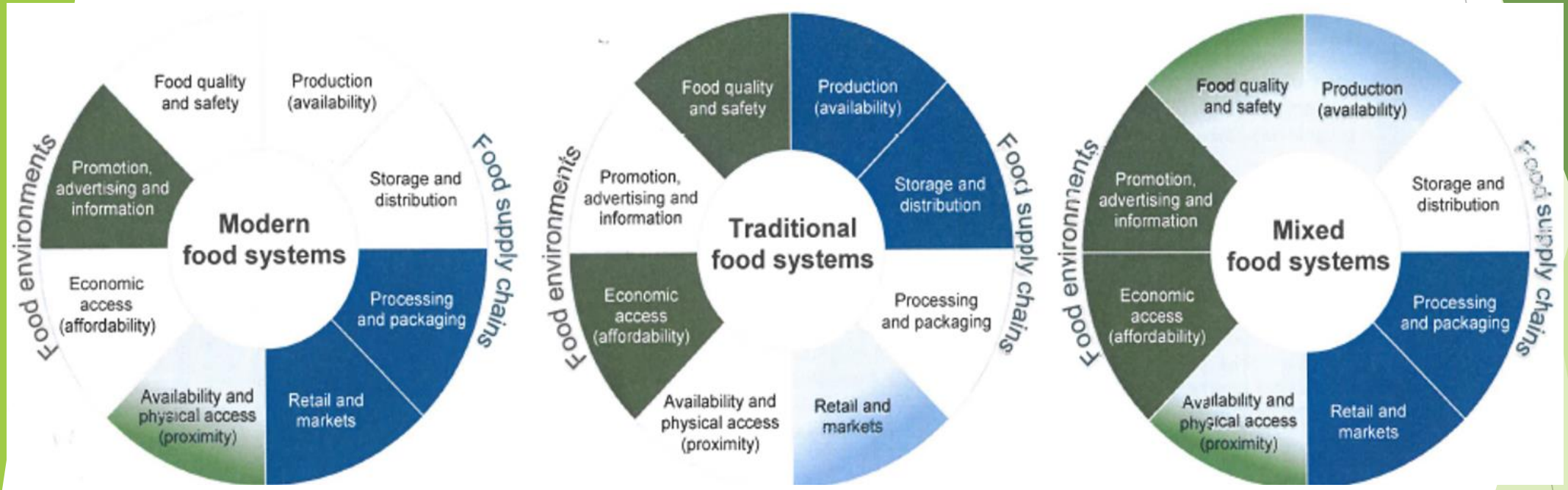
A diversity of Food Systems in the world



(H.L.P.E, 2017)

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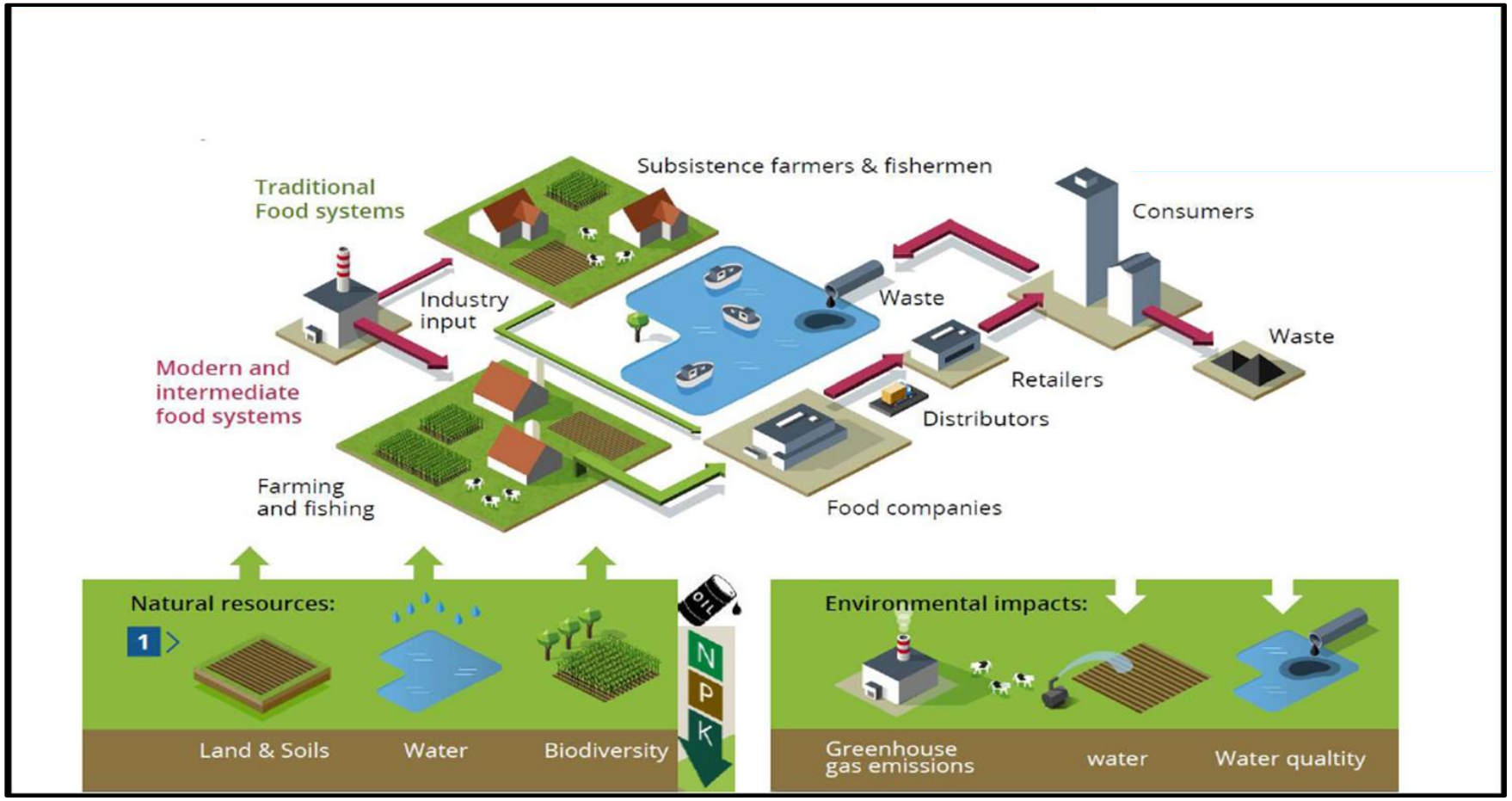
In «modern food systems»



(design from UNEP-IRP Presentation, sept. 2017)

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Sustaible Food Security Implies

- Sustainability of resource utilisation and minimum of environmental impacts
- Nutrition for health
- Livelihood of the actors in the food supply chains and vitality of rural areas

A SYSTEMIC APPROACH at different scales

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Drivers of food system changes

Population, urbanisation
Diet transition
Agricultural systems simplification
Climate change
Environmental stresses
Biomass for non food products
Technological, Socio-economical Innovations

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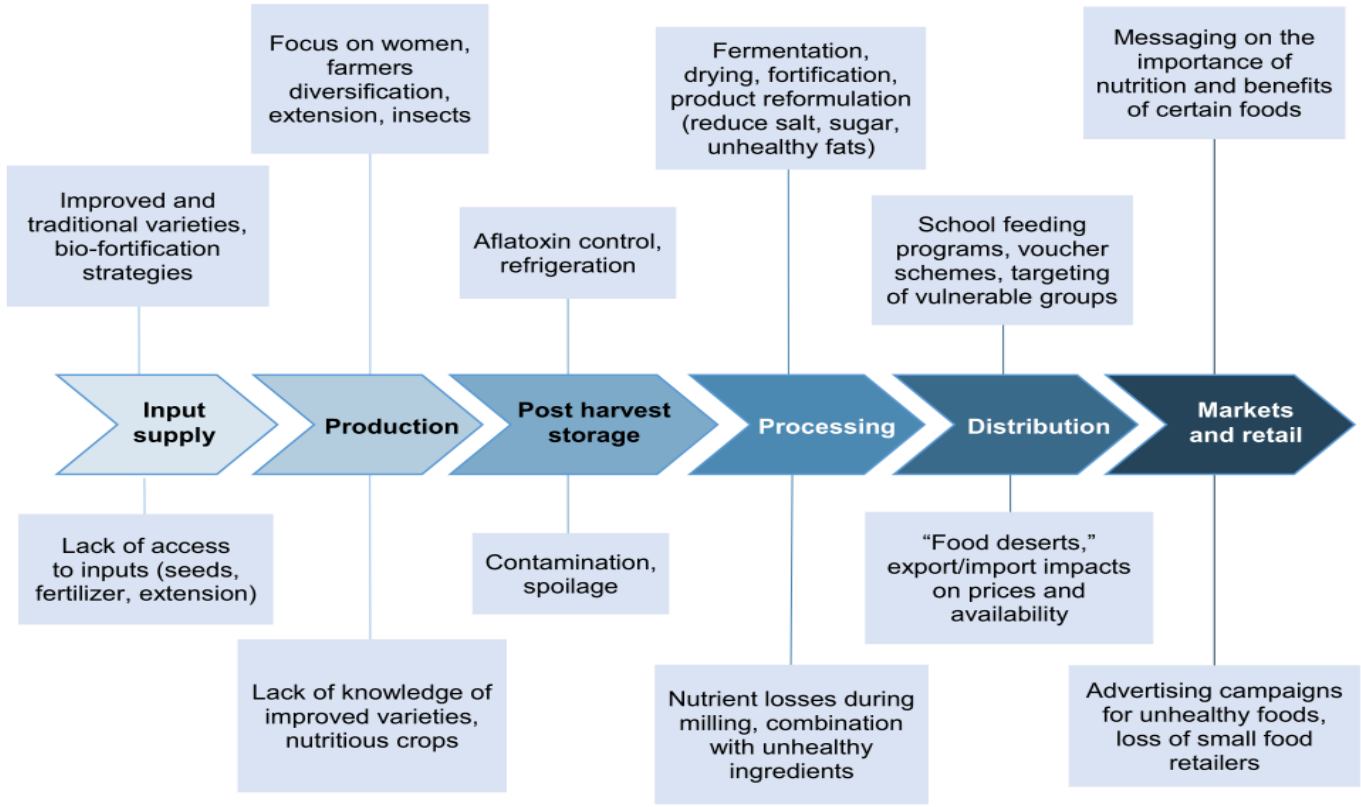
Innovation for sustainable food systems:

Maximise nutrition « entering » the food supply chain



Minimise nutrition « exiting » the food supply chain

Source : Fanzo et al. (2017b)

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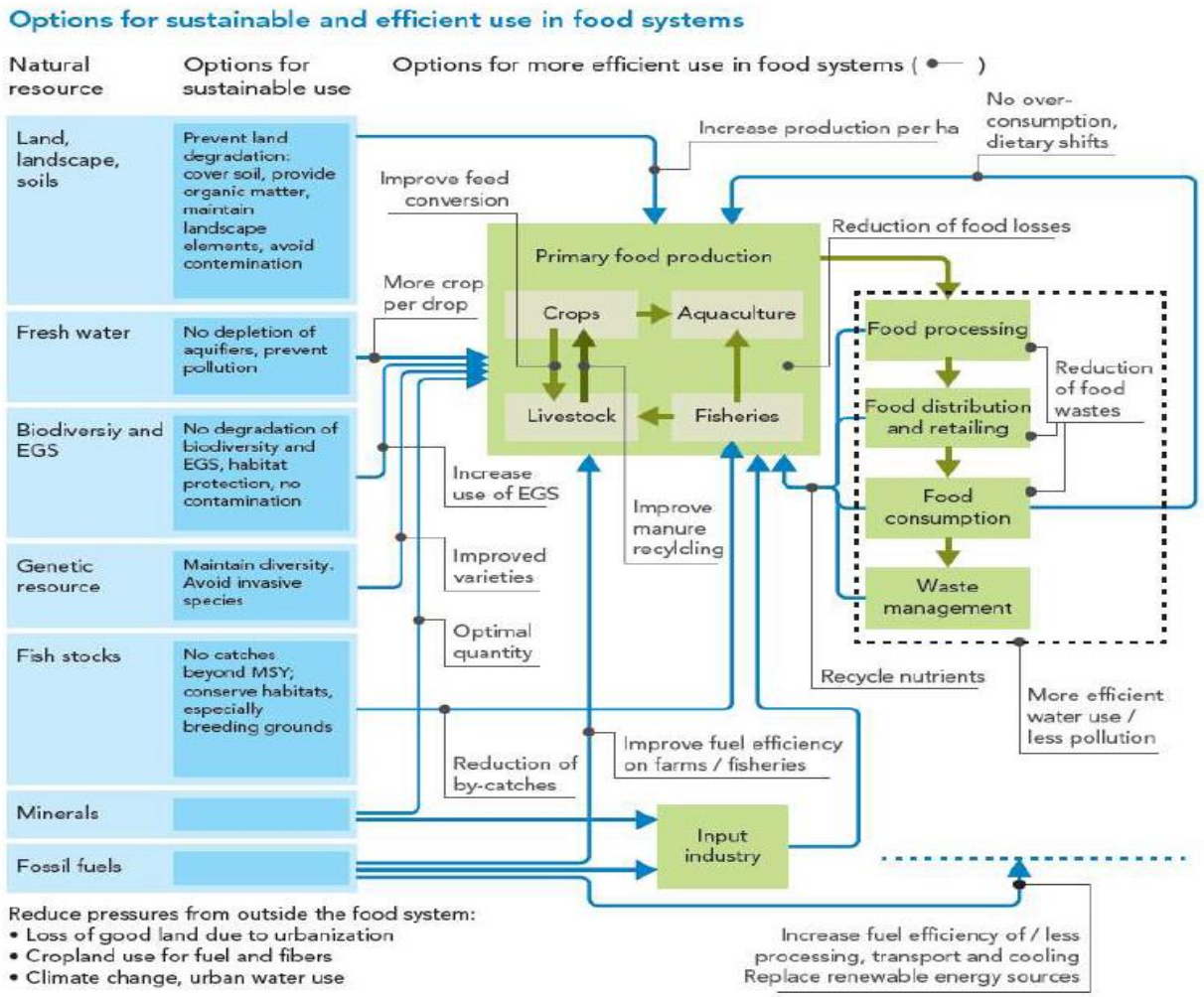
Innovation for sustainable food systems: Options for sustainable and efficient use of resources



(Source P.B.L. Netherlands Env. Assessment Agency)

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Key messages for our academies

- Identify the functioning of our food systems and their key actors
- Organize rethinking to promote smart food systems (multi stakeholder's foresight…)
- Develop capacity building in new approaches
- Draw action plans to stimulate innovations (technical, political, …) to help the necessary transitions

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