








Grand challenges

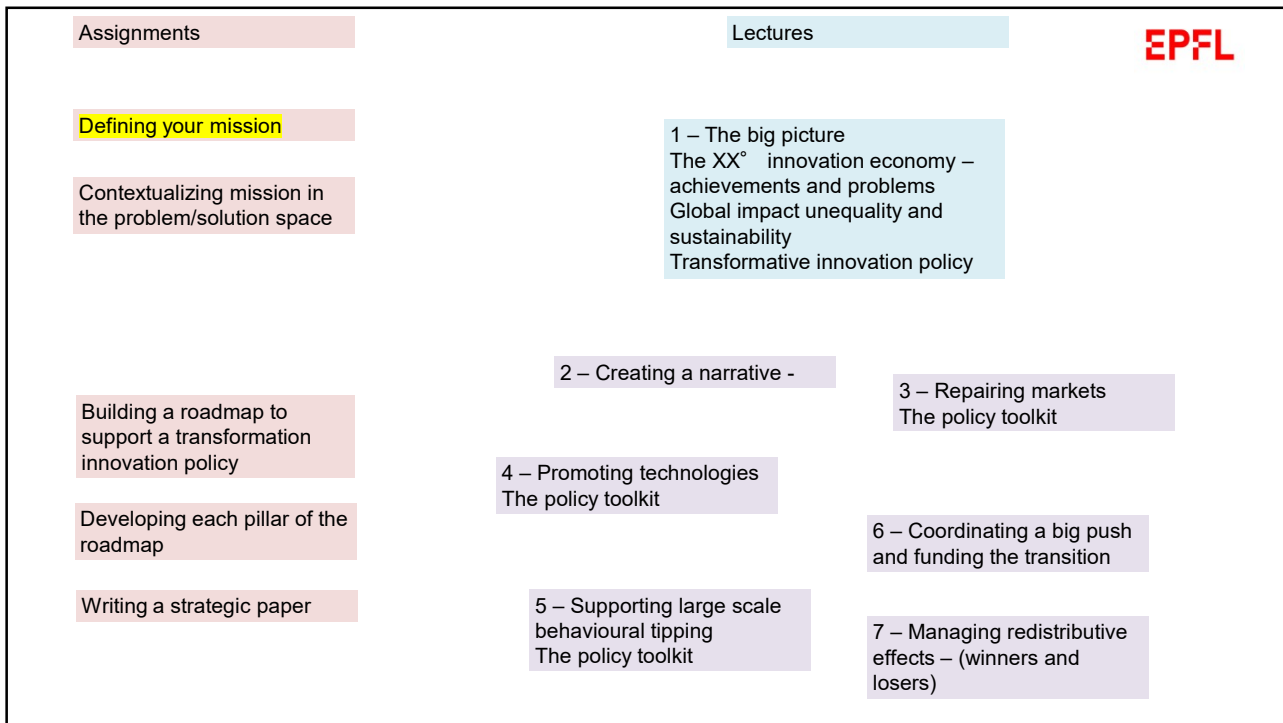





“ Societies today face a **number of formidable challenges**, many of them global in scope. These include adverse climate change, devastating diseases that are not yet under control, uncontrolled population growth in many low-income countries combined with stagnant or declining populations in many high-income economies, rapid urbanization in low-income economies that places stress on the provision of public services, massive education needs in all parts of the world, the development of piped water and sanitation in poor countries, the increase in agricultural productivity in the South, and others (Foray, Mowery and Nelson, Research Policy).”

Research Policy 41 (2012) 1461–1762



Public R&D and social challenges: What lessons from mission R&D programs?
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Assignment 1 *(not graded)* - Perspective

EPFL

- Students form a small team (or start alone and will create a team later) and the team chooses a "mission" – related to a Grand Challenge (GC)
- It is important that all teams come to the first class with a tentative idea about the "mission" they would like to address in terms of transformative innovation policy as well as with a short structured presentation.
- The final goal is to write a roadmap (policy brief) – covering the essential pillars of the desired transformation
- The essential pillars cover: repairing markets, promoting technologies, stimulating large scale behavioural changes, deploying new funding instruments and establishing better rules for policy
- Please read the next slides to have a better idea of what could be YOUR mission and how you should proceed to identify it

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Assignment 1 *(not graded)* - 3 qualifications



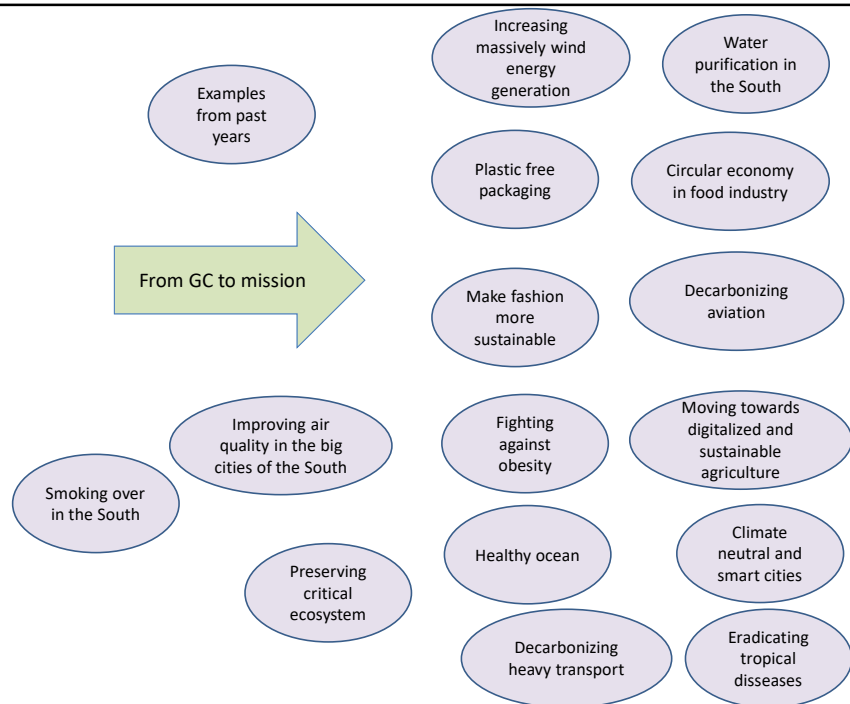
- The topic should deal with any kind of “capital” (natural, human, social, manufacturing) which is mis-managed, over-used, subject to irreversible depletion or significant decumulation
- It is useful to distinguish between *Grand Challenges (GC)* such as climate and *missions* which can be numerous within each GC.
 - Biodiversity as a GC includes numerous missions
 - Climate change as a GC includes numerous missions
 - Global health as a GC includes numerous missions
 - Your task will be easier if your mission is **specific** in terms of industry, sector, problems and of geographical scope (but it can be a specific and global mission – e.g. healthy oceans)
- The fact that the private sector is involved makes cases more challenging! The fact that the case involves not only “winners” but also “losers” makes the case even more challenging!

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The kind of GCs to be studied in this course involve all types of capital (human, natural, infrastructural & tangible) which are central to secure growth and development and are characterized by various types of crisis (overuse and overexploitation, insufficient support and or performance, uncontrolled growth, etc..).

GCs dealing with energy, environment and decarbonization, agriculture, food and nutrition, health and education, rapid urbanization, etc.. are part of the picture.

Outside of this picture are GCs such as terrorism and crimes, wars and ethnical conflicts, social inequalities or global poverty – all GCs for which the centrality of (technological) innovation is not obvious.



Geography	Place-based	Global
Sector/field/functional changes		
Specific	Water purification in developing countries Plastic free packaging in the EU Promoting clean air in the urban areas of the South Developing new renewable energy in Italy	Decarbonizing aviation Climate neutral cities Healthy oceans Soil health and food
Generic	European green plan	Climate actions Good health

It will be more easy for you to build a roadmap on a mission which is:
 specific in terms of sectors/industries/fields and geographical areas
 Just specific (and global)

- For any mission, technological innovations are central BUT solutions are not just about technology. Solutions need also to include economic, societal and institutional changes.
- Next assignments will include:
 - the construction of a narrative – what is the problem, what are the solutions, who will be the winners, who will be the losers
 - the development of a roadmap which includes actions/policy proposals:
- A roadmap is a collection of policy interventions in order to
 - promote innovations (technologies)
 - repair markets (externalities)
 - influence large scale behavioural tipping (social norms)
 - achieve a “coordinated push” and finance all actions and activities
 - address redistributive effects (how to compensate and support potential losers)

Assignment 1



- **Students, teams can prepare 2/3 slides with the following points**
 - *Description of the initial idea about a mission – which mission do you identify to be addressed by a transformative innovation policy? Why this choice (importance for society, realistic objective, your competence/interest)? Main difficulties and obstacles characterizing the mission*
- Don't hesitate to contact me to test/validate your idea
- Send your slides to dominique.foray@epfl.ch - subject header: *MGT 641 – assignment 1* – before September 17th
- An initial discussion of your ideas will be organized on the 19th

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